# 1: Understanding hydrogen properties

ID 139: Knowledge of hydrogen production technology (Similarity Score: 0.6686)

ID 210: Understanding hydrogen properties (Similarity Score: 1.0000)

ID 492: Understanding the interactions between hydrogen, water, and minerals (Similarity Score: 0.6433)

ID 629: Knowledge of climate targets and their implications for hydrogen (Similarity Score: 0.5525)

ID 10: Understanding hydrogen's role in addressing climate change (Similarity Score: 0.6521)

ID 126: Understanding the impact of hydrogen blending on heating systems (Similarity Score: 0.5646)

ID 206: Understanding the hydrogen storage value chain (Similarity Score: 0.6624)

ID 211: Understanding the behavior of hydrogen (Similarity Score: 0.8072)

ID 205: Understanding the hydrogen distribution value chain (Similarity Score: 0.6742)

ID 276: Understanding the hydrogen production value chain (Similarity Score: 0.6469)

ID 31: Knowledge of hydrogen refueling systems (Similarity Score: 0.5927)

ID 536: Knowledge of components that can endure hydrogen pressure and temperatures (Similarity Score: 0.5157)

ID 455: Understanding of carbon dioxide (CO2) properties and behavior in various states (Similarity Score: 0.3895)

ID 604: Understanding properties and characteristics of carbon dioxide (CO2) in a gaseous state (Similarity Score: 0.4742)

ID 44: Understanding of hydrogen blending in power generation (Similarity Score: 0.6381)

ID 204: Understanding the hydrogen gas production value chain (Similarity Score: 0.6065)

ID 630: Understanding of hydrogen technologies in relation to ESG factors (Similarity Score: 0.6241)

ID 6: Experience with hydrogen dispensing (Similarity Score: 0.4941)

ID 543: Understanding of carbon's physical and chemical properties (Similarity Score: 0.4732)

ID 84: Understanding the properties and characteristics of hydrogen in a liquid state (Similarity Score: 0.7561)

ID 461: Understanding the components of hydrogen gas value-chains (Similarity Score: 0.6258)

ID 135: Understanding the carbon impact of hydrogen technologies (Similarity Score: 0.5818)

ID 141: Knowledge of hydrogen dispensing systems (Similarity Score: 0.6019)

ID 7: Knowledge of hydrogen technologies (Similarity Score: 0.7030)

ID 222: Comprehensive understanding of testing procedures due to hydrogen's nature (Similarity Score: 0.6754)

ID 472: Understanding hydrogen's chemical properties (Similarity Score: 0.9057)

ID 83: Understanding the properties and characteristics of hydrogen in a gaseous state (Similarity Score: 0.7853)

ID 133: Understanding of hydrogen technologies (Similarity Score: 0.7833)

ID 377: Understanding the hydrogen production value chain (Similarity Score: 0.6469)

ID 381: Understanding of hydrogen production technology (Similarity Score: 0.7386)

ID 383: Understanding of dispensing technology for hydrogen (Similarity Score: 0.6426)

ID 218: Assess strength of welds in hydrogen systems (Similarity Score: 0.5770)

ID 129: Understanding of coatings effective against hydrogen corrosion (Similarity Score: 0.5834)

ID 431: Understanding the physical properties of carbon dioxide (CO2) in its gaseous state (Similarity Score: 0.4899)

ID 615: Understanding the properties and characteristics of carbon dioxide (CO2) in a gaseous state (Similarity Score: 0.4633)

ID 244: Understanding welding procedures for hydrogen systems (Similarity Score: 0.6156)

ID 36: Understanding the physical characteristics of gaseous hydrogen (Similarity Score: 0.7579)

ID 35: Understanding the chemical properties of hydrogen in a gaseous state (Similarity Score: 0.7656)

ID 449: Understanding of the properties of carbon dioxide (CO2) in a gaseous state (Similarity Score: 0.4875)

ID 37: Understanding the behavior of hydrogen in gaseous form (Similarity Score: 0.7435)

ID 125: Understanding the principles of hydrogen blending for heating (Similarity Score: 0.5528)

ID 631: Knowledge of the value proposition of hydrogen in the context of ESG (Similarity Score: 0.6149)

ID 86: Understanding the behavior of hydrogen under different temperature and pressure conditions (Similarity Score: 0.6853)

ID 160: Advanced knowledge of hydrogen chemical and physical properties (Similarity Score: 0.7911)

ID 161: Advanced understanding of hydrogen behavior (Similarity Score: 0.7598)

ID 628: Understanding of climate issues and science related to hydrogen (Similarity Score: 0.6290)

ID 150: Knowledge of combustion systems in hydrogen blending (Similarity Score: 0.5632)

ID 643: Understanding the climate change implications of hydrogen technologies (Similarity Score: 0.6394)

ID 277: Knowledge of the distribution aspect of the hydrogen value chain (Similarity Score: 0.5400)

ID 167: Understanding of codes related to hydrogen systems (Similarity Score: 0.6143)

ID 641: Knowledge of hydrogen technologies (Similarity Score: 0.7030)

ID 38: Understanding of hydrogen technologies (Similarity Score: 0.7833)

## 1.1: Chemical Properties of Hydrogen

ID 432: Understanding the physical properties of carbon dioxide (CO2) in its liquid state (Similarity Score: 0.5042)

ID 543: Understanding of carbon's physical and chemical properties (Similarity Score: 0.5136)

ID 628: Understanding of climate issues and science related to hydrogen (Similarity Score: 0.5686)

ID 139: Knowledge of hydrogen production technology (Similarity Score: 0.6549)

ID 381: Understanding of hydrogen production technology (Similarity Score: 0.7012)

ID 141: Knowledge of hydrogen dispensing systems (Similarity Score: 0.6133)

ID 377: Understanding the hydrogen production value chain (Similarity Score: 0.6116)

ID 222: Comprehensive understanding of testing procedures due to hydrogen's nature (Similarity Score: 0.6667)

ID 83: Understanding the properties and characteristics of hydrogen in a gaseous state (Similarity Score: 0.7599)

ID 7: Knowledge of hydrogen technologies (Similarity Score: 0.6647)

ID 431: Understanding the physical properties of carbon dioxide (CO2) in its gaseous state (Similarity Score: 0.4993)

ID 383: Understanding of dispensing technology for hydrogen (Similarity Score: 0.6331)

ID 160: Advanced knowledge of hydrogen chemical and physical properties (Similarity Score: 0.8321)

ID 455: Understanding of carbon dioxide (CO2) properties and behavior in various states (Similarity Score: 0.4010)

ID 35: Understanding the chemical properties of hydrogen in a gaseous state (Similarity Score: 0.8173)

ID 150: Knowledge of combustion systems in hydrogen blending (Similarity Score: 0.5825)

ID 461: Understanding the components of hydrogen gas value-chains (Similarity Score: 0.5886)

ID 36: Understanding the physical characteristics of gaseous hydrogen (Similarity Score: 0.7299)

ID 604: Understanding properties and characteristics of carbon dioxide (CO2) in a gaseous state (Similarity Score: 0.4792)

ID 276: Understanding the hydrogen production value chain (Similarity Score: 0.6116)

ID 125: Understanding the principles of hydrogen blending for heating (Similarity Score: 0.5380)

ID 615: Understanding the properties and characteristics of carbon dioxide (CO2) in a gaseous state (Similarity Score: 0.4740)

ID 631: Knowledge of the value proposition of hydrogen in the context of ESG (Similarity Score: 0.5914)

ID 204: Understanding the hydrogen gas production value chain (Similarity Score: 0.5845)

ID 244: Understanding welding procedures for hydrogen systems (Similarity Score: 0.6146)

ID 472: Understanding hydrogen's chemical properties (Similarity Score: 0.9570)

ID 449: Understanding of the properties of carbon dioxide (CO2) in a gaseous state (Similarity Score: 0.4894)

ID 393: Knowledge of environmental laws related to hydrogen (Similarity Score: 0.6300)

ID 167: Understanding of codes related to hydrogen systems (Similarity Score: 0.6028)

ID 86: Understanding the behavior of hydrogen under different temperature and pressure conditions (Similarity Score: 0.6461)

ID 84: Understanding the properties and characteristics of hydrogen in a liquid state (Similarity Score: 0.7770)

ID 6: Experience with hydrogen dispensing (Similarity Score: 0.5121)

ID 641: Knowledge of hydrogen technologies (Similarity Score: 0.6647)

ID 37: Understanding the behavior of hydrogen in gaseous form (Similarity Score: 0.7066)

ID 211: Understanding the behavior of hydrogen (Similarity Score: 0.7330)

ID 206: Understanding the hydrogen storage value chain (Similarity Score: 0.5983)

### 1.1.1: Hydrogen's Forms and Structure

ID 431: Understanding the physical properties of carbon dioxide (CO2) in its gaseous state (Similarity Score: 0.4558)

ID 35: Understanding the chemical properties of hydrogen in a gaseous state (Similarity Score: 0.7422)

ID 84: Understanding the properties and characteristics of hydrogen in a liquid state (Similarity Score: 0.7209)

ID 37: Understanding the behavior of hydrogen in gaseous form (Similarity Score: 0.6784)

ID 455: Understanding of carbon dioxide (CO2) properties and behavior in various states (Similarity Score: 0.3815)

ID 141: Knowledge of hydrogen dispensing systems (Similarity Score: 0.5576)

### 1.1.2: Volumetric and Energy Density

ID 431: Understanding the physical properties of carbon dioxide (CO2) in its gaseous state (Similarity Score: 0.4659)

ID 83: Understanding the properties and characteristics of hydrogen in a gaseous state (Similarity Score: 0.7475)

ID 160: Advanced knowledge of hydrogen chemical and physical properties (Similarity Score: 0.7535)

ID 36: Understanding the physical characteristics of gaseous hydrogen (Similarity Score: 0.7241)

ID 559: PVT characterization specific to sequestered gas and liquid composition (Similarity Score: 0.4361)

ID 37: Understanding the behavior of hydrogen in gaseous form (Similarity Score: 0.6756)

ID 449: Understanding of the properties of carbon dioxide (CO2) in a gaseous state (Similarity Score: 0.4664)

ID 604: Understanding properties and characteristics of carbon dioxide (CO2) in a gaseous state (Similarity Score: 0.4701)

ID 615: Understanding the properties and characteristics of carbon dioxide (CO2) in a gaseous state (Similarity Score: 0.4551)

ID 84: Understanding the properties and characteristics of hydrogen in a liquid state (Similarity Score: 0.7279)

ID 35: Understanding the chemical properties of hydrogen in a gaseous state (Similarity Score: 0.7646)

ID 571: PVT characterization specific to sequestered gas (Similarity Score: 0.3918)

### 1.1.3: Comparison with Other Gases

ID 126: Understanding the impact of hydrogen blending on heating systems (Similarity Score: 0.5586)

ID 432: Understanding the physical properties of carbon dioxide (CO2) in its liquid state (Similarity Score: 0.4809)

ID 128: Understanding efficiency and performance factors when using hydrogen blending for heating (Similarity Score: 0.5944)

ID 101: Selection of odorants for hydrogen blending (Similarity Score: 0.5235)

ID 455: Understanding of carbon dioxide (CO2) properties and behavior in various states (Similarity Score: 0.3918)

ID 450: Understanding the behavior of carbon dioxide (CO2) under different conditions in a gaseous state (Similarity Score: 0.4466)

ID 449: Understanding of the properties of carbon dioxide (CO2) in a gaseous state (Similarity Score: 0.4943)

ID 431: Understanding the physical properties of carbon dioxide (CO2) in its gaseous state (Similarity Score: 0.5016)

ID 86: Understanding the behavior of hydrogen under different temperature and pressure conditions (Similarity Score: 0.6287)

ID 36: Understanding the physical characteristics of gaseous hydrogen (Similarity Score: 0.6929)

ID 571: PVT characterization specific to sequestered gas (Similarity Score: 0.3893)

ID 85: Comparing the properties of gaseous vs. liquid hydrogen (Similarity Score: 0.7091)

ID 35: Understanding the chemical properties of hydrogen in a gaseous state (Similarity Score: 0.7584)

ID 615: Understanding the properties and characteristics of carbon dioxide (CO2) in a gaseous state (Similarity Score: 0.4977)

ID 604: Understanding properties and characteristics of carbon dioxide (CO2) in a gaseous state (Similarity Score: 0.4979)

ID 150: Knowledge of combustion systems in hydrogen blending (Similarity Score: 0.5800)

## 1.2: Hydrogen Interactions with Materials

ID 492: Understanding the interactions between hydrogen, water, and minerals (Similarity Score: 0.6223)

ID 126: Understanding the impact of hydrogen blending on heating systems (Similarity Score: 0.5465)

ID 47: Knowledge of appropriate materials for hydrogen systems (Similarity Score: 0.6609)

ID 536: Knowledge of components that can endure hydrogen pressure and temperatures (Similarity Score: 0.5029)

ID 103: Understanding how materials behave under high pressure hydrogen conditions (Similarity Score: 0.7764)

ID 523: Understanding materials behavior in low-pressure carbon dioxide (CO2) (Similarity Score: 0.5537)

ID 522: Understanding materials behavior in high-pressure carbon dioxide (CO2) (Similarity Score: 0.5597)

ID 406: Understanding welding processes that are compatible with hydrogen (Similarity Score: 0.5874)

ID 534: Knowledge of materials suitable for withstanding hydrogen pressure and temperatures (Similarity Score: 0.6251)

ID 521: Understanding materials behavior in liquid carbon dioxide (CO2) (Similarity Score: 0.5598)

ID 168: Knowledge of appropriate materials for hydrogen blending (Similarity Score: 0.6441)

ID 405: Understanding material rules for compatibility with hydrogen (Similarity Score: 0.7503)

ID 218: Assess strength of welds in hydrogen systems (Similarity Score: 0.5937)

ID 263: Knowledge of selecting materials that can withstand hydrogen pressure and temperatures (Similarity Score: 0.5720)

ID 244: Understanding welding procedures for hydrogen systems (Similarity Score: 0.6127)

ID 633: Material choices based on understanding of potential corrosive elements (Similarity Score: 0.4087)

ID 86: Understanding the behavior of hydrogen under different temperature and pressure conditions (Similarity Score: 0.6243)

ID 473: Knowledge of hydrogen's interaction with other materials (Similarity Score: 0.8614)

ID 475: Knowledge of how carbon dioxide (CO2) interacts with different materials under high pressure (Similarity Score: 0.4622)

### 1.2.1: Material Compatibility

ID 473: Knowledge of hydrogen's interaction with other materials (Similarity Score: 0.8050)

ID 475: Knowledge of how carbon dioxide (CO2) interacts with different materials under high pressure (Similarity Score: 0.4319)

ID 536: Knowledge of components that can endure hydrogen pressure and temperatures (Similarity Score: 0.5284)

ID 521: Understanding materials behavior in liquid carbon dioxide (CO2) (Similarity Score: 0.5378)

ID 405: Understanding material rules for compatibility with hydrogen (Similarity Score: 0.8267)

ID 244: Understanding welding procedures for hydrogen systems (Similarity Score: 0.6154)

ID 219: Assess integrity of welds under hydrogen pressure (Similarity Score: 0.6161)

ID 16: Knowledge of coatings for hydrogen corrosion protection (Similarity Score: 0.5717)

ID 406: Understanding welding processes that are compatible with hydrogen (Similarity Score: 0.6434)

ID 106: Understanding safety protocols related to material behavior in high pressure hydrogen environments (Similarity Score: 0.6839)

ID 15: Knowledge of materials to protect from hydrogen corrosion (Similarity Score: 0.6697)

ID 125: Understanding the principles of hydrogen blending for heating (Similarity Score: 0.5410)

ID 103: Understanding how materials behave under high pressure hydrogen conditions (Similarity Score: 0.7569)

ID 522: Understanding materials behavior in high-pressure carbon dioxide (CO2) (Similarity Score: 0.5408)

ID 47: Knowledge of appropriate materials for hydrogen systems (Similarity Score: 0.6642)

ID 534: Knowledge of materials suitable for withstanding hydrogen pressure and temperatures (Similarity Score: 0.6473)

ID 263: Knowledge of selecting materials that can withstand hydrogen pressure and temperatures (Similarity Score: 0.5850)

ID 129: Understanding of coatings effective against hydrogen corrosion (Similarity Score: 0.5850)

ID 220: Assess integrity of welds under hydrogen temperature conditions (Similarity Score: 0.6220)

ID 218: Assess strength of welds in hydrogen systems (Similarity Score: 0.6159)

ID 168: Knowledge of appropriate materials for hydrogen blending (Similarity Score: 0.6645)

ID 169: Knowledge of seals compatible with hydrogen blending (Similarity Score: 0.5410)

ID 523: Understanding materials behavior in low-pressure carbon dioxide (CO2) (Similarity Score: 0.5353)

ID 57: Knowledge of materials to protect from hydrogen corrosion (Similarity Score: 0.6697)

ID 633: Material choices based on understanding of potential corrosive elements (Similarity Score: 0.4059)

ID 126: Understanding the impact of hydrogen blending on heating systems (Similarity Score: 0.5538)

ID 19: Knowledge of materials to protect from hydrogen corrosion (Similarity Score: 0.6697)

ID 170: Knowledge of coatings effective for hydrogen blending (Similarity Score: 0.5654)

### 1.2.2: Reaction Mechanisms

ID 407: Understanding the procedures necessary for welding in hydrogen environments (Similarity Score: 0.6271)

ID 521: Understanding materials behavior in liquid carbon dioxide (CO2) (Similarity Score: 0.5586)

ID 465: Understanding liquefaction processes in carbon capture (Similarity Score: 0.5101)

ID 37: Understanding the behavior of hydrogen in gaseous form (Similarity Score: 0.6769)

ID 573: Understanding of carbon capture and separation processes (Similarity Score: 0.4368)

ID 450: Understanding the behavior of carbon dioxide (CO2) under different conditions in a gaseous state (Similarity Score: 0.4130)

ID 218: Assess strength of welds in hydrogen systems (Similarity Score: 0.5846)

ID 522: Understanding materials behavior in high-pressure carbon dioxide (CO2) (Similarity Score: 0.5613)

ID 523: Understanding materials behavior in low-pressure carbon dioxide (CO2) (Similarity Score: 0.5515)

ID 492: Understanding the interactions between hydrogen, water, and minerals (Similarity Score: 0.5886)

ID 473: Knowledge of hydrogen's interaction with other materials (Similarity Score: 0.8174)

ID 126: Understanding the impact of hydrogen blending on heating systems (Similarity Score: 0.5664)

ID 86: Understanding the behavior of hydrogen under different temperature and pressure conditions (Similarity Score: 0.6413)

ID 47: Knowledge of appropriate materials for hydrogen systems (Similarity Score: 0.6309)

ID 475: Knowledge of how carbon dioxide (CO2) interacts with different materials under high pressure (Similarity Score: 0.4479)

ID 406: Understanding welding processes that are compatible with hydrogen (Similarity Score: 0.6152)

ID 125: Understanding the principles of hydrogen blending for heating (Similarity Score: 0.5305)

ID 103: Understanding how materials behave under high pressure hydrogen conditions (Similarity Score: 0.7601)

ID 244: Understanding welding procedures for hydrogen systems (Similarity Score: 0.6607)

ID 135: Understanding the carbon impact of hydrogen technologies (Similarity Score: 0.5549)

## 1.3: Property Risks of Hydrogen

ID 561: In-depth understanding of hydrogen safety legislation (Similarity Score: 0.6124)

ID 64: Understanding safety in handling and storage of hydrogen (Similarity Score: 0.6832)

ID 94: Advanced understanding of safety in handling and storage of hydrogen (Similarity Score: 0.6810)

ID 393: Knowledge of environmental laws related to hydrogen (Similarity Score: 0.6462)

ID 48: Knowledge of appropriate seals for hydrogen systems (Similarity Score: 0.6189)

ID 641: Knowledge of hydrogen technologies (Similarity Score: 0.6512)

ID 415: Staying informed about updates in hydrogen technology (Similarity Score: 0.5449)

ID 167: Understanding of codes related to hydrogen systems (Similarity Score: 0.5801)

ID 219: Assess integrity of welds under hydrogen pressure (Similarity Score: 0.6105)

ID 631: Knowledge of the value proposition of hydrogen in the context of ESG (Similarity Score: 0.5808)

ID 134: Understanding the cost aspects of hydrogen technologies (Similarity Score: 0.5938)

ID 205: Understanding the hydrogen distribution value chain (Similarity Score: 0.6144)

ID 643: Understanding the climate change implications of hydrogen technologies (Similarity Score: 0.6462)

ID 206: Understanding the hydrogen storage value chain (Similarity Score: 0.6188)

ID 220: Assess integrity of welds under hydrogen temperature conditions (Similarity Score: 0.5978)

ID 277: Knowledge of the distribution aspect of the hydrogen value chain (Similarity Score: 0.5652)

ID 135: Understanding the carbon impact of hydrogen technologies (Similarity Score: 0.5573)

ID 278: Knowledge of the storage aspect of the hydrogen value chain (Similarity Score: 0.5992)

ID 175: Understanding the value proposition of hydrogen technologies related to ESG factors (Similarity Score: 0.5692)

ID 212: Knowledge of potential hazards created by hydrogen (Similarity Score: 0.7071)

ID 7: Knowledge of hydrogen technologies (Similarity Score: 0.6512)

ID 629: Knowledge of climate targets and their implications for hydrogen (Similarity Score: 0.5872)

### 1.3.1: Handling Risks

ID 278: Knowledge of the storage aspect of the hydrogen value chain (Similarity Score: 0.6288)

ID 631: Knowledge of the value proposition of hydrogen in the context of ESG (Similarity Score: 0.5577)

ID 94: Advanced understanding of safety in handling and storage of hydrogen (Similarity Score: 0.7450)

ID 93: Advanced understanding of personal protective equipment (PPE) for hydrogen environments (Similarity Score: 0.4871)

ID 393: Knowledge of environmental laws related to hydrogen (Similarity Score: 0.6259)

ID 206: Understanding the hydrogen storage value chain (Similarity Score: 0.6246)

ID 49: Knowledge of appropriate coatings for hydrogen systems (Similarity Score: 0.5692)

ID 48: Knowledge of appropriate seals for hydrogen systems (Similarity Score: 0.6369)

ID 277: Knowledge of the distribution aspect of the hydrogen value chain (Similarity Score: 0.5773)

ID 561: In-depth understanding of hydrogen safety legislation (Similarity Score: 0.6115)

ID 220: Assess integrity of welds under hydrogen temperature conditions (Similarity Score: 0.6013)

ID 64: Understanding safety in handling and storage of hydrogen (Similarity Score: 0.7557)

ID 175: Understanding the value proposition of hydrogen technologies related to ESG factors (Similarity Score: 0.5680)

ID 169: Knowledge of seals compatible with hydrogen blending (Similarity Score: 0.5168)

ID 219: Assess integrity of welds under hydrogen pressure (Similarity Score: 0.6074)

ID 63: Understanding personal protective equipment (PPE) requirements for hydrogen work (Similarity Score: 0.4730)

ID 105: Understanding the risk of hydrogen embrittlement in high pressure environments (Similarity Score: 0.6516)

#### 1.3.1.1: Odorless Nature

ID 71: Understanding safety considerations when using odorants in hydrogen systems (Similarity Score: 0.7218)

ID 72: Understanding leak detection techniques involving odorants (Similarity Score: 0.4497)

ID 571: PVT characterization specific to sequestered gas (Similarity Score: 0.4099)

ID 69: Understanding the use of odorants for hydrogen leak detection (Similarity Score: 0.6435)

#### 1.3.1.2: Silent Leaks

ID 342: Procedures for tracing hydrogen leaks (Similarity Score: 0.5041)

ID 48: Knowledge of appropriate seals for hydrogen systems (Similarity Score: 0.6398)

ID 169: Knowledge of seals compatible with hydrogen blending (Similarity Score: 0.5607)

ID 220: Assess integrity of welds under hydrogen temperature conditions (Similarity Score: 0.6040)

ID 64: Understanding safety in handling and storage of hydrogen (Similarity Score: 0.6842)

ID 94: Advanced understanding of safety in handling and storage of hydrogen (Similarity Score: 0.6790)

ID 219: Assess integrity of welds under hydrogen pressure (Similarity Score: 0.6150)

ID 72: Understanding leak detection techniques involving odorants (Similarity Score: 0.4458)

ID 415: Staying informed about updates in hydrogen technology (Similarity Score: 0.5622)

ID 583: Understanding of reservoir data interpretation for hydrogen injection (Similarity Score: 0.4871)

#### 1.3.1.3: Rapid Ascent

ID 505: Knowledge of well completion solutions tailored for hydrogen environments (Similarity Score: 0.5449)

ID 48: Knowledge of appropriate seals for hydrogen systems (Similarity Score: 0.6063)

ID 94: Advanced understanding of safety in handling and storage of hydrogen (Similarity Score: 0.6955)

### 1.3.2: Flammability and Explosive Risks

ID 474: Understanding hydrogen's property risks including flammability and explosive hazards (Similarity Score: 0.9260)

### 1.3.3: Containment Risks

ID 220: Assess integrity of welds under hydrogen temperature conditions (Similarity Score: 0.6358)

ID 236: Staying current with advances in hydrogen technology (Similarity Score: 0.5514)

ID 49: Knowledge of appropriate coatings for hydrogen systems (Similarity Score: 0.5844)

ID 216: Design and selection of coatings for protection against hydrogen (Similarity Score: 0.5470)

ID 218: Assess strength of welds in hydrogen systems (Similarity Score: 0.5905)

ID 219: Assess integrity of welds under hydrogen pressure (Similarity Score: 0.6515)

ID 212: Knowledge of potential hazards created by hydrogen (Similarity Score: 0.7103)

ID 629: Knowledge of climate targets and their implications for hydrogen (Similarity Score: 0.5903)

ID 48: Knowledge of appropriate seals for hydrogen systems (Similarity Score: 0.6467)

ID 225: Selection of protective coatings for hydrogen production (Similarity Score: 0.5194)

ID 393: Knowledge of environmental laws related to hydrogen (Similarity Score: 0.6364)

ID 129: Understanding of coatings effective against hydrogen corrosion (Similarity Score: 0.5910)

ID 59: Knowledge of inhibitors to protect from hydrogen corrosion (Similarity Score: 0.5535)

ID 277: Knowledge of the distribution aspect of the hydrogen value chain (Similarity Score: 0.5200)

ID 16: Knowledge of coatings for hydrogen corrosion protection (Similarity Score: 0.5814)

ID 105: Understanding the risk of hydrogen embrittlement in high pressure environments (Similarity Score: 0.7237)

ID 415: Staying informed about updates in hydrogen technology (Similarity Score: 0.5425)

ID 609: Maintenance of coatings and insulation to protect against hydrogen conditions (Similarity Score: 0.5732)

ID 126: Understanding the impact of hydrogen blending on heating systems (Similarity Score: 0.5679)

ID 20: Knowledge of coatings to protect from hydrogen corrosion and embrittlement (Similarity Score: 0.5688)

ID 643: Understanding the climate change implications of hydrogen technologies (Similarity Score: 0.6423)

ID 21: Knowledge of inhibitors to protect from hydrogen corrosion and embrittlement (Similarity Score: 0.5402)

ID 127: Understanding safety considerations for hydrogen blending in heating systems (Similarity Score: 0.6043)

ID 94: Advanced understanding of safety in handling and storage of hydrogen (Similarity Score: 0.6741)

ID 311: Knowledge of cathodic protection equipment to prevent hydrogen corrosion (Similarity Score: 0.5644)

ID 93: Advanced understanding of personal protective equipment (PPE) for hydrogen environments (Similarity Score: 0.4886)

ID 536: Knowledge of components that can endure hydrogen pressure and temperatures (Similarity Score: 0.5104)

ID 246: Ensuring quality and safety of welds in hydrogen systems (Similarity Score: 0.6152)

ID 167: Understanding of codes related to hydrogen systems (Similarity Score: 0.5820)

ID 169: Knowledge of seals compatible with hydrogen blending (Similarity Score: 0.5365)

ID 170: Knowledge of coatings effective for hydrogen blending (Similarity Score: 0.5509)

ID 58: Knowledge of coatings to protect from hydrogen corrosion (Similarity Score: 0.5910)

ID 162: Advanced understanding of potential hazards created by hydrogen (Similarity Score: 0.7160)

# 2: Maintenance and Monitoring of Hydrogen Equipment

ID 156: Maintenance of vessels for hydrogen pressure and temperatures (Similarity Score: 0.6251)

ID 158: Maintenance of turbines in hydrogen systems (Similarity Score: 0.7303)

ID 54: Maintenance of pressure vessels in hydrogen fueling systems (Similarity Score: 0.7002)

ID 609: Maintenance of coatings and insulation to protect against hydrogen conditions (Similarity Score: 0.5967)

ID 608: Maintenance of valves and seals to withstand hydrogen pressure and temperatures (Similarity Score: 0.6057)

ID 157: Maintenance of compressors for hydrogen systems (Similarity Score: 0.7538)

ID 159: Maintenance of piping systems, fittings, valves, and seals (Similarity Score: 0.5479)

ID 56: Maintenance of coatings and insulation in hydrogen fueling systems (Similarity Score: 0.6531)

ID 623: Stay up to date on carbon dioxide (CO2) monitoring technology (Similarity Score: 0.3947)

ID 55: Maintenance of piping systems, valves, and fittings in hydrogen fueling systems (Similarity Score: 0.7225)

ID 203: Maintenance of electronic systems in hydrogen blending power generation (Similarity Score: 0.6788)

ID 389: Maintenance of high-power electrical equipment in electrolyzer systems (Similarity Score: 0.4987)

ID 202: Maintenance of electrical equipment for hydrogen blending power generation (Similarity Score: 0.7000)

ID 621: Maintenance of power generation equipment used in combined-cycle systems with hydrogen blending (Similarity Score: 0.6858)

ID 599: Maintenance of vessels, piping systems, cryogenic systems, valves, and seals (Similarity Score: 0.5256)

ID 535: Knowledge of equipment designed to withstand hydrogen pressure and temperatures (Similarity Score: 0.6227)

ID 605: Maintenance of vessels to withstand hydrogen pressure and temperatures (Similarity Score: 0.6040)

ID 400: Knowledge of compliance testing in hydrogen infrastructure (Similarity Score: 0.6761)

ID 411: Maintenance of turbines to ensure reliability under hydrogen pressure (Similarity Score: 0.6950)

ID 403: In-depth knowledge of standards for hydrogen infrastructure and operations (Similarity Score: 0.6089)

ID 181: Maintenance of instrumentation systems for hydrogen transmission (Similarity Score: 0.8254)

ID 180: Maintenance of electrical equipment for hydrogen transmission (Similarity Score: 0.7721)

ID 179: Selection of instrumentation systems for hydrogen pipelines (Similarity Score: 0.6089)

ID 607: Maintenance of piping systems and fittings under hydrogen conditions (Similarity Score: 0.6903)

ID 392: Knowledge of operational adjustments for hydrogen blending (Similarity Score: 0.5948)

ID 146: Instrumented system analysis for hydrogen processes (Similarity Score: 0.6278)

ID 606: Maintenance of compressors to withstand hydrogen pressure and temperatures (Similarity Score: 0.6129)

ID 151: Understanding of other relevant equipment for hydrogen blending (Similarity Score: 0.6533)

ID 78: Maintenance of materials and equipment used in high-temperature hydrogen systems (Similarity Score: 0.7311)

ID 374: Selection of key instrumentation equipment for power generation using hydrogen blending (Similarity Score: 0.6238)

ID 250: Maintenance of dispensers in hydrogen fueling systems (Similarity Score: 0.6420)

ID 328: Troubleshooting hydrogen fuel dispensing equipment (Similarity Score: 0.6574)

ID 251: Maintenance of pumps in hydrogen fueling systems (Similarity Score: 0.7347)

ID 327: Troubleshooting hydrogen fuel compression equipment (Similarity Score: 0.6340)

ID 253: Maintenance of Human Machine Interface (HMI) systems (Similarity Score: 0.3544)

ID 319: Maintenance of instrumentation systems in electrolyzer hydrogen production (Similarity Score: 0.7535)

ID 317: Selection of key instrumentation equipment for electrolyzer hydrogen production (Similarity Score: 0.6441)

ID 262: Knowledge of selecting and maintaining equipment to withstand hydrogen conditions (Similarity Score: 0.7150)

ID 316: Maintenance of fuel tanks, piping, valves, and seals in hydrogen systems (Similarity Score: 0.7273)

ID 569: Maintenance of equipment in carbon capture plants (Similarity Score: 0.5988)

ID 271: Maintenance of turbines, compressors, vessels, boilers, pumps, piping, and BOP equipment (Similarity Score: 0.5149)

ID 124: Maintenance and management of mobile hydrogen fueling systems (Similarity Score: 0.7908)

ID 284: Knowledge of electrical equipment used in hydrogen fueling systems (Similarity Score: 0.6382)

ID 249: Maintenance of flow, level, and pressure instrumentation (Similarity Score: 0.5035)

ID 107: Maintenance of ventilation systems for hydrogen blending (Similarity Score: 0.6457)

ID 311: Knowledge of cathodic protection equipment to prevent hydrogen corrosion (Similarity Score: 0.6255)

ID 570: Monitoring and inspection of carbon capture systems for maintenance (Similarity Score: 0.6411)

ID 122: Maintenance of hydrogen fueling station equipment (Similarity Score: 0.8473)

ID 109: Maintenance of flame detection systems for hydrogen blending (Similarity Score: 0.6448)

ID 110: Maintenance of corrosion prevention equipment and systems (Similarity Score: 0.6417)

ID 310: Knowledge of instrumentation systems in hydrogen transmission (Similarity Score: 0.6747)

ID 309: Knowledge of measurement equipment for hydrogen transmission (Similarity Score: 0.7158)

ID 308: Maintenance of key systems to withstand hydrogen pressure and temperatures (Similarity Score: 0.6300)

ID 287: Maintenance of electrical and instrumentation systems in hydrogen fueling (Similarity Score: 0.7955)

ID 121: Management of hydrogen fueling stations (Similarity Score: 0.7200)

ID 300: Knowledge of key instrumentation for ventilation systems in hydrogen blending (Similarity Score: 0.6008)

ID 295: Maintenance of instrumentation and electrical systems in electrolyzers (Similarity Score: 0.5192)

ID 290: Selection of equipment resistant to hydrogen-induced degradation (Similarity Score: 0.5469)

ID 123: Continuous improvement of hydrogen fueling station operations (Similarity Score: 0.6329)

ID 248: Maintenance of vaporizers in hydrogen fueling systems (Similarity Score: 0.6544)

ID 247: Maintenance of pressure vessels in hydrogen fueling systems (Similarity Score: 0.7002)

ID 329: Performing routine maintenance on hydrogen compression equipment (Similarity Score: 0.7991)

ID 373: Maintenance of turbines in hydrogen environments (Similarity Score: 0.6734)

ID 368: Maintenance of systems supporting PEM electrolyzers (Similarity Score: 0.5003)

ID 367: Maintenance of PEM electrolyzers (Similarity Score: 0.4492)

ID 366: Maintenance of fuel tanks, piping, valves, and seals in hydrogen systems (Similarity Score: 0.7273)

ID 67: Knowledge of monitoring systems for electrolyzer hydrogen production plants (Similarity Score: 0.6764)

ID 550: Maintenance of carbon capture systems and materials (Similarity Score: 0.4302)

ID 75: Selection of equipment designed to withstand hydrogen pressure (Similarity Score: 0.6150)

ID 76: Selection of equipment designed to withstand hydrogen temperatures (Similarity Score: 0.5999)

ID 77: Maintenance of materials and equipment used in high-pressure hydrogen systems (Similarity Score: 0.7320)

ID 352: Maintenance of valves and seals in hydrogen systems (Similarity Score: 0.7172)

ID 120: Maintenance of electrolyzers, vessels, compressors, piping systems, valves, and seals to withstand hydrogen pressure and temperatures (Similarity Score: 0.6112)

ID 351: Maintenance of piping systems and fittings under hydrogen conditions (Similarity Score: 0.6903)

ID 350: Maintenance of compressors for hydrogen conditions (Similarity Score: 0.7363)

ID 349: Maintenance of vessels to withstand hydrogen pressure and temperatures (Similarity Score: 0.6040)

ID 221: Understanding of installation procedures unique to hydrogen (Similarity Score: 0.6325)

ID 223: Selection and design of production equipment for hydrogen systems (Similarity Score: 0.7041)

ID 226: Maintenance of production equipment and materials (Similarity Score: 0.4966)

ID 229: Maintenance of electrical equipment in electrolyzer plants (Similarity Score: 0.5036)

ID 137: Knowledge of relevant codes for hydrogen fueling station equipment (Similarity Score: 0.6465)

ID 237: Keeping up-to-date with changes in hydrogen regulations (Similarity Score: 0.5718)

ID 238: Keeping up-to-date with changes in hydrogen standards (Similarity Score: 0.6140)

ID 626: Understanding instrumentation techniques for permanent carbon dioxide (CO2) storage (Similarity Score: 0.4234)

ID 239: Keeping up-to-date with changes in hydrogen codes (Similarity Score: 0.5536)

ID 635: Knowledge of key instrumentation associated with carbon capture (Similarity Score: 0.3970)

ID 341: Maintenance of instrumentation and control systems in fueling operations (Similarity Score: 0.6154)

ID 339: Maintenance of pressure vessels in fueling operations (Similarity Score: 0.5489)

ID 338: Selection of instrumentation and controls for fueling operations (Similarity Score: 0.4725)

ID 335: Maintenance of key hydrogen systems to ensure reliability under varying conditions (Similarity Score: 0.7291)

ID 330: Performing routine maintenance on hydrogen dispensing equipment (Similarity Score: 0.7620)

ID 376: Maintenance of instrumentation in hydrogen blending power generation (Similarity Score: 0.7200)

ID 285: Knowledge of instrumentation systems for hydrogen fueling (Similarity Score: 0.6657)

ID 1: Experience with hydrogen fueling equipment and systems (Similarity Score: 0.6965)

ID 34: Maintenance of hydrogen refueling equipment (Similarity Score: 0.8681)

ID 471: Maintenance of electrolyzers, vessels, compressors, piping systems, valves, and seals (Similarity Score: 0.5603)

ID 458: Maintenance of key instrumentation systems in carbon capture plants (Similarity Score: 0.5794)

ID 421: Maintenance of electrical systems in hydrogen production and storage environments (Similarity Score: 0.7183)

ID 27: Appropriate selection of stationary equipment for hydrogen pipeline transmission (Similarity Score: 0.6175)

ID 31: Knowledge of hydrogen refueling systems (Similarity Score: 0.6027)

ID 481: Maintenance of carbon dioxide (CO2) sensors and monitoring equipment (Similarity Score: 0.5808)

ID 28: Appropriate selection of rotating equipment for hydrogen pipeline transmission (Similarity Score: 0.5848)

ID 511: Maintenance of combustion, compression, pumping, and turbine systems to ensure reliability under hydrogen conditions (Similarity Score: 0.6338)

ID 486: Maintenance of power generation systems for hydrogen blending (Similarity Score: 0.6577)

ID 491: Maintenance of vessels, compressors, piping systems, valves, and seals (Similarity Score: 0.5573)

ID 12: Knowledge of electrical equipment for hydrogen pipelines (Similarity Score: 0.5999)

ID 427: Maintenance of air separation units, vessels, piping systems, valves, and seals (Similarity Score: 0.5463)

ID 500: Stay up to date on monitoring options for hydrogen storage (Similarity Score: 0.7231)

ID 11: Knowledge of key instrumentation for hydrogen pipelines (Similarity Score: 0.6227)

ID 418: Maintenance of mechanical systems under hydrogen pressure (Similarity Score: 0.6586)

ID 520: Maintenance of instrumentation systems in SMR and/or ATR hydrogen production plant (Similarity Score: 0.7124)

ID 33: Safety procedures during hydrogen refueling (Similarity Score: 0.6267)

ID 446: Maintenance of equipment in Autothermal Reforming (ATR) hydrogen production (Similarity Score: 0.6358)

ID 415: Staying informed about updates in hydrogen technology (Similarity Score: 0.5873)

ID 29: Maintenance of stationary equipment in hydrogen pipeline systems (Similarity Score: 0.7769)

ID 2: Experience with on-site hydrogen generation (Similarity Score: 0.5282)

ID 504: Maintenance of electrical and electronic systems in SMR and/or ATR hydrogen production (Similarity Score: 0.6419)

ID 648: Maintenance of turbine systems to ensure reliability under hydrogen conditions (Similarity Score: 0.7150)

ID 30: Maintenance of rotating equipment in hydrogen pipeline systems (Similarity Score: 0.7224)

ID 444: Maintenance of vessels, compressors, piping systems, valves, and seals to ensure reliability under hydrogen conditions (Similarity Score: 0.7032)

## 2.1: Equipment Monitoring

ID 316: Maintenance of fuel tanks, piping, valves, and seals in hydrogen systems (Similarity Score: 0.6733)

ID 310: Knowledge of instrumentation systems in hydrogen transmission (Similarity Score: 0.6561)

ID 329: Performing routine maintenance on hydrogen compression equipment (Similarity Score: 0.7696)

ID 444: Maintenance of vessels, compressors, piping systems, valves, and seals to ensure reliability under hydrogen conditions (Similarity Score: 0.6571)

ID 525: Knowledge of stationary equipment required for pipeline transmission of gaseous carbon dioxide (CO2) (Similarity Score: 0.4534)

ID 335: Maintenance of key hydrogen systems to ensure reliability under varying conditions (Similarity Score: 0.6637)

ID 330: Performing routine maintenance on hydrogen dispensing equipment (Similarity Score: 0.7375)

ID 110: Maintenance of corrosion prevention equipment and systems (Similarity Score: 0.6318)

ID 109: Maintenance of flame detection systems for hydrogen blending (Similarity Score: 0.6014)

ID 524: Knowledge of stationary equipment required for pipeline transmission of liquid carbon dioxide (CO2) (Similarity Score: 0.4352)

ID 570: Monitoring and inspection of carbon capture systems for maintenance (Similarity Score: 0.6479)

ID 327: Troubleshooting hydrogen fuel compression equipment (Similarity Score: 0.6212)

ID 311: Knowledge of cathodic protection equipment to prevent hydrogen corrosion (Similarity Score: 0.5946)

ID 569: Maintenance of equipment in carbon capture plants (Similarity Score: 0.6135)

ID 319: Maintenance of instrumentation systems in electrolyzer hydrogen production (Similarity Score: 0.7262)

ID 434: Selection of key electrical equipment for carbon capture technology (Similarity Score: 0.3863)

ID 317: Selection of key instrumentation equipment for electrolyzer hydrogen production (Similarity Score: 0.6443)

ID 328: Troubleshooting hydrogen fuel dispensing equipment (Similarity Score: 0.6465)

ID 338: Selection of instrumentation and controls for fueling operations (Similarity Score: 0.4783)

ID 349: Maintenance of vessels to withstand hydrogen pressure and temperatures (Similarity Score: 0.5602)

ID 341: Maintenance of instrumentation and control systems in fueling operations (Similarity Score: 0.6035)

ID 56: Maintenance of coatings and insulation in hydrogen fueling systems (Similarity Score: 0.6075)

ID 376: Maintenance of instrumentation in hydrogen blending power generation (Similarity Score: 0.6931)

ID 527: Knowledge of rotating equipment required for pipeline transmission of gaseous carbon dioxide (CO2) (Similarity Score: 0.4392)

ID 374: Selection of key instrumentation equipment for power generation using hydrogen blending (Similarity Score: 0.6135)

ID 30: Maintenance of rotating equipment in hydrogen pipeline systems (Similarity Score: 0.7092)

ID 373: Maintenance of turbines in hydrogen environments (Similarity Score: 0.6235)

ID 369: Regular inspection and troubleshooting of PEM electrolyzer systems (Similarity Score: 0.5027)

ID 29: Maintenance of stationary equipment in hydrogen pipeline systems (Similarity Score: 0.7685)

ID 368: Maintenance of systems supporting PEM electrolyzers (Similarity Score: 0.5118)

ID 367: Maintenance of PEM electrolyzers (Similarity Score: 0.4569)

ID 366: Maintenance of fuel tanks, piping, valves, and seals in hydrogen systems (Similarity Score: 0.6733)

ID 339: Maintenance of pressure vessels in fueling operations (Similarity Score: 0.5279)

ID 67: Knowledge of monitoring systems for electrolyzer hydrogen production plants (Similarity Score: 0.6794)

ID 76: Selection of equipment designed to withstand hydrogen temperatures (Similarity Score: 0.5887)

ID 352: Maintenance of valves and seals in hydrogen systems (Similarity Score: 0.6691)

ID 77: Maintenance of materials and equipment used in high-pressure hydrogen systems (Similarity Score: 0.6852)

ID 28: Appropriate selection of rotating equipment for hydrogen pipeline transmission (Similarity Score: 0.5894)

ID 78: Maintenance of materials and equipment used in high-temperature hydrogen systems (Similarity Score: 0.6800)

ID 351: Maintenance of piping systems and fittings under hydrogen conditions (Similarity Score: 0.6410)

ID 350: Maintenance of compressors for hydrogen conditions (Similarity Score: 0.6846)

ID 309: Knowledge of measurement equipment for hydrogen transmission (Similarity Score: 0.7231)

ID 27: Appropriate selection of stationary equipment for hydrogen pipeline transmission (Similarity Score: 0.6249)

ID 427: Maintenance of air separation units, vessels, piping systems, valves, and seals (Similarity Score: 0.5296)

ID 635: Knowledge of key instrumentation associated with carbon capture (Similarity Score: 0.4000)

ID 75: Selection of equipment designed to withstand hydrogen pressure (Similarity Score: 0.6093)

ID 303: Understanding of instrumentation and electrical controls for corrosion prevention (Similarity Score: 0.4673)

ID 121: Management of hydrogen fueling stations (Similarity Score: 0.6851)

ID 300: Knowledge of key instrumentation for ventilation systems in hydrogen blending (Similarity Score: 0.5794)

ID 229: Maintenance of electrical equipment in electrolyzer plants (Similarity Score: 0.5235)

ID 226: Maintenance of production equipment and materials (Similarity Score: 0.5114)

ID 223: Selection and design of production equipment for hydrogen systems (Similarity Score: 0.6787)

ID 480: Selection of carbon dioxide (CO2) sensors for monitoring equipment and systems (Similarity Score: 0.4466)

ID 481: Maintenance of carbon dioxide (CO2) sensors and monitoring equipment (Similarity Score: 0.5945)

ID 623: Stay up to date on carbon dioxide (CO2) monitoring technology (Similarity Score: 0.4136)

ID 491: Maintenance of vessels, compressors, piping systems, valves, and seals (Similarity Score: 0.5414)

ID 621: Maintenance of power generation equipment used in combined-cycle systems with hydrogen blending (Similarity Score: 0.6603)

ID 203: Maintenance of electronic systems in hydrogen blending power generation (Similarity Score: 0.6379)

ID 500: Stay up to date on monitoring options for hydrogen storage (Similarity Score: 0.7025)

ID 202: Maintenance of electrical equipment for hydrogen blending power generation (Similarity Score: 0.6841)

ID 599: Maintenance of vessels, piping systems, cryogenic systems, valves, and seals (Similarity Score: 0.5044)

ID 605: Maintenance of vessels to withstand hydrogen pressure and temperatures (Similarity Score: 0.5602)

ID 606: Maintenance of compressors to withstand hydrogen pressure and temperatures (Similarity Score: 0.5778)

ID 181: Maintenance of instrumentation systems for hydrogen transmission (Similarity Score: 0.7928)

ID 180: Maintenance of electrical equipment for hydrogen transmission (Similarity Score: 0.7520)

ID 504: Maintenance of electrical and electronic systems in SMR and/or ATR hydrogen production (Similarity Score: 0.6102)

ID 151: Understanding of other relevant equipment for hydrogen blending (Similarity Score: 0.6386)

ID 607: Maintenance of piping systems and fittings under hydrogen conditions (Similarity Score: 0.6410)

ID 157: Maintenance of compressors for hydrogen systems (Similarity Score: 0.6967)

ID 609: Maintenance of coatings and insulation to protect against hydrogen conditions (Similarity Score: 0.5503)

ID 159: Maintenance of piping systems, fittings, valves, and seals (Similarity Score: 0.5302)

ID 1: Experience with hydrogen fueling equipment and systems (Similarity Score: 0.6444)

ID 648: Maintenance of turbine systems to ensure reliability under hydrogen conditions (Similarity Score: 0.6596)

ID 610: Understanding of measurement equipment and instrumentation for carbon capture processes (Similarity Score: 0.4457)

ID 235: Handling compliance issues in electrical systems for road vehicles (Similarity Score: 0.3804)

ID 302: Knowledge of instrumentation and controls for flame detection (Similarity Score: 0.3824)

ID 137: Knowledge of relevant codes for hydrogen fueling station equipment (Similarity Score: 0.6443)

ID 626: Understanding instrumentation techniques for permanent carbon dioxide (CO2) storage (Similarity Score: 0.4274)

ID 295: Maintenance of instrumentation and electrical systems in electrolyzers (Similarity Score: 0.5171)

ID 446: Maintenance of equipment in Autothermal Reforming (ATR) hydrogen production (Similarity Score: 0.6352)

ID 34: Maintenance of hydrogen refueling equipment (Similarity Score: 0.8113)

ID 290: Selection of equipment resistant to hydrogen-induced degradation (Similarity Score: 0.5321)

ID 120: Maintenance of electrolyzers, vessels, compressors, piping systems, valves, and seals to withstand hydrogen pressure and temperatures (Similarity Score: 0.5846)

ID 55: Maintenance of piping systems, valves, and fittings in hydrogen fueling systems (Similarity Score: 0.6730)

ID 287: Maintenance of electrical and instrumentation systems in hydrogen fueling (Similarity Score: 0.7489)

ID 122: Maintenance of hydrogen fueling station equipment (Similarity Score: 0.8163)

ID 285: Knowledge of instrumentation systems for hydrogen fueling (Similarity Score: 0.6270)

ID 123: Continuous improvement of hydrogen fueling station operations (Similarity Score: 0.5933)

ID 284: Knowledge of electrical equipment used in hydrogen fueling systems (Similarity Score: 0.6173)

ID 124: Maintenance and management of mobile hydrogen fueling systems (Similarity Score: 0.7404)

ID 520: Maintenance of instrumentation systems in SMR and/or ATR hydrogen production plant (Similarity Score: 0.6956)

ID 12: Knowledge of electrical equipment for hydrogen pipelines (Similarity Score: 0.5974)

ID 271: Maintenance of turbines, compressors, vessels, boilers, pumps, piping, and BOP equipment (Similarity Score: 0.5243)

ID 262: Knowledge of selecting and maintaining equipment to withstand hydrogen conditions (Similarity Score: 0.6951)

ID 457: Selection of key instrumentation equipment for carbon capture technology (Similarity Score: 0.4604)

ID 253: Maintenance of Human Machine Interface (HMI) systems (Similarity Score: 0.3492)

ID 251: Maintenance of pumps in hydrogen fueling systems (Similarity Score: 0.6776)

ID 458: Maintenance of key instrumentation systems in carbon capture plants (Similarity Score: 0.5816)

ID 250: Maintenance of dispensers in hydrogen fueling systems (Similarity Score: 0.5883)

ID 11: Knowledge of key instrumentation for hydrogen pipelines (Similarity Score: 0.6056)

ID 249: Maintenance of flow, level, and pressure instrumentation (Similarity Score: 0.5072)

ID 247: Maintenance of pressure vessels in hydrogen fueling systems (Similarity Score: 0.6510)

ID 471: Maintenance of electrolyzers, vessels, compressors, piping systems, valves, and seals (Similarity Score: 0.5479)

ID 238: Keeping up-to-date with changes in hydrogen standards (Similarity Score: 0.5532)

ID 54: Maintenance of pressure vessels in hydrogen fueling systems (Similarity Score: 0.6510)

ID 291: Implementation of monitoring systems for corrosion and embrittlement (Similarity Score: 0.4969)

ID 418: Maintenance of mechanical systems under hydrogen pressure (Similarity Score: 0.6068)

ID 411: Maintenance of turbines to ensure reliability under hydrogen pressure (Similarity Score: 0.6523)

ID 535: Knowledge of equipment designed to withstand hydrogen pressure and temperatures (Similarity Score: 0.6141)

ID 421: Maintenance of electrical systems in hydrogen production and storage environments (Similarity Score: 0.6784)

ID 389: Maintenance of high-power electrical equipment in electrolyzer systems (Similarity Score: 0.5009)

ID 415: Staying informed about updates in hydrogen technology (Similarity Score: 0.5422)

### 2.1.1: Monitoring Techniques

ID 338: Selection of instrumentation and controls for fueling operations (Similarity Score: 0.4736)

ID 329: Performing routine maintenance on hydrogen compression equipment (Similarity Score: 0.7449)

ID 290: Selection of equipment resistant to hydrogen-induced degradation (Similarity Score: 0.5427)

ID 30: Maintenance of rotating equipment in hydrogen pipeline systems (Similarity Score: 0.6884)

ID 302: Knowledge of instrumentation and controls for flame detection (Similarity Score: 0.3889)

ID 374: Selection of key instrumentation equipment for power generation using hydrogen blending (Similarity Score: 0.6138)

ID 421: Maintenance of electrical systems in hydrogen production and storage environments (Similarity Score: 0.6706)

ID 606: Maintenance of compressors to withstand hydrogen pressure and temperatures (Similarity Score: 0.5794)

ID 457: Selection of key instrumentation equipment for carbon capture technology (Similarity Score: 0.4841)

ID 330: Performing routine maintenance on hydrogen dispensing equipment (Similarity Score: 0.7163)

ID 623: Stay up to date on carbon dioxide (CO2) monitoring technology (Similarity Score: 0.4238)

ID 180: Maintenance of electrical equipment for hydrogen transmission (Similarity Score: 0.7084)

ID 229: Maintenance of electrical equipment in electrolyzer plants (Similarity Score: 0.5009)

ID 179: Selection of instrumentation systems for hydrogen pipelines (Similarity Score: 0.6041)

ID 67: Knowledge of monitoring systems for electrolyzer hydrogen production plants (Similarity Score: 0.6714)

ID 446: Maintenance of equipment in Autothermal Reforming (ATR) hydrogen production (Similarity Score: 0.6155)

ID 471: Maintenance of electrolyzers, vessels, compressors, piping systems, valves, and seals (Similarity Score: 0.5321)

ID 626: Understanding instrumentation techniques for permanent carbon dioxide (CO2) storage (Similarity Score: 0.4682)

ID 120: Maintenance of electrolyzers, vessels, compressors, piping systems, valves, and seals to withstand hydrogen pressure and temperatures (Similarity Score: 0.5820)

ID 262: Knowledge of selecting and maintaining equipment to withstand hydrogen conditions (Similarity Score: 0.6914)

ID 181: Maintenance of instrumentation systems for hydrogen transmission (Similarity Score: 0.7674)

ID 434: Selection of key electrical equipment for carbon capture technology (Similarity Score: 0.4027)

ID 524: Knowledge of stationary equipment required for pipeline transmission of liquid carbon dioxide (CO2) (Similarity Score: 0.4293)

ID 151: Understanding of other relevant equipment for hydrogen blending (Similarity Score: 0.6252)

ID 271: Maintenance of turbines, compressors, vessels, boilers, pumps, piping, and BOP equipment (Similarity Score: 0.5021)

ID 291: Implementation of monitoring systems for corrosion and embrittlement (Similarity Score: 0.5084)

ID 491: Maintenance of vessels, compressors, piping systems, valves, and seals (Similarity Score: 0.5208)

ID 295: Maintenance of instrumentation and electrical systems in electrolyzers (Similarity Score: 0.5073)

ID 367: Maintenance of PEM electrolyzers (Similarity Score: 0.4554)

ID 78: Maintenance of materials and equipment used in high-temperature hydrogen systems (Similarity Score: 0.6712)

ID 444: Maintenance of vessels, compressors, piping systems, valves, and seals to ensure reliability under hydrogen conditions (Similarity Score: 0.6380)

ID 203: Maintenance of electronic systems in hydrogen blending power generation (Similarity Score: 0.6198)

ID 369: Regular inspection and troubleshooting of PEM electrolyzer systems (Similarity Score: 0.4986)

ID 350: Maintenance of compressors for hydrogen conditions (Similarity Score: 0.6635)

ID 547: Selection and design of carbon capture equipment (Similarity Score: 0.4039)

ID 29: Maintenance of stationary equipment in hydrogen pipeline systems (Similarity Score: 0.7520)

ID 311: Knowledge of cathodic protection equipment to prevent hydrogen corrosion (Similarity Score: 0.5854)

ID 137: Knowledge of relevant codes for hydrogen fueling station equipment (Similarity Score: 0.6133)

ID 300: Knowledge of key instrumentation for ventilation systems in hydrogen blending (Similarity Score: 0.5800)

ID 621: Maintenance of power generation equipment used in combined-cycle systems with hydrogen blending (Similarity Score: 0.6458)

ID 202: Maintenance of electrical equipment for hydrogen blending power generation (Similarity Score: 0.6522)

ID 327: Troubleshooting hydrogen fuel compression equipment (Similarity Score: 0.6221)

ID 223: Selection and design of production equipment for hydrogen systems (Similarity Score: 0.6634)

ID 500: Stay up to date on monitoring options for hydrogen storage (Similarity Score: 0.6868)

ID 599: Maintenance of vessels, piping systems, cryogenic systems, valves, and seals (Similarity Score: 0.4915)

ID 319: Maintenance of instrumentation systems in electrolyzer hydrogen production (Similarity Score: 0.7089)

ID 373: Maintenance of turbines in hydrogen environments (Similarity Score: 0.6291)

ID 328: Troubleshooting hydrogen fuel dispensing equipment (Similarity Score: 0.6461)

ID 368: Maintenance of systems supporting PEM electrolyzers (Similarity Score: 0.5024)

ID 317: Selection of key instrumentation equipment for electrolyzer hydrogen production (Similarity Score: 0.6417)

ID 635: Knowledge of key instrumentation associated with carbon capture (Similarity Score: 0.4232)

ID 411: Maintenance of turbines to ensure reliability under hydrogen pressure (Similarity Score: 0.6512)

ID 159: Maintenance of piping systems, fittings, valves, and seals (Similarity Score: 0.5148)

ID 123: Continuous improvement of hydrogen fueling station operations (Similarity Score: 0.5980)

ID 284: Knowledge of electrical equipment used in hydrogen fueling systems (Similarity Score: 0.5988)

ID 335: Maintenance of key hydrogen systems to ensure reliability under varying conditions (Similarity Score: 0.6599)

ID 570: Monitoring and inspection of carbon capture systems for maintenance (Similarity Score: 0.6501)

ID 124: Maintenance and management of mobile hydrogen fueling systems (Similarity Score: 0.7173)

ID 341: Maintenance of instrumentation and control systems in fueling operations (Similarity Score: 0.5964)

ID 610: Understanding of measurement equipment and instrumentation for carbon capture processes (Similarity Score: 0.4668)

ID 344: Techniques for repairing hydrogen leaks (Similarity Score: 0.5304)

ID 251: Maintenance of pumps in hydrogen fueling systems (Similarity Score: 0.6619)

ID 389: Maintenance of high-power electrical equipment in electrolyzer systems (Similarity Score: 0.4910)

ID 648: Maintenance of turbine systems to ensure reliability under hydrogen conditions (Similarity Score: 0.6595)

ID 28: Appropriate selection of rotating equipment for hydrogen pipeline transmission (Similarity Score: 0.5833)

ID 339: Maintenance of pressure vessels in fueling operations (Similarity Score: 0.5148)

ID 109: Maintenance of flame detection systems for hydrogen blending (Similarity Score: 0.6068)

ID 611: Understanding of measurement equipment and instrumentation for carbon separation and purification (Similarity Score: 0.4605)

ID 525: Knowledge of stationary equipment required for pipeline transmission of gaseous carbon dioxide (CO2) (Similarity Score: 0.4511)

ID 352: Maintenance of valves and seals in hydrogen systems (Similarity Score: 0.6575)

ID 11: Knowledge of key instrumentation for hydrogen pipelines (Similarity Score: 0.6036)

ID 249: Maintenance of flow, level, and pressure instrumentation (Similarity Score: 0.5108)

ID 76: Selection of equipment designed to withstand hydrogen temperatures (Similarity Score: 0.5930)

ID 520: Maintenance of instrumentation systems in SMR and/or ATR hydrogen production plant (Similarity Score: 0.6657)

ID 110: Maintenance of corrosion prevention equipment and systems (Similarity Score: 0.6105)

ID 458: Maintenance of key instrumentation systems in carbon capture plants (Similarity Score: 0.5977)

ID 550: Maintenance of carbon capture systems and materials (Similarity Score: 0.4145)

ID 27: Appropriate selection of stationary equipment for hydrogen pipeline transmission (Similarity Score: 0.6258)

ID 303: Understanding of instrumentation and electrical controls for corrosion prevention (Similarity Score: 0.4473)

ID 376: Maintenance of instrumentation in hydrogen blending power generation (Similarity Score: 0.6858)

ID 535: Knowledge of equipment designed to withstand hydrogen pressure and temperatures (Similarity Score: 0.6110)

ID 427: Maintenance of air separation units, vessels, piping systems, valves, and seals (Similarity Score: 0.5117)

ID 480: Selection of carbon dioxide (CO2) sensors for monitoring equipment and systems (Similarity Score: 0.4528)

ID 121: Management of hydrogen fueling stations (Similarity Score: 0.6681)

ID 309: Knowledge of measurement equipment for hydrogen transmission (Similarity Score: 0.7066)

ID 226: Maintenance of production equipment and materials (Similarity Score: 0.5078)

ID 12: Knowledge of electrical equipment for hydrogen pipelines (Similarity Score: 0.5713)

ID 481: Maintenance of carbon dioxide (CO2) sensors and monitoring equipment (Similarity Score: 0.5908)

ID 75: Selection of equipment designed to withstand hydrogen pressure (Similarity Score: 0.6106)

ID 569: Maintenance of equipment in carbon capture plants (Similarity Score: 0.6145)

ID 122: Maintenance of hydrogen fueling station equipment (Similarity Score: 0.7821)

ID 285: Knowledge of instrumentation systems for hydrogen fueling (Similarity Score: 0.6142)

ID 77: Maintenance of materials and equipment used in high-pressure hydrogen systems (Similarity Score: 0.6767)

ID 310: Knowledge of instrumentation systems in hydrogen transmission (Similarity Score: 0.6525)

ID 253: Maintenance of Human Machine Interface (HMI) systems (Similarity Score: 0.3413)

ID 527: Knowledge of rotating equipment required for pipeline transmission of gaseous carbon dioxide (CO2) (Similarity Score: 0.4360)

#### 2.1.1.1: Visual Inspections

ID 226: Maintenance of production equipment and materials (Similarity Score: 0.4708)

ID 291: Implementation of monitoring systems for corrosion and embrittlement (Similarity Score: 0.5147)

ID 271: Maintenance of turbines, compressors, vessels, boilers, pumps, piping, and BOP equipment (Similarity Score: 0.4778)

ID 623: Stay up to date on carbon dioxide (CO2) monitoring technology (Similarity Score: 0.3949)

ID 480: Selection of carbon dioxide (CO2) sensors for monitoring equipment and systems (Similarity Score: 0.4384)

ID 367: Maintenance of PEM electrolyzers (Similarity Score: 0.4237)

ID 481: Maintenance of carbon dioxide (CO2) sensors and monitoring equipment (Similarity Score: 0.5691)

ID 28: Appropriate selection of rotating equipment for hydrogen pipeline transmission (Similarity Score: 0.5436)

ID 389: Maintenance of high-power electrical equipment in electrolyzer systems (Similarity Score: 0.4533)

ID 471: Maintenance of electrolyzers, vessels, compressors, piping systems, valves, and seals (Similarity Score: 0.5120)

ID 330: Performing routine maintenance on hydrogen dispensing equipment (Similarity Score: 0.6869)

ID 11: Knowledge of key instrumentation for hydrogen pipelines (Similarity Score: 0.5643)

ID 569: Maintenance of equipment in carbon capture plants (Similarity Score: 0.5685)

ID 110: Maintenance of corrosion prevention equipment and systems (Similarity Score: 0.6009)

ID 427: Maintenance of air separation units, vessels, piping systems, valves, and seals (Similarity Score: 0.5088)

ID 302: Knowledge of instrumentation and controls for flame detection (Similarity Score: 0.4065)

ID 303: Understanding of instrumentation and electrical controls for corrosion prevention (Similarity Score: 0.4470)

ID 570: Monitoring and inspection of carbon capture systems for maintenance (Similarity Score: 0.6580)

ID 458: Maintenance of key instrumentation systems in carbon capture plants (Similarity Score: 0.5432)

ID 457: Selection of key instrumentation equipment for carbon capture technology (Similarity Score: 0.4374)

ID 159: Maintenance of piping systems, fittings, valves, and seals (Similarity Score: 0.5063)

ID 30: Maintenance of rotating equipment in hydrogen pipeline systems (Similarity Score: 0.6554)

ID 109: Maintenance of flame detection systems for hydrogen blending (Similarity Score: 0.5986)

ID 328: Troubleshooting hydrogen fuel dispensing equipment (Similarity Score: 0.5928)

ID 311: Knowledge of cathodic protection equipment to prevent hydrogen corrosion (Similarity Score: 0.5657)

ID 369: Regular inspection and troubleshooting of PEM electrolyzer systems (Similarity Score: 0.5398)

ID 368: Maintenance of systems supporting PEM electrolyzers (Similarity Score: 0.4653)

ID 147: Conducting operation readiness inspections (Similarity Score: 0.4689)

ID 295: Maintenance of instrumentation and electrical systems in electrolyzers (Similarity Score: 0.4812)

#### 2.1.1.2: Non-Destructive Testing (NDT) Methods

ID 226: Maintenance of production equipment and materials (Similarity Score: 0.4617)

### 2.1.2: Digital Twins and Predictive Maintenance

ID 621: Maintenance of power generation equipment used in combined-cycle systems with hydrogen blending (Similarity Score: 0.6507)

ID 203: Maintenance of electronic systems in hydrogen blending power generation (Similarity Score: 0.6225)

ID 28: Appropriate selection of rotating equipment for hydrogen pipeline transmission (Similarity Score: 0.5569)

ID 27: Appropriate selection of stationary equipment for hydrogen pipeline transmission (Similarity Score: 0.5685)

ID 30: Maintenance of rotating equipment in hydrogen pipeline systems (Similarity Score: 0.6683)

## 2.2: Measurement of Equipment Integrity

ID 399: Understanding acceptance criteria for hydrogen infrastructure (Similarity Score: 0.5457)

ID 520: Maintenance of instrumentation systems in SMR and/or ATR hydrogen production plant (Similarity Score: 0.6763)

ID 226: Maintenance of production equipment and materials (Similarity Score: 0.5096)

ID 234: Experience with standards for electrical systems in road vehicles (Similarity Score: 0.3868)

ID 253: Maintenance of Human Machine Interface (HMI) systems (Similarity Score: 0.3704)

ID 341: Maintenance of instrumentation and control systems in fueling operations (Similarity Score: 0.5647)

ID 11: Knowledge of key instrumentation for hydrogen pipelines (Similarity Score: 0.6093)

ID 400: Knowledge of compliance testing in hydrogen infrastructure (Similarity Score: 0.7152)

ID 458: Maintenance of key instrumentation systems in carbon capture plants (Similarity Score: 0.5480)

ID 77: Maintenance of materials and equipment used in high-pressure hydrogen systems (Similarity Score: 0.6912)

ID 352: Maintenance of valves and seals in hydrogen systems (Similarity Score: 0.6774)

ID 535: Knowledge of equipment designed to withstand hydrogen pressure and temperatures (Similarity Score: 0.6293)

ID 262: Knowledge of selecting and maintaining equipment to withstand hydrogen conditions (Similarity Score: 0.7333)

ID 421: Maintenance of electrical systems in hydrogen production and storage environments (Similarity Score: 0.6879)

ID 351: Maintenance of piping systems and fittings under hydrogen conditions (Similarity Score: 0.6439)

ID 392: Knowledge of operational adjustments for hydrogen blending (Similarity Score: 0.5740)

ID 329: Performing routine maintenance on hydrogen compression equipment (Similarity Score: 0.7502)

ID 233: Experience with codes related to electrical systems in road vehicles (Similarity Score: 0.3285)

ID 137: Knowledge of relevant codes for hydrogen fueling station equipment (Similarity Score: 0.6534)

ID 327: Troubleshooting hydrogen fuel compression equipment (Similarity Score: 0.5781)

ID 232: Knowledge of standards for EMC/EMI in hydrogen systems (Similarity Score: 0.5518)

ID 229: Maintenance of electrical equipment in electrolyzer plants (Similarity Score: 0.5002)

ID 418: Maintenance of mechanical systems under hydrogen pressure (Similarity Score: 0.6084)

ID 78: Maintenance of materials and equipment used in high-temperature hydrogen systems (Similarity Score: 0.7037)

ID 27: Appropriate selection of stationary equipment for hydrogen pipeline transmission (Similarity Score: 0.5717)

ID 238: Keeping up-to-date with changes in hydrogen standards (Similarity Score: 0.5736)

ID 471: Maintenance of electrolyzers, vessels, compressors, piping systems, valves, and seals (Similarity Score: 0.5345)

ID 235: Handling compliance issues in electrical systems for road vehicles (Similarity Score: 0.4074)

ID 427: Maintenance of air separation units, vessels, piping systems, valves, and seals (Similarity Score: 0.5241)

ID 335: Maintenance of key hydrogen systems to ensure reliability under varying conditions (Similarity Score: 0.7053)

ID 12: Knowledge of electrical equipment for hydrogen pipelines (Similarity Score: 0.5970)

ID 635: Knowledge of key instrumentation associated with carbon capture (Similarity Score: 0.3966)

ID 239: Keeping up-to-date with changes in hydrogen codes (Similarity Score: 0.5184)

ID 349: Maintenance of vessels to withstand hydrogen pressure and temperatures (Similarity Score: 0.5756)

ID 350: Maintenance of compressors for hydrogen conditions (Similarity Score: 0.6652)

ID 223: Selection and design of production equipment for hydrogen systems (Similarity Score: 0.6810)

ID 203: Maintenance of electronic systems in hydrogen blending power generation (Similarity Score: 0.6439)

ID 444: Maintenance of vessels, compressors, piping systems, valves, and seals to ensure reliability under hydrogen conditions (Similarity Score: 0.6587)

ID 29: Maintenance of stationary equipment in hydrogen pipeline systems (Similarity Score: 0.7048)

ID 159: Maintenance of piping systems, fittings, valves, and seals (Similarity Score: 0.5178)

ID 202: Maintenance of electrical equipment for hydrogen blending power generation (Similarity Score: 0.6623)

ID 300: Knowledge of key instrumentation for ventilation systems in hydrogen blending (Similarity Score: 0.5780)

ID 110: Maintenance of corrosion prevention equipment and systems (Similarity Score: 0.6304)

ID 319: Maintenance of instrumentation systems in electrolyzer hydrogen production (Similarity Score: 0.7334)

ID 605: Maintenance of vessels to withstand hydrogen pressure and temperatures (Similarity Score: 0.5756)

ID 403: In-depth knowledge of standards for hydrogen infrastructure and operations (Similarity Score: 0.6443)

ID 606: Maintenance of compressors to withstand hydrogen pressure and temperatures (Similarity Score: 0.5905)

ID 500: Stay up to date on monitoring options for hydrogen storage (Similarity Score: 0.6532)

ID 181: Maintenance of instrumentation systems for hydrogen transmission (Similarity Score: 0.7727)

ID 180: Maintenance of electrical equipment for hydrogen transmission (Similarity Score: 0.7201)

ID 302: Knowledge of instrumentation and controls for flame detection (Similarity Score: 0.3888)

ID 504: Maintenance of electrical and electronic systems in SMR and/or ATR hydrogen production (Similarity Score: 0.6215)

ID 303: Understanding of instrumentation and electrical controls for corrosion prevention (Similarity Score: 0.4965)

ID 153: Assess integrity of piping systems and fittings (Similarity Score: 0.4645)

ID 309: Knowledge of measurement equipment for hydrogen transmission (Similarity Score: 0.7616)

ID 609: Maintenance of coatings and insulation to protect against hydrogen conditions (Similarity Score: 0.5792)

ID 310: Knowledge of instrumentation systems in hydrogen transmission (Similarity Score: 0.6662)

ID 570: Monitoring and inspection of carbon capture systems for maintenance (Similarity Score: 0.6099)

ID 376: Maintenance of instrumentation in hydrogen blending power generation (Similarity Score: 0.6874)

ID 369: Regular inspection and troubleshooting of PEM electrolyzer systems (Similarity Score: 0.4917)

ID 154: Assess integrity of valves and seals (Similarity Score: 0.5007)

ID 151: Understanding of other relevant equipment for hydrogen blending (Similarity Score: 0.6248)

ID 30: Maintenance of rotating equipment in hydrogen pipeline systems (Similarity Score: 0.6663)

ID 569: Maintenance of equipment in carbon capture plants (Similarity Score: 0.5591)

ID 607: Maintenance of piping systems and fittings under hydrogen conditions (Similarity Score: 0.6439)

ID 317: Selection of key instrumentation equipment for electrolyzer hydrogen production (Similarity Score: 0.6260)

ID 155: Conducting comprehensive integrity assessments (Similarity Score: 0.3351)

ID 411: Maintenance of turbines to ensure reliability under hydrogen pressure (Similarity Score: 0.6520)

ID 608: Maintenance of valves and seals to withstand hydrogen pressure and temperatures (Similarity Score: 0.5924)

ID 295: Maintenance of instrumentation and electrical systems in electrolyzers (Similarity Score: 0.5317)

ID 648: Maintenance of turbine systems to ensure reliability under hydrogen conditions (Similarity Score: 0.6769)

ID 284: Knowledge of electrical equipment used in hydrogen fueling systems (Similarity Score: 0.6115)

ID 76: Selection of equipment designed to withstand hydrogen temperatures (Similarity Score: 0.5874)

ID 221: Understanding of installation procedures unique to hydrogen (Similarity Score: 0.6227)

ID 75: Selection of equipment designed to withstand hydrogen pressure (Similarity Score: 0.5931)

ID 611: Understanding of measurement equipment and instrumentation for carbon separation and purification (Similarity Score: 0.4783)

ID 285: Knowledge of instrumentation systems for hydrogen fueling (Similarity Score: 0.6220)

ID 389: Maintenance of high-power electrical equipment in electrolyzer systems (Similarity Score: 0.4957)

ID 446: Maintenance of equipment in Autothermal Reforming (ATR) hydrogen production (Similarity Score: 0.5905)

ID 311: Knowledge of cathodic protection equipment to prevent hydrogen corrosion (Similarity Score: 0.6055)

ID 219: Assess integrity of welds under hydrogen pressure (Similarity Score: 0.5883)

ID 443: Selection and design of valves and seals to maintain integrity under hydrogen conditions (Similarity Score: 0.5732)

ID 121: Management of hydrogen fueling stations (Similarity Score: 0.6578)

ID 287: Maintenance of electrical and instrumentation systems in hydrogen fueling (Similarity Score: 0.7419)

ID 562: Application of hydrogen safety codes and standards in operations (Similarity Score: 0.6618)

ID 290: Selection of equipment resistant to hydrogen-induced degradation (Similarity Score: 0.5831)

ID 28: Appropriate selection of rotating equipment for hydrogen pipeline transmission (Similarity Score: 0.5503)

ID 481: Maintenance of carbon dioxide (CO2) sensors and monitoring equipment (Similarity Score: 0.5373)

ID 1: Experience with hydrogen fueling equipment and systems (Similarity Score: 0.6390)

ID 145: Mechanical integrity analysis for hydrogen systems (Similarity Score: 0.6918)

ID 368: Maintenance of systems supporting PEM electrolyzers (Similarity Score: 0.5093)

ID 491: Maintenance of vessels, compressors, piping systems, valves, and seals (Similarity Score: 0.5155)

ID 291: Implementation of monitoring systems for corrosion and embrittlement (Similarity Score: 0.5132)

ID 67: Knowledge of monitoring systems for electrolyzer hydrogen production plants (Similarity Score: 0.6655)

ID 621: Maintenance of power generation equipment used in combined-cycle systems with hydrogen blending (Similarity Score: 0.6322)

ID 367: Maintenance of PEM electrolyzers (Similarity Score: 0.4564)

ID 610: Understanding of measurement equipment and instrumentation for carbon capture processes (Similarity Score: 0.4466)

ID 109: Maintenance of flame detection systems for hydrogen blending (Similarity Score: 0.6017)

ID 120: Maintenance of electrolyzers, vessels, compressors, piping systems, valves, and seals to withstand hydrogen pressure and temperatures (Similarity Score: 0.5842)

ID 249: Maintenance of flow, level, and pressure instrumentation (Similarity Score: 0.5093)

ID 56: Maintenance of coatings and insulation in hydrogen fueling systems (Similarity Score: 0.6222)

### 2.2.1: Pressure Testing

ID 315: Selection and design of valves and seals for hydrogen systems (Similarity Score: 0.5666)

ID 109: Maintenance of flame detection systems for hydrogen blending (Similarity Score: 0.6087)

ID 443: Selection and design of valves and seals to maintain integrity under hydrogen conditions (Similarity Score: 0.6052)

ID 400: Knowledge of compliance testing in hydrogen infrastructure (Similarity Score: 0.7399)

ID 310: Knowledge of instrumentation systems in hydrogen transmission (Similarity Score: 0.6456)

ID 302: Knowledge of instrumentation and controls for flame detection (Similarity Score: 0.3935)

ID 262: Knowledge of selecting and maintaining equipment to withstand hydrogen conditions (Similarity Score: 0.7175)

ID 536: Knowledge of components that can endure hydrogen pressure and temperatures (Similarity Score: 0.4996)

ID 520: Maintenance of instrumentation systems in SMR and/or ATR hydrogen production plant (Similarity Score: 0.6551)

ID 285: Knowledge of instrumentation systems for hydrogen fueling (Similarity Score: 0.6199)

ID 121: Management of hydrogen fueling stations (Similarity Score: 0.6534)

ID 446: Maintenance of equipment in Autothermal Reforming (ATR) hydrogen production (Similarity Score: 0.6004)

ID 290: Selection of equipment resistant to hydrogen-induced degradation (Similarity Score: 0.5418)

ID 120: Maintenance of electrolyzers, vessels, compressors, piping systems, valves, and seals to withstand hydrogen pressure and temperatures (Similarity Score: 0.6130)

ID 577: Understanding of well testing, pressure and rate transient analysis (Similarity Score: 0.4969)

ID 291: Implementation of monitoring systems for corrosion and embrittlement (Similarity Score: 0.5161)

ID 562: Application of hydrogen safety codes and standards in operations (Similarity Score: 0.6677)

ID 444: Maintenance of vessels, compressors, piping systems, valves, and seals to ensure reliability under hydrogen conditions (Similarity Score: 0.6339)

ID 300: Knowledge of key instrumentation for ventilation systems in hydrogen blending (Similarity Score: 0.5980)

ID 319: Maintenance of instrumentation systems in electrolyzer hydrogen production (Similarity Score: 0.7082)

ID 329: Performing routine maintenance on hydrogen compression equipment (Similarity Score: 0.7473)

ID 330: Performing routine maintenance on hydrogen dispensing equipment (Similarity Score: 0.6878)

ID 317: Selection of key instrumentation equipment for electrolyzer hydrogen production (Similarity Score: 0.6317)

ID 303: Understanding of instrumentation and electrical controls for corrosion prevention (Similarity Score: 0.4613)

ID 334: Selection and design of valves and seals for hydrogen conditions (Similarity Score: 0.5719)

ID 308: Maintenance of key systems to withstand hydrogen pressure and temperatures (Similarity Score: 0.6236)

ID 309: Knowledge of measurement equipment for hydrogen transmission (Similarity Score: 0.7398)

ID 327: Troubleshooting hydrogen fuel compression equipment (Similarity Score: 0.6059)

ID 311: Knowledge of cathodic protection equipment to prevent hydrogen corrosion (Similarity Score: 0.6007)

ID 607: Maintenance of piping systems and fittings under hydrogen conditions (Similarity Score: 0.6350)

ID 608: Maintenance of valves and seals to withstand hydrogen pressure and temperatures (Similarity Score: 0.6537)

ID 56: Maintenance of coatings and insulation in hydrogen fueling systems (Similarity Score: 0.6083)

ID 232: Knowledge of standards for EMC/EMI in hydrogen systems (Similarity Score: 0.5443)

ID 351: Maintenance of piping systems and fittings under hydrogen conditions (Similarity Score: 0.6350)

ID 481: Maintenance of carbon dioxide (CO2) sensors and monitoring equipment (Similarity Score: 0.5351)

ID 78: Maintenance of materials and equipment used in high-temperature hydrogen systems (Similarity Score: 0.6915)

ID 535: Knowledge of equipment designed to withstand hydrogen pressure and temperatures (Similarity Score: 0.6784)

ID 352: Maintenance of valves and seals in hydrogen systems (Similarity Score: 0.6812)

ID 152: Assess integrity of vessels and tanks for hydrogen pressure and temperatures (Similarity Score: 0.6585)

ID 249: Maintenance of flow, level, and pressure instrumentation (Similarity Score: 0.5453)

ID 151: Understanding of other relevant equipment for hydrogen blending (Similarity Score: 0.6378)

ID 77: Maintenance of materials and equipment used in high-pressure hydrogen systems (Similarity Score: 0.7178)

ID 223: Selection and design of production equipment for hydrogen systems (Similarity Score: 0.6866)

ID 426: Selection and design of valves and seals to withstand hydrogen pressure and temperatures (Similarity Score: 0.5477)

ID 76: Selection of equipment designed to withstand hydrogen temperatures (Similarity Score: 0.6028)

ID 411: Maintenance of turbines to ensure reliability under hydrogen pressure (Similarity Score: 0.6671)

ID 221: Understanding of installation procedures unique to hydrogen (Similarity Score: 0.6275)

ID 75: Selection of equipment designed to withstand hydrogen pressure (Similarity Score: 0.6422)

ID 601: Selection of appropriate coatings for carbon dioxide (CO2) compression facility maintenance (Similarity Score: 0.3899)

ID 220: Assess integrity of welds under hydrogen temperature conditions (Similarity Score: 0.6064)

ID 375: Calibration of instrumentation systems for hydrogen blending (Similarity Score: 0.6433)

ID 403: In-depth knowledge of standards for hydrogen infrastructure and operations (Similarity Score: 0.6110)

ID 365: Selection and design of valves and seals to withstand hydrogen conditions (Similarity Score: 0.5653)

ID 606: Maintenance of compressors to withstand hydrogen pressure and temperatures (Similarity Score: 0.6253)

ID 605: Maintenance of vessels to withstand hydrogen pressure and temperatures (Similarity Score: 0.6156)

ID 635: Knowledge of key instrumentation associated with carbon capture (Similarity Score: 0.3956)

ID 623: Stay up to date on carbon dioxide (CO2) monitoring technology (Similarity Score: 0.4020)

ID 500: Stay up to date on monitoring options for hydrogen storage (Similarity Score: 0.6781)

ID 67: Knowledge of monitoring systems for electrolyzer hydrogen production plants (Similarity Score: 0.6852)

ID 159: Maintenance of piping systems, fittings, valves, and seals (Similarity Score: 0.4969)

ID 418: Maintenance of mechanical systems under hydrogen pressure (Similarity Score: 0.6436)

ID 376: Maintenance of instrumentation in hydrogen blending power generation (Similarity Score: 0.6597)

ID 153: Assess integrity of piping systems and fittings (Similarity Score: 0.4553)

ID 247: Maintenance of pressure vessels in hydrogen fueling systems (Similarity Score: 0.6448)

ID 392: Knowledge of operational adjustments for hydrogen blending (Similarity Score: 0.5896)

ID 339: Maintenance of pressure vessels in fueling operations (Similarity Score: 0.5251)

ID 11: Knowledge of key instrumentation for hydrogen pipelines (Similarity Score: 0.6093)

ID 145: Mechanical integrity analysis for hydrogen systems (Similarity Score: 0.6763)

ID 369: Regular inspection and troubleshooting of PEM electrolyzer systems (Similarity Score: 0.5097)

ID 54: Maintenance of pressure vessels in hydrogen fueling systems (Similarity Score: 0.6448)

ID 156: Maintenance of vessels for hydrogen pressure and temperatures (Similarity Score: 0.6236)

ID 422: Calibration and testing of instrumentation systems for hydrogen processes (Similarity Score: 0.7439)

ID 611: Understanding of measurement equipment and instrumentation for carbon separation and purification (Similarity Score: 0.4961)

ID 610: Understanding of measurement equipment and instrumentation for carbon capture processes (Similarity Score: 0.4490)

ID 239: Keeping up-to-date with changes in hydrogen codes (Similarity Score: 0.5302)

ID 427: Maintenance of air separation units, vessels, piping systems, valves, and seals (Similarity Score: 0.5135)

ID 155: Conducting comprehensive integrity assessments (Similarity Score: 0.3378)

ID 490: Selection and design of valves and seals for hydrogen conditions (Similarity Score: 0.5719)

ID 368: Maintenance of systems supporting PEM electrolyzers (Similarity Score: 0.4822)

ID 219: Assess integrity of welds under hydrogen pressure (Similarity Score: 0.6475)

ID 470: Selection and design of valves and seals to withstand hydrogen pressure and temperatures (Similarity Score: 0.5477)

ID 146: Instrumented system analysis for hydrogen processes (Similarity Score: 0.6393)

ID 626: Understanding instrumentation techniques for permanent carbon dioxide (CO2) storage (Similarity Score: 0.4321)

ID 367: Maintenance of PEM electrolyzers (Similarity Score: 0.4395)

ID 154: Assess integrity of valves and seals (Similarity Score: 0.5224)

ID 471: Maintenance of electrolyzers, vessels, compressors, piping systems, valves, and seals (Similarity Score: 0.5096)

ID 625: Understanding measurement equipment for carbon dioxide (CO2) storage (Similarity Score: 0.4728)

ID 609: Maintenance of coatings and insulation to protect against hydrogen conditions (Similarity Score: 0.5765)

ID 349: Maintenance of vessels to withstand hydrogen pressure and temperatures (Similarity Score: 0.6156)

ID 238: Keeping up-to-date with changes in hydrogen standards (Similarity Score: 0.5863)

ID 612: Understanding of measurement equipment and instrumentation for carbon liquefication (Similarity Score: 0.4394)

ID 215: Design and selection of valves and seals (Similarity Score: 0.3624)

ID 237: Keeping up-to-date with changes in hydrogen regulations (Similarity Score: 0.5494)

ID 137: Knowledge of relevant codes for hydrogen fueling station equipment (Similarity Score: 0.6543)

### 2.2.2: Leakage Detection

ID 319: Maintenance of instrumentation systems in electrolyzer hydrogen production (Similarity Score: 0.6830)

ID 547: Selection and design of carbon capture equipment (Similarity Score: 0.4016)

ID 202: Maintenance of electrical equipment for hydrogen blending power generation (Similarity Score: 0.6455)

ID 301: Knowledge of electrical systems used for leak detection in hydrogen blending (Similarity Score: 0.6451)

ID 612: Understanding of measurement equipment and instrumentation for carbon liquefication (Similarity Score: 0.4730)

ID 428: Knowledge of instrumentation systems for carbon dioxide (CO2) pipeline transmission (Similarity Score: 0.5114)

ID 500: Stay up to date on monitoring options for hydrogen storage (Similarity Score: 0.6555)

ID 609: Maintenance of coatings and insulation to protect against hydrogen conditions (Similarity Score: 0.5489)

ID 159: Maintenance of piping systems, fittings, valves, and seals (Similarity Score: 0.5075)

ID 155: Conducting comprehensive integrity assessments (Similarity Score: 0.3570)

ID 110: Maintenance of corrosion prevention equipment and systems (Similarity Score: 0.5873)

ID 310: Knowledge of instrumentation systems in hydrogen transmission (Similarity Score: 0.6502)

ID 154: Assess integrity of valves and seals (Similarity Score: 0.5129)

ID 302: Knowledge of instrumentation and controls for flame detection (Similarity Score: 0.4200)

ID 376: Maintenance of instrumentation in hydrogen blending power generation (Similarity Score: 0.6504)

ID 153: Assess integrity of piping systems and fittings (Similarity Score: 0.4877)

ID 300: Knowledge of key instrumentation for ventilation systems in hydrogen blending (Similarity Score: 0.6216)

ID 151: Understanding of other relevant equipment for hydrogen blending (Similarity Score: 0.6211)

ID 317: Selection of key instrumentation equipment for electrolyzer hydrogen production (Similarity Score: 0.6274)

ID 303: Understanding of instrumentation and electrical controls for corrosion prevention (Similarity Score: 0.4726)

ID 178: Appropriate selection of electrical equipment for pipeline transmission of gaseous hydrogen (Similarity Score: 0.5793)

ID 309: Knowledge of measurement equipment for hydrogen transmission (Similarity Score: 0.7491)

ID 295: Maintenance of instrumentation and electrical systems in electrolyzers (Similarity Score: 0.4789)

ID 109: Maintenance of flame detection systems for hydrogen blending (Similarity Score: 0.6501)

ID 145: Mechanical integrity analysis for hydrogen systems (Similarity Score: 0.6406)

ID 233: Experience with codes related to electrical systems in road vehicles (Similarity Score: 0.3100)

ID 235: Handling compliance issues in electrical systems for road vehicles (Similarity Score: 0.4120)

ID 311: Knowledge of cathodic protection equipment to prevent hydrogen corrosion (Similarity Score: 0.6075)

ID 525: Knowledge of stationary equipment required for pipeline transmission of gaseous carbon dioxide (CO2) (Similarity Score: 0.4829)

ID 137: Knowledge of relevant codes for hydrogen fueling station equipment (Similarity Score: 0.6215)

ID 270: Selection and design of piping systems and BOP equipment (Similarity Score: 0.4038)

ID 262: Knowledge of selecting and maintaining equipment to withstand hydrogen conditions (Similarity Score: 0.6648)

ID 611: Understanding of measurement equipment and instrumentation for carbon separation and purification (Similarity Score: 0.5061)

ID 27: Appropriate selection of stationary equipment for hydrogen pipeline transmission (Similarity Score: 0.5819)

ID 12: Knowledge of electrical equipment for hydrogen pipelines (Similarity Score: 0.5984)

ID 626: Understanding instrumentation techniques for permanent carbon dioxide (CO2) storage (Similarity Score: 0.4693)

ID 343: Methods for locating hydrogen leaks (Similarity Score: 0.5753)

ID 457: Selection of key instrumentation equipment for carbon capture technology (Similarity Score: 0.4549)

ID 427: Maintenance of air separation units, vessels, piping systems, valves, and seals (Similarity Score: 0.5161)

ID 588: Knowledge of instrumentation systems for monitoring carbon dioxide (CO2) pipeline transmission (Similarity Score: 0.5758)

ID 342: Procedures for tracing hydrogen leaks (Similarity Score: 0.5498)

ID 587: Understanding of electrical equipment required for pipeline transmission of carbon dioxide (CO2) (Similarity Score: 0.4641)

ID 11: Knowledge of key instrumentation for hydrogen pipelines (Similarity Score: 0.6266)

ID 400: Knowledge of compliance testing in hydrogen infrastructure (Similarity Score: 0.7067)

ID 635: Knowledge of key instrumentation associated with carbon capture (Similarity Score: 0.4356)

ID 344: Techniques for repairing hydrogen leaks (Similarity Score: 0.5104)

ID 369: Regular inspection and troubleshooting of PEM electrolyzer systems (Similarity Score: 0.5150)

ID 610: Understanding of measurement equipment and instrumentation for carbon capture processes (Similarity Score: 0.4666)

ID 223: Selection and design of production equipment for hydrogen systems (Similarity Score: 0.6463)

ID 434: Selection of key electrical equipment for carbon capture technology (Similarity Score: 0.3998)

ID 291: Implementation of monitoring systems for corrosion and embrittlement (Similarity Score: 0.5490)

ID 524: Knowledge of stationary equipment required for pipeline transmission of liquid carbon dioxide (CO2) (Similarity Score: 0.4756)

ID 527: Knowledge of rotating equipment required for pipeline transmission of gaseous carbon dioxide (CO2) (Similarity Score: 0.4781)

ID 623: Stay up to date on carbon dioxide (CO2) monitoring technology (Similarity Score: 0.4268)

ID 67: Knowledge of monitoring systems for electrolyzer hydrogen production plants (Similarity Score: 0.6774)

ID 636: Knowledge of electrical equipment associated with carbon capture (Similarity Score: 0.4247)

ID 538: Understanding of instrumentation used in carbon dioxide (CO2) transmission (Similarity Score: 0.4568)

ID 367: Maintenance of PEM electrolyzers (Similarity Score: 0.4257)

ID 526: Knowledge of rotating equipment required for pipeline transmission of liquid carbon dioxide (CO2) (Similarity Score: 0.4732)

ID 28: Appropriate selection of rotating equipment for hydrogen pipeline transmission (Similarity Score: 0.5539)

ID 72: Understanding leak detection techniques involving odorants (Similarity Score: 0.4459)

ID 108: Maintenance of leak detection systems for hydrogen blending (Similarity Score: 0.7625)

ID 403: In-depth knowledge of standards for hydrogen infrastructure and operations (Similarity Score: 0.6207)

ID 368: Maintenance of systems supporting PEM electrolyzers (Similarity Score: 0.4789)

ID 537: Understanding of measurement equipment used in carbon dioxide (CO2) transmission (Similarity Score: 0.4990)

ID 480: Selection of carbon dioxide (CO2) sensors for monitoring equipment and systems (Similarity Score: 0.4800)

ID 625: Understanding measurement equipment for carbon dioxide (CO2) storage (Similarity Score: 0.5137)

ID 481: Maintenance of carbon dioxide (CO2) sensors and monitoring equipment (Similarity Score: 0.5788)

ID 570: Monitoring and inspection of carbon capture systems for maintenance (Similarity Score: 0.6166)

### 2.2.3: Fracture and Crack Analysis

ID 610: Understanding of measurement equipment and instrumentation for carbon capture processes (Similarity Score: 0.4423)

ID 612: Understanding of measurement equipment and instrumentation for carbon liquefication (Similarity Score: 0.4488)

ID 611: Understanding of measurement equipment and instrumentation for carbon separation and purification (Similarity Score: 0.4764)

ID 291: Implementation of monitoring systems for corrosion and embrittlement (Similarity Score: 0.5411)

ID 154: Assess integrity of valves and seals (Similarity Score: 0.4935)

ID 309: Knowledge of measurement equipment for hydrogen transmission (Similarity Score: 0.6902)

ID 303: Understanding of instrumentation and electrical controls for corrosion prevention (Similarity Score: 0.4618)

ID 601: Selection of appropriate coatings for carbon dioxide (CO2) compression facility maintenance (Similarity Score: 0.3779)

ID 145: Mechanical integrity analysis for hydrogen systems (Similarity Score: 0.6798)

ID 290: Selection of equipment resistant to hydrogen-induced degradation (Similarity Score: 0.5600)

ID 219: Assess integrity of welds under hydrogen pressure (Similarity Score: 0.6058)

ID 400: Knowledge of compliance testing in hydrogen infrastructure (Similarity Score: 0.6730)

ID 226: Maintenance of production equipment and materials (Similarity Score: 0.4849)

ID 235: Handling compliance issues in electrical systems for road vehicles (Similarity Score: 0.3928)

ID 262: Knowledge of selecting and maintaining equipment to withstand hydrogen conditions (Similarity Score: 0.6777)

ID 253: Maintenance of Human Machine Interface (HMI) systems (Similarity Score: 0.3405)

ID 110: Maintenance of corrosion prevention equipment and systems (Similarity Score: 0.5963)

ID 446: Maintenance of equipment in Autothermal Reforming (ATR) hydrogen production (Similarity Score: 0.5738)

ID 327: Troubleshooting hydrogen fuel compression equipment (Similarity Score: 0.5796)

ID 78: Maintenance of materials and equipment used in high-temperature hydrogen systems (Similarity Score: 0.6622)

ID 76: Selection of equipment designed to withstand hydrogen temperatures (Similarity Score: 0.5523)

ID 311: Knowledge of cathodic protection equipment to prevent hydrogen corrosion (Similarity Score: 0.5781)

## 2.3: Functional Testing of Equipment

ID 122: Maintenance of hydrogen fueling station equipment (Similarity Score: 0.7824)

ID 607: Maintenance of piping systems and fittings under hydrogen conditions (Similarity Score: 0.6426)

ID 284: Knowledge of electrical equipment used in hydrogen fueling systems (Similarity Score: 0.6074)

ID 400: Knowledge of compliance testing in hydrogen infrastructure (Similarity Score: 0.7249)

ID 29: Maintenance of stationary equipment in hydrogen pipeline systems (Similarity Score: 0.7111)

ID 327: Troubleshooting hydrogen fuel compression equipment (Similarity Score: 0.5852)

ID 120: Maintenance of electrolyzers, vessels, compressors, piping systems, valves, and seals to withstand hydrogen pressure and temperatures (Similarity Score: 0.5702)

ID 374: Selection of key instrumentation equipment for power generation using hydrogen blending (Similarity Score: 0.6155)

ID 403: In-depth knowledge of standards for hydrogen infrastructure and operations (Similarity Score: 0.6023)

ID 146: Instrumented system analysis for hydrogen processes (Similarity Score: 0.6526)

ID 609: Maintenance of coatings and insulation to protect against hydrogen conditions (Similarity Score: 0.5635)

ID 203: Maintenance of electronic systems in hydrogen blending power generation (Similarity Score: 0.6241)

ID 328: Troubleshooting hydrogen fuel dispensing equipment (Similarity Score: 0.6100)

ID 369: Regular inspection and troubleshooting of PEM electrolyzer systems (Similarity Score: 0.4919)

ID 329: Performing routine maintenance on hydrogen compression equipment (Similarity Score: 0.7393)

ID 317: Selection of key instrumentation equipment for electrolyzer hydrogen production (Similarity Score: 0.6547)

ID 570: Monitoring and inspection of carbon capture systems for maintenance (Similarity Score: 0.5983)

ID 338: Selection of instrumentation and controls for fueling operations (Similarity Score: 0.4796)

ID 341: Maintenance of instrumentation and control systems in fueling operations (Similarity Score: 0.5701)

ID 202: Maintenance of electrical equipment for hydrogen blending power generation (Similarity Score: 0.6486)

ID 319: Maintenance of instrumentation systems in electrolyzer hydrogen production (Similarity Score: 0.7254)

ID 27: Appropriate selection of stationary equipment for hydrogen pipeline transmission (Similarity Score: 0.5911)

ID 181: Maintenance of instrumentation systems for hydrogen transmission (Similarity Score: 0.7569)

ID 446: Maintenance of equipment in Autothermal Reforming (ATR) hydrogen production (Similarity Score: 0.6171)

ID 376: Maintenance of instrumentation in hydrogen blending power generation (Similarity Score: 0.6797)

ID 56: Maintenance of coatings and insulation in hydrogen fueling systems (Similarity Score: 0.6142)

ID 28: Appropriate selection of rotating equipment for hydrogen pipeline transmission (Similarity Score: 0.5388)

ID 427: Maintenance of air separation units, vessels, piping systems, valves, and seals (Similarity Score: 0.4957)

ID 418: Maintenance of mechanical systems under hydrogen pressure (Similarity Score: 0.6055)

ID 124: Maintenance and management of mobile hydrogen fueling systems (Similarity Score: 0.7402)

ID 11: Knowledge of key instrumentation for hydrogen pipelines (Similarity Score: 0.6142)

ID 223: Selection and design of production equipment for hydrogen systems (Similarity Score: 0.7076)

ID 562: Application of hydrogen safety codes and standards in operations (Similarity Score: 0.6599)

ID 137: Knowledge of relevant codes for hydrogen fueling station equipment (Similarity Score: 0.6605)

ID 196: Ability to inspect fuel cell vehicles (Similarity Score: 0.4867)

ID 392: Knowledge of operational adjustments for hydrogen blending (Similarity Score: 0.5917)

ID 500: Stay up to date on monitoring options for hydrogen storage (Similarity Score: 0.6844)

ID 295: Maintenance of instrumentation and electrical systems in electrolyzers (Similarity Score: 0.4800)

ID 55: Maintenance of piping systems, valves, and fittings in hydrogen fueling systems (Similarity Score: 0.6675)

ID 520: Maintenance of instrumentation systems in SMR and/or ATR hydrogen production plant (Similarity Score: 0.6689)

ID 290: Selection of equipment resistant to hydrogen-induced degradation (Similarity Score: 0.5500)

ID 300: Knowledge of key instrumentation for ventilation systems in hydrogen blending (Similarity Score: 0.5855)

ID 123: Continuous improvement of hydrogen fueling station operations (Similarity Score: 0.6028)

ID 250: Maintenance of dispensers in hydrogen fueling systems (Similarity Score: 0.5853)

ID 287: Maintenance of electrical and instrumentation systems in hydrogen fueling (Similarity Score: 0.7408)

ID 444: Maintenance of vessels, compressors, piping systems, valves, and seals to ensure reliability under hydrogen conditions (Similarity Score: 0.6397)

ID 75: Selection of equipment designed to withstand hydrogen pressure (Similarity Score: 0.6025)

ID 335: Maintenance of key hydrogen systems to ensure reliability under varying conditions (Similarity Score: 0.6746)

ID 457: Selection of key instrumentation equipment for carbon capture technology (Similarity Score: 0.4376)

ID 221: Understanding of installation procedures unique to hydrogen (Similarity Score: 0.6575)

ID 33: Safety procedures during hydrogen refueling (Similarity Score: 0.6281)

ID 375: Calibration of instrumentation systems for hydrogen blending (Similarity Score: 0.6406)

ID 109: Maintenance of flame detection systems for hydrogen blending (Similarity Score: 0.6055)

ID 1: Experience with hydrogen fueling equipment and systems (Similarity Score: 0.6549)

ID 76: Selection of equipment designed to withstand hydrogen temperatures (Similarity Score: 0.5962)

ID 635: Knowledge of key instrumentation associated with carbon capture (Similarity Score: 0.3991)

ID 311: Knowledge of cathodic protection equipment to prevent hydrogen corrosion (Similarity Score: 0.5800)

ID 367: Maintenance of PEM electrolyzers (Similarity Score: 0.4341)

ID 77: Maintenance of materials and equipment used in high-pressure hydrogen systems (Similarity Score: 0.7012)

ID 352: Maintenance of valves and seals in hydrogen systems (Similarity Score: 0.6699)

ID 179: Selection of instrumentation systems for hydrogen pipelines (Similarity Score: 0.6117)

ID 142: Understanding how to match hydrogen technology with the needs of different fleets (Similarity Score: 0.4977)

ID 621: Maintenance of power generation equipment used in combined-cycle systems with hydrogen blending (Similarity Score: 0.6488)

ID 239: Keeping up-to-date with changes in hydrogen codes (Similarity Score: 0.5022)

ID 366: Maintenance of fuel tanks, piping, valves, and seals in hydrogen systems (Similarity Score: 0.6744)

ID 504: Maintenance of electrical and electronic systems in SMR and/or ATR hydrogen production (Similarity Score: 0.5850)

ID 78: Maintenance of materials and equipment used in high-temperature hydrogen systems (Similarity Score: 0.6980)

ID 310: Knowledge of instrumentation systems in hydrogen transmission (Similarity Score: 0.6481)

ID 368: Maintenance of systems supporting PEM electrolyzers (Similarity Score: 0.4880)

ID 145: Mechanical integrity analysis for hydrogen systems (Similarity Score: 0.6528)

ID 316: Maintenance of fuel tanks, piping, valves, and seals in hydrogen systems (Similarity Score: 0.6744)

ID 330: Performing routine maintenance on hydrogen dispensing equipment (Similarity Score: 0.7193)

ID 351: Maintenance of piping systems and fittings under hydrogen conditions (Similarity Score: 0.6426)

ID 121: Management of hydrogen fueling stations (Similarity Score: 0.6838)

ID 262: Knowledge of selecting and maintaining equipment to withstand hydrogen conditions (Similarity Score: 0.7067)

ID 151: Understanding of other relevant equipment for hydrogen blending (Similarity Score: 0.6614)

ID 251: Maintenance of pumps in hydrogen fueling systems (Similarity Score: 0.6683)

ID 309: Knowledge of measurement equipment for hydrogen transmission (Similarity Score: 0.6865)

ID 67: Knowledge of monitoring systems for electrolyzer hydrogen production plants (Similarity Score: 0.6708)

ID 285: Knowledge of instrumentation systems for hydrogen fueling (Similarity Score: 0.6470)

ID 422: Calibration and testing of instrumentation systems for hydrogen processes (Similarity Score: 0.7541)

### 2.3.1: Operational Testing

ID 120: Maintenance of electrolyzers, vessels, compressors, piping systems, valves, and seals to withstand hydrogen pressure and temperatures (Similarity Score: 0.5524)

ID 284: Knowledge of electrical equipment used in hydrogen fueling systems (Similarity Score: 0.6019)

ID 124: Maintenance and management of mobile hydrogen fueling systems (Similarity Score: 0.7237)

ID 285: Knowledge of instrumentation systems for hydrogen fueling (Similarity Score: 0.6398)

ID 151: Understanding of other relevant equipment for hydrogen blending (Similarity Score: 0.6311)

ID 341: Maintenance of instrumentation and control systems in fueling operations (Similarity Score: 0.5634)

ID 123: Continuous improvement of hydrogen fueling station operations (Similarity Score: 0.6208)

ID 121: Management of hydrogen fueling stations (Similarity Score: 0.6768)

ID 446: Maintenance of equipment in Autothermal Reforming (ATR) hydrogen production (Similarity Score: 0.5984)

ID 142: Understanding how to match hydrogen technology with the needs of different fleets (Similarity Score: 0.4954)

ID 500: Stay up to date on monitoring options for hydrogen storage (Similarity Score: 0.6654)

ID 221: Understanding of installation procedures unique to hydrogen (Similarity Score: 0.6489)

ID 287: Maintenance of electrical and instrumentation systems in hydrogen fueling (Similarity Score: 0.7202)

ID 403: In-depth knowledge of standards for hydrogen infrastructure and operations (Similarity Score: 0.6165)

ID 76: Selection of equipment designed to withstand hydrogen temperatures (Similarity Score: 0.5571)

ID 366: Maintenance of fuel tanks, piping, valves, and seals in hydrogen systems (Similarity Score: 0.6650)

ID 89: Understanding operational adjustments needed for hydrogen-blending (Similarity Score: 0.5675)

ID 262: Knowledge of selecting and maintaining equipment to withstand hydrogen conditions (Similarity Score: 0.6905)

ID 78: Maintenance of materials and equipment used in high-temperature hydrogen systems (Similarity Score: 0.6591)

ID 621: Maintenance of power generation equipment used in combined-cycle systems with hydrogen blending (Similarity Score: 0.6246)

ID 330: Performing routine maintenance on hydrogen dispensing equipment (Similarity Score: 0.6890)

ID 368: Maintenance of systems supporting PEM electrolyzers (Similarity Score: 0.4694)

ID 316: Maintenance of fuel tanks, piping, valves, and seals in hydrogen systems (Similarity Score: 0.6650)

ID 352: Maintenance of valves and seals in hydrogen systems (Similarity Score: 0.6539)

ID 56: Maintenance of coatings and insulation in hydrogen fueling systems (Similarity Score: 0.5967)

ID 609: Maintenance of coatings and insulation to protect against hydrogen conditions (Similarity Score: 0.5491)

ID 400: Knowledge of compliance testing in hydrogen infrastructure (Similarity Score: 0.7346)

ID 317: Selection of key instrumentation equipment for electrolyzer hydrogen production (Similarity Score: 0.6173)

ID 11: Knowledge of key instrumentation for hydrogen pipelines (Similarity Score: 0.5979)

ID 351: Maintenance of piping systems and fittings under hydrogen conditions (Similarity Score: 0.6332)

ID 310: Knowledge of instrumentation systems in hydrogen transmission (Similarity Score: 0.6356)

ID 335: Maintenance of key hydrogen systems to ensure reliability under varying conditions (Similarity Score: 0.6591)

ID 1: Experience with hydrogen fueling equipment and systems (Similarity Score: 0.6499)

ID 146: Instrumented system analysis for hydrogen processes (Similarity Score: 0.6277)

ID 607: Maintenance of piping systems and fittings under hydrogen conditions (Similarity Score: 0.6332)

ID 223: Selection and design of production equipment for hydrogen systems (Similarity Score: 0.6888)

ID 55: Maintenance of piping systems, valves, and fittings in hydrogen fueling systems (Similarity Score: 0.6588)

ID 562: Application of hydrogen safety codes and standards in operations (Similarity Score: 0.6643)

ID 422: Calibration and testing of instrumentation systems for hydrogen processes (Similarity Score: 0.7370)

ID 427: Maintenance of air separation units, vessels, piping systems, valves, and seals (Similarity Score: 0.4929)

ID 77: Maintenance of materials and equipment used in high-pressure hydrogen systems (Similarity Score: 0.6694)

ID 137: Knowledge of relevant codes for hydrogen fueling station equipment (Similarity Score: 0.6595)

ID 319: Maintenance of instrumentation systems in electrolyzer hydrogen production (Similarity Score: 0.6935)

ID 520: Maintenance of instrumentation systems in SMR and/or ATR hydrogen production plant (Similarity Score: 0.6464)

ID 300: Knowledge of key instrumentation for ventilation systems in hydrogen blending (Similarity Score: 0.5673)

ID 392: Knowledge of operational adjustments for hydrogen blending (Similarity Score: 0.6102)

#### 2.3.1.1: Checking Vessel Integrity

ID 123: Continuous improvement of hydrogen fueling station operations (Similarity Score: 0.6152)

ID 335: Maintenance of key hydrogen systems to ensure reliability under varying conditions (Similarity Score: 0.6671)

ID 366: Maintenance of fuel tanks, piping, valves, and seals in hydrogen systems (Similarity Score: 0.6747)

ID 490: Selection and design of valves and seals for hydrogen conditions (Similarity Score: 0.5533)

ID 491: Maintenance of vessels, compressors, piping systems, valves, and seals (Similarity Score: 0.5280)

ID 124: Maintenance and management of mobile hydrogen fueling systems (Similarity Score: 0.7147)

ID 368: Maintenance of systems supporting PEM electrolyzers (Similarity Score: 0.4635)

ID 262: Knowledge of selecting and maintaining equipment to withstand hydrogen conditions (Similarity Score: 0.6658)

ID 285: Knowledge of instrumentation systems for hydrogen fueling (Similarity Score: 0.6491)

ID 11: Knowledge of key instrumentation for hydrogen pipelines (Similarity Score: 0.6012)

ID 500: Stay up to date on monitoring options for hydrogen storage (Similarity Score: 0.6644)

ID 400: Knowledge of compliance testing in hydrogen infrastructure (Similarity Score: 0.7331)

ID 605: Maintenance of vessels to withstand hydrogen pressure and temperatures (Similarity Score: 0.6194)

ID 403: In-depth knowledge of standards for hydrogen infrastructure and operations (Similarity Score: 0.6077)

ID 142: Understanding how to match hydrogen technology with the needs of different fleets (Similarity Score: 0.5399)

ID 339: Maintenance of pressure vessels in fueling operations (Similarity Score: 0.5536)

ID 247: Maintenance of pressure vessels in hydrogen fueling systems (Similarity Score: 0.6921)

ID 334: Selection and design of valves and seals for hydrogen conditions (Similarity Score: 0.5533)

ID 599: Maintenance of vessels, piping systems, cryogenic systems, valves, and seals (Similarity Score: 0.5348)

ID 146: Instrumented system analysis for hydrogen processes (Similarity Score: 0.6276)

ID 427: Maintenance of air separation units, vessels, piping systems, valves, and seals (Similarity Score: 0.5322)

ID 152: Assess integrity of vessels and tanks for hydrogen pressure and temperatures (Similarity Score: 0.6506)

ID 609: Maintenance of coatings and insulation to protect against hydrogen conditions (Similarity Score: 0.5402)

ID 351: Maintenance of piping systems and fittings under hydrogen conditions (Similarity Score: 0.6392)

ID 608: Maintenance of valves and seals to withstand hydrogen pressure and temperatures (Similarity Score: 0.5913)

ID 159: Maintenance of piping systems, fittings, valves, and seals (Similarity Score: 0.4945)

ID 223: Selection and design of production equipment for hydrogen systems (Similarity Score: 0.6552)

ID 562: Application of hydrogen safety codes and standards in operations (Similarity Score: 0.6561)

ID 55: Maintenance of piping systems, valves, and fittings in hydrogen fueling systems (Similarity Score: 0.6669)

ID 120: Maintenance of electrolyzers, vessels, compressors, piping systems, valves, and seals to withstand hydrogen pressure and temperatures (Similarity Score: 0.6085)

ID 316: Maintenance of fuel tanks, piping, valves, and seals in hydrogen systems (Similarity Score: 0.6747)

ID 349: Maintenance of vessels to withstand hydrogen pressure and temperatures (Similarity Score: 0.6194)

ID 54: Maintenance of pressure vessels in hydrogen fueling systems (Similarity Score: 0.6921)

ID 137: Knowledge of relevant codes for hydrogen fueling station equipment (Similarity Score: 0.6476)

ID 154: Assess integrity of valves and seals (Similarity Score: 0.4779)

ID 648: Maintenance of turbine systems to ensure reliability under hydrogen conditions (Similarity Score: 0.6519)

ID 415: Staying informed about updates in hydrogen technology (Similarity Score: 0.5426)

ID 156: Maintenance of vessels for hydrogen pressure and temperatures (Similarity Score: 0.6495)

ID 411: Maintenance of turbines to ensure reliability under hydrogen pressure (Similarity Score: 0.6344)

ID 319: Maintenance of instrumentation systems in electrolyzer hydrogen production (Similarity Score: 0.6947)

ID 56: Maintenance of coatings and insulation in hydrogen fueling systems (Similarity Score: 0.5956)

ID 317: Selection of key instrumentation equipment for electrolyzer hydrogen production (Similarity Score: 0.5998)

ID 1: Experience with hydrogen fueling equipment and systems (Similarity Score: 0.6406)

ID 121: Management of hydrogen fueling stations (Similarity Score: 0.6563)

ID 443: Selection and design of valves and seals to maintain integrity under hydrogen conditions (Similarity Score: 0.5943)

ID 221: Understanding of installation procedures unique to hydrogen (Similarity Score: 0.6099)

ID 352: Maintenance of valves and seals in hydrogen systems (Similarity Score: 0.6757)

ID 311: Knowledge of cathodic protection equipment to prevent hydrogen corrosion (Similarity Score: 0.5810)

ID 392: Knowledge of operational adjustments for hydrogen blending (Similarity Score: 0.5919)

ID 444: Maintenance of vessels, compressors, piping systems, valves, and seals to ensure reliability under hydrogen conditions (Similarity Score: 0.7013)

ID 607: Maintenance of piping systems and fittings under hydrogen conditions (Similarity Score: 0.6392)

ID 422: Calibration and testing of instrumentation systems for hydrogen processes (Similarity Score: 0.7204)

ID 151: Understanding of other relevant equipment for hydrogen blending (Similarity Score: 0.5990)

ID 310: Knowledge of instrumentation systems in hydrogen transmission (Similarity Score: 0.6435)

ID 48: Knowledge of appropriate seals for hydrogen systems (Similarity Score: 0.6022)

ID 471: Maintenance of electrolyzers, vessels, compressors, piping systems, valves, and seals (Similarity Score: 0.5314)

#### 2.3.1.2: Assessing Valve Functionality

ID 316: Maintenance of fuel tanks, piping, valves, and seals in hydrogen systems (Similarity Score: 0.6766)

ID 137: Knowledge of relevant codes for hydrogen fueling station equipment (Similarity Score: 0.6130)

ID 52: Appropriate selection of valves and seals for hydrogen fueling systems (Similarity Score: 0.6010)

ID 11: Knowledge of key instrumentation for hydrogen pipelines (Similarity Score: 0.5739)

ID 267: Selection and design of valves (Similarity Score: 0.3417)

ID 392: Knowledge of operational adjustments for hydrogen blending (Similarity Score: 0.5962)

ID 215: Design and selection of valves and seals (Similarity Score: 0.4023)

ID 334: Selection and design of valves and seals for hydrogen conditions (Similarity Score: 0.6096)

ID 315: Selection and design of valves and seals for hydrogen systems (Similarity Score: 0.6110)

ID 352: Maintenance of valves and seals in hydrogen systems (Similarity Score: 0.7014)

ID 159: Maintenance of piping systems, fittings, valves, and seals (Similarity Score: 0.5162)

ID 490: Selection and design of valves and seals for hydrogen conditions (Similarity Score: 0.6096)

ID 351: Maintenance of piping systems and fittings under hydrogen conditions (Similarity Score: 0.6299)

ID 444: Maintenance of vessels, compressors, piping systems, valves, and seals to ensure reliability under hydrogen conditions (Similarity Score: 0.6500)

ID 443: Selection and design of valves and seals to maintain integrity under hydrogen conditions (Similarity Score: 0.6259)

ID 223: Selection and design of production equipment for hydrogen systems (Similarity Score: 0.6550)

ID 55: Maintenance of piping systems, valves, and fittings in hydrogen fueling systems (Similarity Score: 0.6778)

ID 317: Selection of key instrumentation equipment for electrolyzer hydrogen production (Similarity Score: 0.5949)

ID 599: Maintenance of vessels, piping systems, cryogenic systems, valves, and seals (Similarity Score: 0.4884)

ID 608: Maintenance of valves and seals to withstand hydrogen pressure and temperatures (Similarity Score: 0.6211)

ID 123: Continuous improvement of hydrogen fueling station operations (Similarity Score: 0.5802)

ID 365: Selection and design of valves and seals to withstand hydrogen conditions (Similarity Score: 0.5956)

ID 154: Assess integrity of valves and seals (Similarity Score: 0.5205)

ID 366: Maintenance of fuel tanks, piping, valves, and seals in hydrogen systems (Similarity Score: 0.6766)

ID 562: Application of hydrogen safety codes and standards in operations (Similarity Score: 0.6337)

ID 607: Maintenance of piping systems and fittings under hydrogen conditions (Similarity Score: 0.6299)

ID 360: Selection and design of valves and fittings for hydrogen blending (Similarity Score: 0.5654)

ID 511: Maintenance of combustion, compression, pumping, and turbine systems to ensure reliability under hydrogen conditions (Similarity Score: 0.6238)

ID 120: Maintenance of electrolyzers, vessels, compressors, piping systems, valves, and seals to withstand hydrogen pressure and temperatures (Similarity Score: 0.5593)

ID 400: Knowledge of compliance testing in hydrogen infrastructure (Similarity Score: 0.6944)

ID 300: Knowledge of key instrumentation for ventilation systems in hydrogen blending (Similarity Score: 0.5622)

ID 403: In-depth knowledge of standards for hydrogen infrastructure and operations (Similarity Score: 0.5876)

ID 285: Knowledge of instrumentation systems for hydrogen fueling (Similarity Score: 0.6079)

ID 221: Understanding of installation procedures unique to hydrogen (Similarity Score: 0.6210)

#### 2.3.1.3: Inspecting Pipework and Joints

ID 221: Understanding of installation procedures unique to hydrogen (Similarity Score: 0.6039)

ID 151: Understanding of other relevant equipment for hydrogen blending (Similarity Score: 0.6065)

ID 400: Knowledge of compliance testing in hydrogen infrastructure (Similarity Score: 0.6841)

ID 392: Knowledge of operational adjustments for hydrogen blending (Similarity Score: 0.5669)

ID 607: Maintenance of piping systems and fittings under hydrogen conditions (Similarity Score: 0.6359)

ID 317: Selection of key instrumentation equipment for electrolyzer hydrogen production (Similarity Score: 0.5901)

ID 55: Maintenance of piping systems, valves, and fittings in hydrogen fueling systems (Similarity Score: 0.6656)

ID 11: Knowledge of key instrumentation for hydrogen pipelines (Similarity Score: 0.5826)

ID 137: Knowledge of relevant codes for hydrogen fueling station equipment (Similarity Score: 0.5999)

ID 300: Knowledge of key instrumentation for ventilation systems in hydrogen blending (Similarity Score: 0.5635)

ID 351: Maintenance of piping systems and fittings under hydrogen conditions (Similarity Score: 0.6359)

### 2.3.2: Calibration and Adjustment

ID 11: Knowledge of key instrumentation for hydrogen pipelines (Similarity Score: 0.5776)

ID 221: Understanding of installation procedures unique to hydrogen (Similarity Score: 0.6108)

ID 223: Selection and design of production equipment for hydrogen systems (Similarity Score: 0.6714)

ID 427: Maintenance of air separation units, vessels, piping systems, valves, and seals (Similarity Score: 0.5029)

ID 77: Maintenance of materials and equipment used in high-pressure hydrogen systems (Similarity Score: 0.6711)

ID 621: Maintenance of power generation equipment used in combined-cycle systems with hydrogen blending (Similarity Score: 0.6204)

ID 392: Knowledge of operational adjustments for hydrogen blending (Similarity Score: 0.6094)

ID 400: Knowledge of compliance testing in hydrogen infrastructure (Similarity Score: 0.6866)

ID 76: Selection of equipment designed to withstand hydrogen temperatures (Similarity Score: 0.5538)

ID 89: Understanding operational adjustments needed for hydrogen-blending (Similarity Score: 0.5696)

ID 137: Knowledge of relevant codes for hydrogen fueling station equipment (Similarity Score: 0.6166)

ID 238: Keeping up-to-date with changes in hydrogen standards (Similarity Score: 0.5528)

ID 239: Keeping up-to-date with changes in hydrogen codes (Similarity Score: 0.5073)

ID 78: Maintenance of materials and equipment used in high-temperature hydrogen systems (Similarity Score: 0.6617)

ID 300: Knowledge of key instrumentation for ventilation systems in hydrogen blending (Similarity Score: 0.5687)

ID 319: Maintenance of instrumentation systems in electrolyzer hydrogen production (Similarity Score: 0.6824)

ID 376: Maintenance of instrumentation in hydrogen blending power generation (Similarity Score: 0.6529)

ID 422: Calibration and testing of instrumentation systems for hydrogen processes (Similarity Score: 0.7853)

ID 500: Stay up to date on monitoring options for hydrogen storage (Similarity Score: 0.6752)

ID 375: Calibration of instrumentation systems for hydrogen blending (Similarity Score: 0.6925)

ID 446: Maintenance of equipment in Autothermal Reforming (ATR) hydrogen production (Similarity Score: 0.5841)

ID 146: Instrumented system analysis for hydrogen processes (Similarity Score: 0.6295)

ID 285: Knowledge of instrumentation systems for hydrogen fueling (Similarity Score: 0.6167)

ID 317: Selection of key instrumentation equipment for electrolyzer hydrogen production (Similarity Score: 0.6077)

ID 151: Understanding of other relevant equipment for hydrogen blending (Similarity Score: 0.6250)

ID 120: Maintenance of electrolyzers, vessels, compressors, piping systems, valves, and seals to withstand hydrogen pressure and temperatures (Similarity Score: 0.5530)

ID 262: Knowledge of selecting and maintaining equipment to withstand hydrogen conditions (Similarity Score: 0.6859)

#### 2.3.2.1: Sensor Calibration

ID 626: Understanding instrumentation techniques for permanent carbon dioxide (CO2) storage (Similarity Score: 0.4279)

ID 11: Knowledge of key instrumentation for hydrogen pipelines (Similarity Score: 0.5687)

ID 481: Maintenance of carbon dioxide (CO2) sensors and monitoring equipment (Similarity Score: 0.5431)

ID 635: Knowledge of key instrumentation associated with carbon capture (Similarity Score: 0.4103)

ID 623: Stay up to date on carbon dioxide (CO2) monitoring technology (Similarity Score: 0.3933)

ID 500: Stay up to date on monitoring options for hydrogen storage (Similarity Score: 0.6688)

ID 375: Calibration of instrumentation systems for hydrogen blending (Similarity Score: 0.6723)

ID 151: Understanding of other relevant equipment for hydrogen blending (Similarity Score: 0.6127)

ID 285: Knowledge of instrumentation systems for hydrogen fueling (Similarity Score: 0.6083)

ID 480: Selection of carbon dioxide (CO2) sensors for monitoring equipment and systems (Similarity Score: 0.4770)

ID 317: Selection of key instrumentation equipment for electrolyzer hydrogen production (Similarity Score: 0.6010)

ID 223: Selection and design of production equipment for hydrogen systems (Similarity Score: 0.6459)

ID 137: Knowledge of relevant codes for hydrogen fueling station equipment (Similarity Score: 0.6022)

ID 422: Calibration and testing of instrumentation systems for hydrogen processes (Similarity Score: 0.7557)

ID 612: Understanding of measurement equipment and instrumentation for carbon liquefication (Similarity Score: 0.4320)

ID 392: Knowledge of operational adjustments for hydrogen blending (Similarity Score: 0.5818)

#### 2.3.2.2: Equipment Calibration

ID 137: Knowledge of relevant codes for hydrogen fueling station equipment (Similarity Score: 0.6066)

ID 392: Knowledge of operational adjustments for hydrogen blending (Similarity Score: 0.5835)

ID 223: Selection and design of production equipment for hydrogen systems (Similarity Score: 0.6530)

ID 427: Maintenance of air separation units, vessels, piping systems, valves, and seals (Similarity Score: 0.4994)

ID 151: Understanding of other relevant equipment for hydrogen blending (Similarity Score: 0.6113)

ID 262: Knowledge of selecting and maintaining equipment to withstand hydrogen conditions (Similarity Score: 0.6781)

ID 422: Calibration and testing of instrumentation systems for hydrogen processes (Similarity Score: 0.7482)

ID 500: Stay up to date on monitoring options for hydrogen storage (Similarity Score: 0.6530)

ID 375: Calibration of instrumentation systems for hydrogen blending (Similarity Score: 0.6591)

# 3: Hydrogen Storage and Transportation

ID 31: Knowledge of hydrogen refueling systems (Similarity Score: 0.6329)

ID 382: Understanding of distribution technology for hydrogen (Similarity Score: 0.7049)

ID 383: Understanding of dispensing technology for hydrogen (Similarity Score: 0.6027)

ID 139: Knowledge of hydrogen production technology (Similarity Score: 0.6437)

ID 421: Maintenance of electrical systems in hydrogen production and storage environments (Similarity Score: 0.6671)

ID 141: Knowledge of hydrogen dispensing systems (Similarity Score: 0.5818)

ID 379: Understanding the role of storage in the hydrogen value chain (Similarity Score: 0.6223)

ID 140: Knowledge of distribution systems for hydrogen (Similarity Score: 0.6408)

ID 378: Understanding distribution and logistics in the hydrogen value chain (Similarity Score: 0.6298)

ID 94: Advanced understanding of safety in handling and storage of hydrogen (Similarity Score: 0.7037)

ID 151: Understanding of other relevant equipment for hydrogen blending (Similarity Score: 0.6065)

ID 7: Knowledge of hydrogen technologies (Similarity Score: 0.6462)

ID 27: Appropriate selection of stationary equipment for hydrogen pipeline transmission (Similarity Score: 0.5837)

ID 236: Staying current with advances in hydrogen technology (Similarity Score: 0.6032)

ID 385: Knowledge of gaseous hydrogen storage systems (Similarity Score: 0.6891)

ID 121: Management of hydrogen fueling stations (Similarity Score: 0.6588)

ID 13: Knowledge of systems associated with hydrogen pipeline transmission (Similarity Score: 0.5770)

ID 641: Knowledge of hydrogen technologies (Similarity Score: 0.6462)

ID 261: Experience with hydrogen production and handling processes (Similarity Score: 0.6415)

ID 5: Experience with hydrogen storage (Similarity Score: 0.6742)

ID 278: Knowledge of the storage aspect of the hydrogen value chain (Similarity Score: 0.6386)

ID 499: Stay up to date on hydrogen storage technologies (Similarity Score: 0.6921)

ID 64: Understanding safety in handling and storage of hydrogen (Similarity Score: 0.7156)

ID 206: Understanding the hydrogen storage value chain (Similarity Score: 0.6207)

ID 584: Understanding of reservoir data for hydrogen storage efficiency (Similarity Score: 0.5708)

## 3.1: Cryogenic Systems for Hydrogen

ID 140: Knowledge of distribution systems for hydrogen (Similarity Score: 0.6624)

ID 141: Knowledge of hydrogen dispensing systems (Similarity Score: 0.6134)

ID 397: Knowledge of control systems for hydrogen blending in power generation (Similarity Score: 0.5936)

ID 499: Stay up to date on hydrogen storage technologies (Similarity Score: 0.6374)

ID 386: Knowledge of delivery systems for cryogenic and gaseous hydrogen (Similarity Score: 0.7670)

ID 418: Maintenance of mechanical systems under hydrogen pressure (Similarity Score: 0.6055)

ID 32: Operation of hydrogen dispensing systems (Similarity Score: 0.6497)

ID 236: Staying current with advances in hydrogen technology (Similarity Score: 0.5608)

ID 250: Maintenance of dispensers in hydrogen fueling systems (Similarity Score: 0.6105)

ID 385: Knowledge of gaseous hydrogen storage systems (Similarity Score: 0.6975)

ID 597: Selection and design of cryogenic systems for carbon dioxide (CO2) storage (Similarity Score: 0.5366)

ID 646: Selection of turbine systems suitable for hydrogen applications (Similarity Score: 0.5905)

ID 27: Appropriate selection of stationary equipment for hydrogen pipeline transmission (Similarity Score: 0.5681)

ID 248: Maintenance of vaporizers in hydrogen fueling systems (Similarity Score: 0.6150)

ID 486: Maintenance of power generation systems for hydrogen blending (Similarity Score: 0.6329)

ID 354: Knowledge of advanced control systems for combined-cycle power generation using hydrogen (Similarity Score: 0.6081)

ID 382: Understanding of distribution technology for hydrogen (Similarity Score: 0.6721)

ID 509: Selection and design of pumping systems for hydrogen environments (Similarity Score: 0.5891)

ID 384: Understanding of cryogenic hydrogen storage systems (Similarity Score: 0.8034)

ID 6: Experience with hydrogen dispensing (Similarity Score: 0.4674)

ID 13: Knowledge of systems associated with hydrogen pipeline transmission (Similarity Score: 0.5971)

ID 383: Understanding of dispensing technology for hydrogen (Similarity Score: 0.6140)

ID 31: Knowledge of hydrogen refueling systems (Similarity Score: 0.6297)

ID 516: Migration modeling for carbon dioxide (CO2) storage (Similarity Score: 0.4758)

### 3.1.1: Cryogenic Principles and Technology

ID 386: Knowledge of delivery systems for cryogenic and gaseous hydrogen (Similarity Score: 0.6967)

ID 384: Understanding of cryogenic hydrogen storage systems (Similarity Score: 0.7382)

ID 13: Knowledge of systems associated with hydrogen pipeline transmission (Similarity Score: 0.5962)

ID 140: Knowledge of distribution systems for hydrogen (Similarity Score: 0.6115)

ID 31: Knowledge of hydrogen refueling systems (Similarity Score: 0.5995)

ID 597: Selection and design of cryogenic systems for carbon dioxide (CO2) storage (Similarity Score: 0.4947)

ID 141: Knowledge of hydrogen dispensing systems (Similarity Score: 0.5810)

ID 385: Knowledge of gaseous hydrogen storage systems (Similarity Score: 0.6735)

#### 3.1.1.2: Cooling Systems and Equipment

ID 141: Knowledge of hydrogen dispensing systems (Similarity Score: 0.5669)

ID 599: Maintenance of vessels, piping systems, cryogenic systems, valves, and seals (Similarity Score: 0.4894)

ID 13: Knowledge of systems associated with hydrogen pipeline transmission (Similarity Score: 0.5821)

ID 385: Knowledge of gaseous hydrogen storage systems (Similarity Score: 0.6418)

#### 3.1.1.3: Insulation Techniques

ID 609: Maintenance of coatings and insulation to protect against hydrogen conditions (Similarity Score: 0.5485)

ID 13: Knowledge of systems associated with hydrogen pipeline transmission (Similarity Score: 0.5968)

### 3.1.2: Operation of Cryogenic Systems

ID 383: Understanding of dispensing technology for hydrogen (Similarity Score: 0.5883)

ID 499: Stay up to date on hydrogen storage technologies (Similarity Score: 0.6261)

ID 250: Maintenance of dispensers in hydrogen fueling systems (Similarity Score: 0.6017)

ID 384: Understanding of cryogenic hydrogen storage systems (Similarity Score: 0.7621)

ID 385: Knowledge of gaseous hydrogen storage systems (Similarity Score: 0.6750)

ID 386: Knowledge of delivery systems for cryogenic and gaseous hydrogen (Similarity Score: 0.7406)

ID 599: Maintenance of vessels, piping systems, cryogenic systems, valves, and seals (Similarity Score: 0.4827)

ID 31: Knowledge of hydrogen refueling systems (Similarity Score: 0.6046)

ID 141: Knowledge of hydrogen dispensing systems (Similarity Score: 0.5945)

ID 32: Operation of hydrogen dispensing systems (Similarity Score: 0.6419)

ID 140: Knowledge of distribution systems for hydrogen (Similarity Score: 0.6308)

ID 516: Migration modeling for carbon dioxide (CO2) storage (Similarity Score: 0.4368)

ID 597: Selection and design of cryogenic systems for carbon dioxide (CO2) storage (Similarity Score: 0.5115)

ID 13: Knowledge of systems associated with hydrogen pipeline transmission (Similarity Score: 0.5748)

#### 3.1.2.1: Safe Operation of Cryogenic Systems

ID 599: Maintenance of vessels, piping systems, cryogenic systems, valves, and seals (Similarity Score: 0.4829)

ID 385: Knowledge of gaseous hydrogen storage systems (Similarity Score: 0.6280)

#### 3.1.2.2: Monitoring and Control of Cryogenic Temperatures

ID 599: Maintenance of vessels, piping systems, cryogenic systems, valves, and seals (Similarity Score: 0.5242)

ID 120: Maintenance of electrolyzers, vessels, compressors, piping systems, valves, and seals to withstand hydrogen pressure and temperatures (Similarity Score: 0.5603)

## 3.2: Hydrogen Stability and Containment

ID 499: Stay up to date on hydrogen storage technologies (Similarity Score: 0.6780)

ID 236: Staying current with advances in hydrogen technology (Similarity Score: 0.6047)

ID 64: Understanding safety in handling and storage of hydrogen (Similarity Score: 0.7090)

ID 31: Knowledge of hydrogen refueling systems (Similarity Score: 0.5897)

ID 141: Knowledge of hydrogen dispensing systems (Similarity Score: 0.5526)

ID 385: Knowledge of gaseous hydrogen storage systems (Similarity Score: 0.6726)

ID 278: Knowledge of the storage aspect of the hydrogen value chain (Similarity Score: 0.5985)

ID 94: Advanced understanding of safety in handling and storage of hydrogen (Similarity Score: 0.7004)

ID 121: Management of hydrogen fueling stations (Similarity Score: 0.6510)

ID 584: Understanding of reservoir data for hydrogen storage efficiency (Similarity Score: 0.6023)

ID 609: Maintenance of coatings and insulation to protect against hydrogen conditions (Similarity Score: 0.5537)

ID 140: Knowledge of distribution systems for hydrogen (Similarity Score: 0.5968)

### 3.2.1: Maintaining Hydrogen in Liquid Form

ID 385: Knowledge of gaseous hydrogen storage systems (Similarity Score: 0.6425)

ID 499: Stay up to date on hydrogen storage technologies (Similarity Score: 0.6345)

ID 236: Staying current with advances in hydrogen technology (Similarity Score: 0.5715)

ID 248: Maintenance of vaporizers in hydrogen fueling systems (Similarity Score: 0.6119)

ID 584: Understanding of reservoir data for hydrogen storage efficiency (Similarity Score: 0.5501)

ID 609: Maintenance of coatings and insulation to protect against hydrogen conditions (Similarity Score: 0.5381)

#### 3.2.1.1: Managing Boil-Off

ID 599: Maintenance of vessels, piping systems, cryogenic systems, valves, and seals (Similarity Score: 0.5038)

#### 3.2.1.2: Minimizing Heat Transfer

ID 560: Thermal/flow modeling for sequestered gas and liquid compositions (Similarity Score: 0.4091)

ID 419: Maintenance of mechanical systems to withstand temperature variations in hydrogen environments (Similarity Score: 0.6075)

ID 609: Maintenance of coatings and insulation to protect against hydrogen conditions (Similarity Score: 0.5445)

ID 236: Staying current with advances in hydrogen technology (Similarity Score: 0.5464)

### 3.2.2: Transportation of Cryogenic Hydrogen

ID 516: Migration modeling for carbon dioxide (CO2) storage (Similarity Score: 0.4537)

ID 384: Understanding of cryogenic hydrogen storage systems (Similarity Score: 0.7334)

## 3.3: Related Systems for Hydrogen Stabilization

ID 32: Operation of hydrogen dispensing systems (Similarity Score: 0.6186)

ID 27: Appropriate selection of stationary equipment for hydrogen pipeline transmission (Similarity Score: 0.5768)

ID 141: Knowledge of hydrogen dispensing systems (Similarity Score: 0.5761)

ID 140: Knowledge of distribution systems for hydrogen (Similarity Score: 0.6188)

ID 236: Staying current with advances in hydrogen technology (Similarity Score: 0.5579)

ID 31: Knowledge of hydrogen refueling systems (Similarity Score: 0.6011)

ID 28: Appropriate selection of rotating equipment for hydrogen pipeline transmission (Similarity Score: 0.5556)

ID 385: Knowledge of gaseous hydrogen storage systems (Similarity Score: 0.6412)

ID 13: Knowledge of systems associated with hydrogen pipeline transmission (Similarity Score: 0.5960)

### 3.3.1: Alternative Cooling Methods

ID 344: Techniques for repairing hydrogen leaks (Similarity Score: 0.5014)

ID 646: Selection of turbine systems suitable for hydrogen applications (Similarity Score: 0.5649)

### 3.3.2: Pressure Management Systems

ID 141: Knowledge of hydrogen dispensing systems (Similarity Score: 0.5663)

ID 27: Appropriate selection of stationary equipment for hydrogen pipeline transmission (Similarity Score: 0.5637)

ID 418: Maintenance of mechanical systems under hydrogen pressure (Similarity Score: 0.6572)

ID 13: Knowledge of systems associated with hydrogen pipeline transmission (Similarity Score: 0.5768)

ID 439: Selection of seals for carbon dioxide (CO2) pump systems to ensure system integrity (Similarity Score: 0.4508)

# 4: Understanding hazardous areas involving hydrogen

ID 395: Understanding best environmental practices in hydrogen operations (Similarity Score: 0.6827)

ID 641: Knowledge of hydrogen technologies (Similarity Score: 0.6488)

ID 162: Advanced understanding of potential hazards created by hydrogen (Similarity Score: 0.7939)

ID 31: Knowledge of hydrogen refueling systems (Similarity Score: 0.5932)

ID 176: Measuring environmental impacts of hydrogen technologies (Similarity Score: 0.6533)

ID 165: Understanding of hydrogen-related regulations (Similarity Score: 0.6908)

ID 239: Keeping up-to-date with changes in hydrogen codes (Similarity Score: 0.5303)

ID 191: Knowledge of relevant codes applicable to hydrogen (Similarity Score: 0.6233)

ID 167: Understanding of codes related to hydrogen systems (Similarity Score: 0.5938)

ID 630: Understanding of hydrogen technologies in relation to ESG factors (Similarity Score: 0.6132)

ID 189: Understanding of relevant hydrogen regulations (Similarity Score: 0.7142)

ID 64: Understanding safety in handling and storage of hydrogen (Similarity Score: 0.7149)

ID 93: Advanced understanding of personal protective equipment (PPE) for hydrogen environments (Similarity Score: 0.4720)

ID 222: Comprehensive understanding of testing procedures due to hydrogen's nature (Similarity Score: 0.7102)

ID 105: Understanding the risk of hydrogen embrittlement in high pressure environments (Similarity Score: 0.6913)

ID 212: Knowledge of potential hazards created by hydrogen (Similarity Score: 0.7781)

ID 576: Understanding of cavern engineering fundamentals for hydrogen injection (Similarity Score: 0.5126)

ID 505: Knowledge of well completion solutions tailored for hydrogen environments (Similarity Score: 0.5907)

ID 62: Understanding safety measures in hazardous areas involving hydrogen (Similarity Score: 0.8672)

ID 629: Knowledge of climate targets and their implications for hydrogen (Similarity Score: 0.6027)

ID 393: Knowledge of environmental laws related to hydrogen (Similarity Score: 0.6923)

ID 237: Keeping up-to-date with changes in hydrogen regulations (Similarity Score: 0.5540)

ID 506: Application of well completion techniques to ensure safe hydrogen extraction (Similarity Score: 0.5302)

ID 183: Advanced knowledge of evolving standards in hydrogen industry (Similarity Score: 0.6056)

ID 91: Advanced understanding of general safety protocols for hydrogen (Similarity Score: 0.7037)

ID 126: Understanding the impact of hydrogen blending on heating systems (Similarity Score: 0.5566)

ID 94: Advanced understanding of safety in handling and storage of hydrogen (Similarity Score: 0.7214)

ID 403: In-depth knowledge of standards for hydrogen infrastructure and operations (Similarity Score: 0.5885)

ID 561: In-depth understanding of hydrogen safety legislation (Similarity Score: 0.6174)

ID 7: Knowledge of hydrogen technologies (Similarity Score: 0.6488)

ID 92: Advanced understanding of safety measures in hazardous hydrogen areas (Similarity Score: 0.8387)

ID 628: Understanding of climate issues and science related to hydrogen (Similarity Score: 0.5681)

ID 90: Understanding the environmental and regulatory aspects of hydrogen-blending (Similarity Score: 0.6443)

ID 394: Understanding regulations for hydrogen infrastructure and operations (Similarity Score: 0.6187)

## 4.1: Identification of Hazardous Zones

ID 392: Knowledge of operational adjustments for hydrogen blending (Similarity Score: 0.5740)

ID 562: Application of hydrogen safety codes and standards in operations (Similarity Score: 0.6539)

ID 403: In-depth knowledge of standards for hydrogen infrastructure and operations (Similarity Score: 0.5882)

ID 533: Understanding of fluid characterization for carbon dioxide (CO2) injection (Similarity Score: 0.3703)

ID 395: Understanding best environmental practices in hydrogen operations (Similarity Score: 0.6737)

ID 92: Advanced understanding of safety measures in hazardous hydrogen areas (Similarity Score: 0.8064)

ID 505: Knowledge of well completion solutions tailored for hydrogen environments (Similarity Score: 0.5754)

ID 394: Understanding regulations for hydrogen infrastructure and operations (Similarity Score: 0.6183)

ID 191: Knowledge of relevant codes applicable to hydrogen (Similarity Score: 0.6222)

ID 393: Knowledge of environmental laws related to hydrogen (Similarity Score: 0.6490)

ID 167: Understanding of codes related to hydrogen systems (Similarity Score: 0.6098)

ID 49: Knowledge of appropriate coatings for hydrogen systems (Similarity Score: 0.5748)

ID 93: Advanced understanding of personal protective equipment (PPE) for hydrogen environments (Similarity Score: 0.4867)

ID 137: Knowledge of relevant codes for hydrogen fueling station equipment (Similarity Score: 0.6011)

ID 62: Understanding safety measures in hazardous areas involving hydrogen (Similarity Score: 0.8053)

ID 63: Understanding personal protective equipment (PPE) requirements for hydrogen work (Similarity Score: 0.4710)

ID 239: Keeping up-to-date with changes in hydrogen codes (Similarity Score: 0.5217)

ID 629: Knowledge of climate targets and their implications for hydrogen (Similarity Score: 0.5844)

ID 183: Advanced knowledge of evolving standards in hydrogen industry (Similarity Score: 0.5781)

ID 517: Zone selection for carbon dioxide (CO2) storage (Similarity Score: 0.4263)

ID 554: Understanding fluid characterization in carbon dioxide (CO2) injection contexts (Similarity Score: 0.3826)

ID 506: Application of well completion techniques to ensure safe hydrogen extraction (Similarity Score: 0.5317)

### 4.1.1: Explosive Zones

ID 517: Zone selection for carbon dioxide (CO2) storage (Similarity Score: 0.4273)

ID 93: Advanced understanding of personal protective equipment (PPE) for hydrogen environments (Similarity Score: 0.4701)

### 4.1.2: Flammable Zones

ID 517: Zone selection for carbon dioxide (CO2) storage (Similarity Score: 0.4299)

ID 505: Knowledge of well completion solutions tailored for hydrogen environments (Similarity Score: 0.5418)

ID 601: Selection of appropriate coatings for carbon dioxide (CO2) compression facility maintenance (Similarity Score: 0.3750)

ID 167: Understanding of codes related to hydrogen systems (Similarity Score: 0.5894)

### 4.1.3: Spill Risk Areas

ID 579: Understanding of well completion solutions for carbon dioxide (CO2) based on subsurface conditions (Similarity Score: 0.3623)

ID 554: Understanding fluid characterization in carbon dioxide (CO2) injection contexts (Similarity Score: 0.4088)

ID 525: Knowledge of stationary equipment required for pipeline transmission of gaseous carbon dioxide (CO2) (Similarity Score: 0.4574)

ID 546: Application of coatings to protect carbon dioxide (CO2) pipelines (Similarity Score: 0.4266)

ID 601: Selection of appropriate coatings for carbon dioxide (CO2) compression facility maintenance (Similarity Score: 0.3990)

ID 524: Knowledge of stationary equipment required for pipeline transmission of liquid carbon dioxide (CO2) (Similarity Score: 0.4416)

ID 505: Knowledge of well completion solutions tailored for hydrogen environments (Similarity Score: 0.5517)

ID 528: Understanding of reservoir data for carbon dioxide (CO2) injection (Similarity Score: 0.3756)

ID 456: Identification of potential hazards related to carbon dioxide (CO2) (Similarity Score: 0.5339)

ID 529: Understanding of reservoir data for carbon dioxide (CO2) storage (Similarity Score: 0.4099)

ID 629: Knowledge of climate targets and their implications for hydrogen (Similarity Score: 0.5572)

ID 517: Zone selection for carbon dioxide (CO2) storage (Similarity Score: 0.4109)

ID 105: Understanding the risk of hydrogen embrittlement in high pressure environments (Similarity Score: 0.6595)

ID 428: Knowledge of instrumentation systems for carbon dioxide (CO2) pipeline transmission (Similarity Score: 0.4665)

ID 598: Selection and design of valves and seals for carbon dioxide (CO2) environments (Similarity Score: 0.4132)

ID 533: Understanding of fluid characterization for carbon dioxide (CO2) injection (Similarity Score: 0.3941)

ID 580: Understanding of long-term well integrity in carbon dioxide (CO2) environments (Similarity Score: 0.4207)

ID 92: Advanced understanding of safety measures in hazardous hydrogen areas (Similarity Score: 0.7702)

## 4.2: Contributing Environmental/Material Factors

ID 433: Knowledge of carbon dioxide (CO2) behavior in different states (Similarity Score: 0.3822)

ID 502: Application of carbon dioxide (CO2) value-chain knowledge in the industry (Similarity Score: 0.3610)

ID 598: Selection and design of valves and seals for carbon dioxide (CO2) environments (Similarity Score: 0.4034)

ID 93: Advanced understanding of personal protective equipment (PPE) for hydrogen environments (Similarity Score: 0.4906)

ID 393: Knowledge of environmental laws related to hydrogen (Similarity Score: 0.6598)

ID 456: Identification of potential hazards related to carbon dioxide (CO2) (Similarity Score: 0.5567)

ID 601: Selection of appropriate coatings for carbon dioxide (CO2) compression facility maintenance (Similarity Score: 0.3897)

ID 92: Advanced understanding of safety measures in hazardous hydrogen areas (Similarity Score: 0.7617)

ID 533: Understanding of fluid characterization for carbon dioxide (CO2) injection (Similarity Score: 0.3878)

ID 630: Understanding of hydrogen technologies in relation to ESG factors (Similarity Score: 0.5972)

ID 175: Understanding the value proposition of hydrogen technologies related to ESG factors (Similarity Score: 0.5648)

ID 46: Understanding the environmental impacts of hydrogen blending in power generation (Similarity Score: 0.6390)

ID 63: Understanding personal protective equipment (PPE) requirements for hydrogen work (Similarity Score: 0.4827)

ID 536: Knowledge of components that can endure hydrogen pressure and temperatures (Similarity Score: 0.5256)

ID 176: Measuring environmental impacts of hydrogen technologies (Similarity Score: 0.6722)

ID 106: Understanding safety protocols related to material behavior in high pressure hydrogen environments (Similarity Score: 0.6947)

ID 635: Knowledge of key instrumentation associated with carbon capture (Similarity Score: 0.3987)

ID 556: Knowledge of coating selection for carbon dioxide (CO2) environments (Similarity Score: 0.4486)

ID 554: Understanding fluid characterization in carbon dioxide (CO2) injection contexts (Similarity Score: 0.4165)

ID 596: Selection and design of piping systems and fittings for carbon dioxide (CO2) environments (Similarity Score: 0.4164)

ID 629: Knowledge of climate targets and their implications for hydrogen (Similarity Score: 0.5539)

ID 580: Understanding of long-term well integrity in carbon dioxide (CO2) environments (Similarity Score: 0.4394)

ID 544: Awareness of potential hazards related to carbon (Similarity Score: 0.5126)

ID 613: PVT characterization specific to sequestered carbon dioxide (CO2) composition (Similarity Score: 0.4219)

ID 505: Knowledge of well completion solutions tailored for hydrogen environments (Similarity Score: 0.5411)

ID 528: Understanding of reservoir data for carbon dioxide (CO2) injection (Similarity Score: 0.3546)

ID 476: Understanding the impact of high-pressure carbon dioxide (CO2) on material durability and integrity (Similarity Score: 0.5272)

ID 496: Design considerations for well based on changes in carbon dioxide (CO2) pressure over its lifetime (Similarity Score: 0.3960)

ID 579: Understanding of well completion solutions for carbon dioxide (CO2) based on subsurface conditions (Similarity Score: 0.3698)

ID 555: Knowledge of material selection for carbon dioxide (CO2) environments (Similarity Score: 0.4944)

ID 595: Selection and design of vessels for carbon dioxide (CO2) environments (Similarity Score: 0.4022)

ID 105: Understanding the risk of hydrogen embrittlement in high pressure environments (Similarity Score: 0.6564)

ID 475: Knowledge of how carbon dioxide (CO2) interacts with different materials under high pressure (Similarity Score: 0.4506)

### 4.2.1: Ignition Factors

ID 433: Knowledge of carbon dioxide (CO2) behavior in different states (Similarity Score: 0.3584)

ID 556: Knowledge of coating selection for carbon dioxide (CO2) environments (Similarity Score: 0.4156)

ID 502: Application of carbon dioxide (CO2) value-chain knowledge in the industry (Similarity Score: 0.3601)

ID 554: Understanding fluid characterization in carbon dioxide (CO2) injection contexts (Similarity Score: 0.4024)

ID 613: PVT characterization specific to sequestered carbon dioxide (CO2) composition (Similarity Score: 0.4003)

ID 601: Selection of appropriate coatings for carbon dioxide (CO2) compression facility maintenance (Similarity Score: 0.3772)

ID 528: Understanding of reservoir data for carbon dioxide (CO2) injection (Similarity Score: 0.3604)

ID 476: Understanding the impact of high-pressure carbon dioxide (CO2) on material durability and integrity (Similarity Score: 0.4907)

ID 533: Understanding of fluid characterization for carbon dioxide (CO2) injection (Similarity Score: 0.3748)

ID 555: Knowledge of material selection for carbon dioxide (CO2) environments (Similarity Score: 0.4822)

ID 496: Design considerations for well based on changes in carbon dioxide (CO2) pressure over its lifetime (Similarity Score: 0.4104)

ID 544: Awareness of potential hazards related to carbon (Similarity Score: 0.4905)

ID 175: Understanding the value proposition of hydrogen technologies related to ESG factors (Similarity Score: 0.5641)

ID 456: Identification of potential hazards related to carbon dioxide (CO2) (Similarity Score: 0.5428)

### 4.2.2: Loss of Containment Factors

ID 528: Understanding of reservoir data for carbon dioxide (CO2) injection (Similarity Score: 0.3520)

ID 613: PVT characterization specific to sequestered carbon dioxide (CO2) composition (Similarity Score: 0.3930)

ID 580: Understanding of long-term well integrity in carbon dioxide (CO2) environments (Similarity Score: 0.4076)

ID 601: Selection of appropriate coatings for carbon dioxide (CO2) compression facility maintenance (Similarity Score: 0.3809)

ID 614: Thermal/flow modeling specific to sequestered carbon dioxide (CO2) composition (Similarity Score: 0.4084)

## 4.3: Safety Zones and Emergency Procedures

ID 48: Knowledge of appropriate seals for hydrogen systems (Similarity Score: 0.6002)

ID 239: Keeping up-to-date with changes in hydrogen codes (Similarity Score: 0.5100)

ID 94: Advanced understanding of safety in handling and storage of hydrogen (Similarity Score: 0.6829)

ID 165: Understanding of hydrogen-related regulations (Similarity Score: 0.6584)

ID 561: In-depth understanding of hydrogen safety legislation (Similarity Score: 0.6455)

ID 189: Understanding of relevant hydrogen regulations (Similarity Score: 0.6928)

ID 394: Understanding regulations for hydrogen infrastructure and operations (Similarity Score: 0.6644)

ID 237: Keeping up-to-date with changes in hydrogen regulations (Similarity Score: 0.5544)

ID 562: Application of hydrogen safety codes and standards in operations (Similarity Score: 0.6875)

ID 137: Knowledge of relevant codes for hydrogen fueling station equipment (Similarity Score: 0.6226)

ID 89: Understanding operational adjustments needed for hydrogen-blending (Similarity Score: 0.5673)

ID 93: Advanced understanding of personal protective equipment (PPE) for hydrogen environments (Similarity Score: 0.4798)

ID 403: In-depth knowledge of standards for hydrogen infrastructure and operations (Similarity Score: 0.5930)

ID 300: Knowledge of key instrumentation for ventilation systems in hydrogen blending (Similarity Score: 0.5647)

ID 395: Understanding best environmental practices in hydrogen operations (Similarity Score: 0.6878)

ID 91: Advanced understanding of general safety protocols for hydrogen (Similarity Score: 0.7067)

ID 505: Knowledge of well completion solutions tailored for hydrogen environments (Similarity Score: 0.5556)

ID 62: Understanding safety measures in hazardous areas involving hydrogen (Similarity Score: 0.8476)

ID 92: Advanced understanding of safety measures in hazardous hydrogen areas (Similarity Score: 0.8313)

ID 392: Knowledge of operational adjustments for hydrogen blending (Similarity Score: 0.5767)

ID 127: Understanding safety considerations for hydrogen blending in heating systems (Similarity Score: 0.6115)

ID 33: Safety procedures during hydrogen refueling (Similarity Score: 0.6857)

### 4.3.1: Safety Zone Identification

ID 62: Understanding safety measures in hazardous areas involving hydrogen (Similarity Score: 0.8201)

ID 167: Understanding of codes related to hydrogen systems (Similarity Score: 0.5811)

ID 394: Understanding regulations for hydrogen infrastructure and operations (Similarity Score: 0.6573)

ID 403: In-depth knowledge of standards for hydrogen infrastructure and operations (Similarity Score: 0.5908)

ID 561: In-depth understanding of hydrogen safety legislation (Similarity Score: 0.6492)

ID 239: Keeping up-to-date with changes in hydrogen codes (Similarity Score: 0.5121)

ID 137: Knowledge of relevant codes for hydrogen fueling station equipment (Similarity Score: 0.6373)

ID 505: Knowledge of well completion solutions tailored for hydrogen environments (Similarity Score: 0.5432)

ID 94: Advanced understanding of safety in handling and storage of hydrogen (Similarity Score: 0.6721)

ID 92: Advanced understanding of safety measures in hazardous hydrogen areas (Similarity Score: 0.7947)

ID 233: Experience with codes related to electrical systems in road vehicles (Similarity Score: 0.3151)

ID 395: Understanding best environmental practices in hydrogen operations (Similarity Score: 0.6549)

ID 33: Safety procedures during hydrogen refueling (Similarity Score: 0.6397)

ID 562: Application of hydrogen safety codes and standards in operations (Similarity Score: 0.6783)

ID 300: Knowledge of key instrumentation for ventilation systems in hydrogen blending (Similarity Score: 0.5621)

ID 189: Understanding of relevant hydrogen regulations (Similarity Score: 0.6703)

### 4.3.2: Emergency Procedures

ID 394: Understanding regulations for hydrogen infrastructure and operations (Similarity Score: 0.6370)

ID 395: Understanding best environmental practices in hydrogen operations (Similarity Score: 0.6551)

ID 33: Safety procedures during hydrogen refueling (Similarity Score: 0.6799)

ID 561: In-depth understanding of hydrogen safety legislation (Similarity Score: 0.6059)

ID 62: Understanding safety measures in hazardous areas involving hydrogen (Similarity Score: 0.7853)

ID 562: Application of hydrogen safety codes and standards in operations (Similarity Score: 0.6513)

ID 92: Advanced understanding of safety measures in hazardous hydrogen areas (Similarity Score: 0.7687)

## 4.4: Material Selection for Risk Reduction

ID 93: Advanced understanding of personal protective equipment (PPE) for hydrogen environments (Similarity Score: 0.4979)

ID 62: Understanding safety measures in hazardous areas involving hydrogen (Similarity Score: 0.7924)

ID 505: Knowledge of well completion solutions tailored for hydrogen environments (Similarity Score: 0.5840)

ID 144: Conducting hazard risk analysis and reviews (Similarity Score: 0.4752)

ID 92: Advanced understanding of safety measures in hazardous hydrogen areas (Similarity Score: 0.7852)

ID 307: Selection and design of turbines to withstand hydrogen conditions (Similarity Score: 0.5444)

ID 279: Knowledge of end-use applications in the hydrogen value chain (Similarity Score: 0.5414)

ID 506: Application of well completion techniques to ensure safe hydrogen extraction (Similarity Score: 0.5387)

ID 105: Understanding the risk of hydrogen embrittlement in high pressure environments (Similarity Score: 0.6767)

ID 629: Knowledge of climate targets and their implications for hydrogen (Similarity Score: 0.5499)

ID 64: Understanding safety in handling and storage of hydrogen (Similarity Score: 0.6809)

ID 633: Material choices based on understanding of potential corrosive elements (Similarity Score: 0.4043)

ID 580: Understanding of long-term well integrity in carbon dioxide (CO2) environments (Similarity Score: 0.3980)

### 4.4.1: Corrosion Resistance

ID 59: Knowledge of inhibitors to protect from hydrogen corrosion (Similarity Score: 0.6034)

ID 19: Knowledge of materials to protect from hydrogen corrosion (Similarity Score: 0.7163)

ID 58: Knowledge of coatings to protect from hydrogen corrosion (Similarity Score: 0.6257)

ID 18: Correct application techniques for corrosion protection (Similarity Score: 0.5695)

ID 20: Knowledge of coatings to protect from hydrogen corrosion and embrittlement (Similarity Score: 0.5975)

ID 609: Maintenance of coatings and insulation to protect against hydrogen conditions (Similarity Score: 0.5422)

ID 17: Knowledge of inhibitors for hydrogen corrosion protection (Similarity Score: 0.5838)

ID 290: Selection of equipment resistant to hydrogen-induced degradation (Similarity Score: 0.5751)

ID 505: Knowledge of well completion solutions tailored for hydrogen environments (Similarity Score: 0.5809)

ID 57: Knowledge of materials to protect from hydrogen corrosion (Similarity Score: 0.7163)

ID 15: Knowledge of materials to protect from hydrogen corrosion (Similarity Score: 0.7163)

ID 174: Selection and modification of corrosion prevention systems (Similarity Score: 0.5609)

ID 438: Selection of coatings for corrosion protection in carbon dioxide (CO2) pump systems (Similarity Score: 0.4291)

ID 312: Techniques for implementing cathodic protection in hydrogen systems (Similarity Score: 0.5407)

ID 21: Knowledge of inhibitors to protect from hydrogen corrosion and embrittlement (Similarity Score: 0.5775)

ID 288: Understanding practices to mitigate hydrogen corrosion (Similarity Score: 0.6679)

ID 47: Knowledge of appropriate materials for hydrogen systems (Similarity Score: 0.6233)

ID 105: Understanding the risk of hydrogen embrittlement in high pressure environments (Similarity Score: 0.6683)

ID 311: Knowledge of cathodic protection equipment to prevent hydrogen corrosion (Similarity Score: 0.6245)

ID 16: Knowledge of coatings for hydrogen corrosion protection (Similarity Score: 0.6233)

ID 307: Selection and design of turbines to withstand hydrogen conditions (Similarity Score: 0.5523)

ID 225: Selection of protective coatings for hydrogen production (Similarity Score: 0.5372)

ID 217: Design and selection of insulation to withstand hydrogen conditions (Similarity Score: 0.5776)

ID 536: Knowledge of components that can endure hydrogen pressure and temperatures (Similarity Score: 0.5080)

ID 601: Selection of appropriate coatings for carbon dioxide (CO2) compression facility maintenance (Similarity Score: 0.3864)

ID 365: Selection and design of valves and seals to withstand hydrogen conditions (Similarity Score: 0.5790)

ID 132: Knowledge of maintaining coatings to ensure long-term protection (Similarity Score: 0.3416)

ID 580: Understanding of long-term well integrity in carbon dioxide (CO2) environments (Similarity Score: 0.4186)

ID 633: Material choices based on understanding of potential corrosive elements (Similarity Score: 0.4404)

ID 216: Design and selection of coatings for protection against hydrogen (Similarity Score: 0.5244)

ID 131: Knowledge of correct application techniques for protective coatings (Similarity Score: 0.3720)

ID 129: Understanding of coatings effective against hydrogen corrosion (Similarity Score: 0.6221)

ID 596: Selection and design of piping systems and fittings for carbon dioxide (CO2) environments (Similarity Score: 0.4081)

ID 598: Selection and design of valves and seals for carbon dioxide (CO2) environments (Similarity Score: 0.4090)

ID 220: Assess integrity of welds under hydrogen temperature conditions (Similarity Score: 0.6125)

ID 60: Correct application techniques for corrosion protection (Similarity Score: 0.5695)

ID 556: Knowledge of coating selection for carbon dioxide (CO2) environments (Similarity Score: 0.4346)

ID 183: Advanced knowledge of evolving standards in hydrogen industry (Similarity Score: 0.5972)

ID 244: Understanding welding procedures for hydrogen systems (Similarity Score: 0.6402)

ID 263: Knowledge of selecting materials that can withstand hydrogen pressure and temperatures (Similarity Score: 0.5690)

ID 407: Understanding the procedures necessary for welding in hydrogen environments (Similarity Score: 0.6520)

ID 49: Knowledge of appropriate coatings for hydrogen systems (Similarity Score: 0.5767)

ID 93: Advanced understanding of personal protective equipment (PPE) for hydrogen environments (Similarity Score: 0.4773)

ID 219: Assess integrity of welds under hydrogen pressure (Similarity Score: 0.6002)

### 4.4.2: Containment Integrity

ID 583: Understanding of reservoir data interpretation for hydrogen injection (Similarity Score: 0.4995)

ID 505: Knowledge of well completion solutions tailored for hydrogen environments (Similarity Score: 0.5951)

ID 629: Knowledge of climate targets and their implications for hydrogen (Similarity Score: 0.5494)

ID 144: Conducting hazard risk analysis and reviews (Similarity Score: 0.4549)

ID 307: Selection and design of turbines to withstand hydrogen conditions (Similarity Score: 0.5779)

ID 580: Understanding of long-term well integrity in carbon dioxide (CO2) environments (Similarity Score: 0.4381)

ID 207: Knowledge of end-use applications within the hydrogen value chain (Similarity Score: 0.5312)

ID 365: Selection and design of valves and seals to withstand hydrogen conditions (Similarity Score: 0.5671)

ID 584: Understanding of reservoir data for hydrogen storage efficiency (Similarity Score: 0.5569)

ID 312: Techniques for implementing cathodic protection in hydrogen systems (Similarity Score: 0.5364)

ID 131: Knowledge of correct application techniques for protective coatings (Similarity Score: 0.3378)

ID 132: Knowledge of maintaining coatings to ensure long-term protection (Similarity Score: 0.3176)

ID 246: Ensuring quality and safety of welds in hydrogen systems (Similarity Score: 0.6143)

ID 219: Assess integrity of welds under hydrogen pressure (Similarity Score: 0.6130)

ID 105: Understanding the risk of hydrogen embrittlement in high pressure environments (Similarity Score: 0.6959)

ID 635: Knowledge of key instrumentation associated with carbon capture (Similarity Score: 0.4017)

ID 506: Application of well completion techniques to ensure safe hydrogen extraction (Similarity Score: 0.5523)

ID 220: Assess integrity of welds under hydrogen temperature conditions (Similarity Score: 0.6122)

ID 106: Understanding safety protocols related to material behavior in high pressure hydrogen environments (Similarity Score: 0.6777)

ID 217: Design and selection of insulation to withstand hydrogen conditions (Similarity Score: 0.5677)

ID 155: Conducting comprehensive integrity assessments (Similarity Score: 0.3523)

ID 601: Selection of appropriate coatings for carbon dioxide (CO2) compression facility maintenance (Similarity Score: 0.3934)

ID 63: Understanding personal protective equipment (PPE) requirements for hydrogen work (Similarity Score: 0.4769)

ID 613: PVT characterization specific to sequestered carbon dioxide (CO2) composition (Similarity Score: 0.3989)

ID 536: Knowledge of components that can endure hydrogen pressure and temperatures (Similarity Score: 0.5128)

ID 92: Advanced understanding of safety measures in hazardous hydrogen areas (Similarity Score: 0.7808)

ID 225: Selection of protective coatings for hydrogen production (Similarity Score: 0.5307)

ID 93: Advanced understanding of personal protective equipment (PPE) for hydrogen environments (Similarity Score: 0.5044)

ID 94: Advanced understanding of safety in handling and storage of hydrogen (Similarity Score: 0.6782)

ID 395: Understanding best environmental practices in hydrogen operations (Similarity Score: 0.6592)

ID 183: Advanced knowledge of evolving standards in hydrogen industry (Similarity Score: 0.5794)

ID 290: Selection of equipment resistant to hydrogen-induced degradation (Similarity Score: 0.5364)

ID 571: PVT characterization specific to sequestered gas (Similarity Score: 0.4104)

ID 279: Knowledge of end-use applications in the hydrogen value chain (Similarity Score: 0.5423)

ID 64: Understanding safety in handling and storage of hydrogen (Similarity Score: 0.6834)

### 4.4.3: Flammability Reduction

ID 505: Knowledge of well completion solutions tailored for hydrogen environments (Similarity Score: 0.5446)

ID 279: Knowledge of end-use applications in the hydrogen value chain (Similarity Score: 0.5416)

ID 144: Conducting hazard risk analysis and reviews (Similarity Score: 0.4367)

### 4.4.4: Explosion Prevention

ID 506: Application of well completion techniques to ensure safe hydrogen extraction (Similarity Score: 0.5617)

ID 633: Material choices based on understanding of potential corrosive elements (Similarity Score: 0.3983)

ID 576: Understanding of cavern engineering fundamentals for hydrogen injection (Similarity Score: 0.5399)

ID 92: Advanced understanding of safety measures in hazardous hydrogen areas (Similarity Score: 0.7822)

ID 62: Understanding safety measures in hazardous areas involving hydrogen (Similarity Score: 0.7926)

ID 162: Advanced understanding of potential hazards created by hydrogen (Similarity Score: 0.7262)

ID 505: Knowledge of well completion solutions tailored for hydrogen environments (Similarity Score: 0.5728)

ID 629: Knowledge of climate targets and their implications for hydrogen (Similarity Score: 0.5583)

ID 93: Advanced understanding of personal protective equipment (PPE) for hydrogen environments (Similarity Score: 0.5169)

ID 395: Understanding best environmental practices in hydrogen operations (Similarity Score: 0.6634)

ID 212: Knowledge of potential hazards created by hydrogen (Similarity Score: 0.7255)

ID 571: PVT characterization specific to sequestered gas (Similarity Score: 0.3935)

ID 94: Advanced understanding of safety in handling and storage of hydrogen (Similarity Score: 0.6820)

ID 601: Selection of appropriate coatings for carbon dioxide (CO2) compression facility maintenance (Similarity Score: 0.3784)

ID 105: Understanding the risk of hydrogen embrittlement in high pressure environments (Similarity Score: 0.6995)

ID 98: Knowledge of safety considerations in hydrogen compression processes (Similarity Score: 0.6806)

ID 307: Selection and design of turbines to withstand hydrogen conditions (Similarity Score: 0.5513)

ID 63: Understanding personal protective equipment (PPE) requirements for hydrogen work (Similarity Score: 0.4776)

ID 64: Understanding safety in handling and storage of hydrogen (Similarity Score: 0.6915)

ID 144: Conducting hazard risk analysis and reviews (Similarity Score: 0.4483)

# 5: Understanding Market Dynamics for Hydrogen

ID 134: Understanding the cost aspects of hydrogen technologies (Similarity Score: 0.6285)

ID 177: Measuring social and governance impacts of hydrogen technologies (Similarity Score: 0.5891)

ID 462: Analyzing the economic impact of hydrogen value-chains (Similarity Score: 0.6772)

ID 382: Understanding of distribution technology for hydrogen (Similarity Score: 0.6421)

ID 629: Knowledge of climate targets and their implications for hydrogen (Similarity Score: 0.5567)

ID 142: Understanding how to match hydrogen technology with the needs of different fleets (Similarity Score: 0.5361)

ID 184: Advanced understanding of policy developments in hydrogen (Similarity Score: 0.6357)

ID 39: Understanding the economic advantages of hydrogen (Similarity Score: 0.6542)

ID 276: Understanding the hydrogen production value chain (Similarity Score: 0.6505)

ID 279: Knowledge of end-use applications in the hydrogen value chain (Similarity Score: 0.5752)

ID 204: Understanding the hydrogen gas production value chain (Similarity Score: 0.6223)

ID 175: Understanding the value proposition of hydrogen technologies related to ESG factors (Similarity Score: 0.6021)

ID 643: Understanding the climate change implications of hydrogen technologies (Similarity Score: 0.6220)

ID 277: Knowledge of the distribution aspect of the hydrogen value chain (Similarity Score: 0.5547)

ID 205: Understanding the hydrogen distribution value chain (Similarity Score: 0.6464)

ID 206: Understanding the hydrogen storage value chain (Similarity Score: 0.6227)

ID 404: Understanding advanced policy considerations for hydrogen (Similarity Score: 0.6273)

ID 630: Understanding of hydrogen technologies in relation to ESG factors (Similarity Score: 0.6340)

ID 378: Understanding distribution and logistics in the hydrogen value chain (Similarity Score: 0.6746)

ID 208: Understanding fueling standards for hydrogen products (Similarity Score: 0.6232)

ID 377: Understanding the hydrogen production value chain (Similarity Score: 0.6505)

ID 380: Understanding end-use applications in the hydrogen value chain (Similarity Score: 0.5942)

ID 207: Knowledge of end-use applications within the hydrogen value chain (Similarity Score: 0.5713)

## 5.1: Market Demand and Supply Analysis

ID 462: Analyzing the economic impact of hydrogen value-chains (Similarity Score: 0.6436)

ID 560: Thermal/flow modeling for sequestered gas and liquid compositions (Similarity Score: 0.4057)

ID 276: Understanding the hydrogen production value chain (Similarity Score: 0.6589)

ID 204: Understanding the hydrogen gas production value chain (Similarity Score: 0.6398)

ID 378: Understanding distribution and logistics in the hydrogen value chain (Similarity Score: 0.6969)

ID 175: Understanding the value proposition of hydrogen technologies related to ESG factors (Similarity Score: 0.5616)

ID 205: Understanding the hydrogen distribution value chain (Similarity Score: 0.6621)

ID 505: Knowledge of well completion solutions tailored for hydrogen environments (Similarity Score: 0.5515)

ID 461: Understanding the components of hydrogen gas value-chains (Similarity Score: 0.5729)

ID 206: Understanding the hydrogen storage value chain (Similarity Score: 0.6190)

ID 207: Knowledge of end-use applications within the hydrogen value chain (Similarity Score: 0.5882)

ID 380: Understanding end-use applications in the hydrogen value chain (Similarity Score: 0.6100)

ID 572: Thermal and flow modeling for sequestered gas composition (Similarity Score: 0.4062)

ID 279: Knowledge of end-use applications in the hydrogen value chain (Similarity Score: 0.5950)

ID 377: Understanding the hydrogen production value chain (Similarity Score: 0.6589)

ID 277: Knowledge of the distribution aspect of the hydrogen value chain (Similarity Score: 0.5712)

ID 584: Understanding of reservoir data for hydrogen storage efficiency (Similarity Score: 0.5570)

ID 583: Understanding of reservoir data interpretation for hydrogen injection (Similarity Score: 0.5058)

ID 142: Understanding how to match hydrogen technology with the needs of different fleets (Similarity Score: 0.5161)

### 5.1.1: Factors Influencing Market Demand

ID 279: Knowledge of end-use applications in the hydrogen value chain (Similarity Score: 0.5472)

ID 175: Understanding the value proposition of hydrogen technologies related to ESG factors (Similarity Score: 0.5707)

ID 142: Understanding how to match hydrogen technology with the needs of different fleets (Similarity Score: 0.5150)

ID 462: Analyzing the economic impact of hydrogen value-chains (Similarity Score: 0.6211)

ID 207: Knowledge of end-use applications within the hydrogen value chain (Similarity Score: 0.5402)

ID 277: Knowledge of the distribution aspect of the hydrogen value chain (Similarity Score: 0.5361)

ID 380: Understanding end-use applications in the hydrogen value chain (Similarity Score: 0.5645)

ID 630: Understanding of hydrogen technologies in relation to ESG factors (Similarity Score: 0.5999)

#### 5.1.1.1: Technological Developments

ID 175: Understanding the value proposition of hydrogen technologies related to ESG factors (Similarity Score: 0.5516)

ID 142: Understanding how to match hydrogen technology with the needs of different fleets (Similarity Score: 0.4936)

#### 5.1.1.2: Consumer Trends

ID 207: Knowledge of end-use applications within the hydrogen value chain (Similarity Score: 0.5345)

ID 277: Knowledge of the distribution aspect of the hydrogen value chain (Similarity Score: 0.5226)

ID 142: Understanding how to match hydrogen technology with the needs of different fleets (Similarity Score: 0.5008)

ID 279: Knowledge of end-use applications in the hydrogen value chain (Similarity Score: 0.5400)

ID 380: Understanding end-use applications in the hydrogen value chain (Similarity Score: 0.5613)

### 5.1.2: Factors Influencing Market Supply

ID 142: Understanding how to match hydrogen technology with the needs of different fleets (Similarity Score: 0.5212)

ID 378: Understanding distribution and logistics in the hydrogen value chain (Similarity Score: 0.6374)

ID 175: Understanding the value proposition of hydrogen technologies related to ESG factors (Similarity Score: 0.5726)

ID 462: Analyzing the economic impact of hydrogen value-chains (Similarity Score: 0.6257)

ID 277: Knowledge of the distribution aspect of the hydrogen value chain (Similarity Score: 0.5558)

ID 279: Knowledge of end-use applications in the hydrogen value chain (Similarity Score: 0.5509)

ID 380: Understanding end-use applications in the hydrogen value chain (Similarity Score: 0.5664)

ID 630: Understanding of hydrogen technologies in relation to ESG factors (Similarity Score: 0.6014)

ID 207: Knowledge of end-use applications within the hydrogen value chain (Similarity Score: 0.5439)

#### 5.1.2.2: Availability of Resources

ID 142: Understanding how to match hydrogen technology with the needs of different fleets (Similarity Score: 0.4926)

#### 5.1.2.3: Supply Chain Logistics

ID 277: Knowledge of the distribution aspect of the hydrogen value chain (Similarity Score: 0.5477)

ID 142: Understanding how to match hydrogen technology with the needs of different fleets (Similarity Score: 0.4964)

ID 378: Understanding distribution and logistics in the hydrogen value chain (Similarity Score: 0.6763)

## 5.2: Government Policy and Regulation

ID 402: Advanced knowledge of regulatory systems governing hydrogen (Similarity Score: 0.6407)

ID 182: Advanced knowledge of current hydrogen regulatory systems (Similarity Score: 0.6133)

ID 404: Understanding advanced policy considerations for hydrogen (Similarity Score: 0.6836)

ID 177: Measuring social and governance impacts of hydrogen technologies (Similarity Score: 0.6012)

ID 619: Understanding of climate change policy and its influence on hydrogen regulations in Canada, USA, and internationally (Similarity Score: 0.6017)

ID 184: Advanced understanding of policy developments in hydrogen (Similarity Score: 0.7003)

ID 142: Understanding how to match hydrogen technology with the needs of different fleets (Similarity Score: 0.5070)

ID 358: Selection and design of turbines for hydrogen blending (Similarity Score: 0.5225)

ID 620: Understanding of the interplay between different policy areas (environmental, energy, climate change) and their impact on hydrogen (Similarity Score: 0.6446)

ID 629: Knowledge of climate targets and their implications for hydrogen (Similarity Score: 0.5824)

ID 277: Knowledge of the distribution aspect of the hydrogen value chain (Similarity Score: 0.5264)

### 5.2.1: Impact of Government Policy

ID 177: Measuring social and governance impacts of hydrogen technologies (Similarity Score: 0.5998)

ID 404: Understanding advanced policy considerations for hydrogen (Similarity Score: 0.6383)

ID 619: Understanding of climate change policy and its influence on hydrogen regulations in Canada, USA, and internationally (Similarity Score: 0.6130)

ID 142: Understanding how to match hydrogen technology with the needs of different fleets (Similarity Score: 0.4888)

ID 629: Knowledge of climate targets and their implications for hydrogen (Similarity Score: 0.5817)

ID 184: Advanced understanding of policy developments in hydrogen (Similarity Score: 0.6589)

ID 494: Understanding long-term regulatory environment and its impact on well design (Similarity Score: 0.4869)

ID 620: Understanding of the interplay between different policy areas (environmental, energy, climate change) and their impact on hydrogen (Similarity Score: 0.6442)

#### 5.2.1.2: Environmental Regulations

ID 416: Keeping current with regulatory, standard, and code changes in the hydrogen sector (Similarity Score: 0.5833)

ID 619: Understanding of climate change policy and its influence on hydrogen regulations in Canada, USA, and internationally (Similarity Score: 0.6456)

ID 494: Understanding long-term regulatory environment and its impact on well design (Similarity Score: 0.5283)

ID 346: Techniques to reduce environmental impact through eco-driving (Similarity Score: 0.3563)

ID 189: Understanding of relevant hydrogen regulations (Similarity Score: 0.6856)

ID 273: Understanding the impact of eco-driving on fleet sustainability (Similarity Score: 0.4928)

ID 393: Knowledge of environmental laws related to hydrogen (Similarity Score: 0.6463)

ID 629: Knowledge of climate targets and their implications for hydrogen (Similarity Score: 0.5869)

ID 90: Understanding the environmental and regulatory aspects of hydrogen-blending (Similarity Score: 0.7083)

ID 348: Achieving cost savings through eco-driving practices (Similarity Score: 0.3297)

ID 617: Understanding of current environmental policy and regulatory frameworks in Canada, USA, and internationally (Similarity Score: 0.4924)

ID 324: Techniques to reduce environmental impact through eco-driving (Similarity Score: 0.3563)

ID 165: Understanding of hydrogen-related regulations (Similarity Score: 0.6614)

ID 620: Understanding of the interplay between different policy areas (environmental, energy, climate change) and their impact on hydrogen (Similarity Score: 0.6483)

ID 483: Stay informed about changes to carbon capture and storage regulations, standards, and codes (Similarity Score: 0.4261)

ID 326: Achieving cost savings through eco-driving practices (Similarity Score: 0.3297)

ID 237: Keeping up-to-date with changes in hydrogen regulations (Similarity Score: 0.5568)

ID 394: Understanding regulations for hydrogen infrastructure and operations (Similarity Score: 0.6034)

ID 595: Selection and design of vessels for carbon dioxide (CO2) environments (Similarity Score: 0.4031)

ID 634: Well design considerations based on regulatory environment and pressure changes over time (Similarity Score: 0.4940)

#### 5.2.1.3: Trade and Tariff Policies

ID 619: Understanding of climate change policy and its influence on hydrogen regulations in Canada, USA, and internationally (Similarity Score: 0.5993)

ID 620: Understanding of the interplay between different policy areas (environmental, energy, climate change) and their impact on hydrogen (Similarity Score: 0.6253)

### 5.2.2: Regulatory Frameworks

ID 494: Understanding long-term regulatory environment and its impact on well design (Similarity Score: 0.5215)

ID 618: Understanding of evolving energy policy and regulatory frameworks in Canada, USA, and internationally (Similarity Score: 0.5024)

ID 619: Understanding of climate change policy and its influence on hydrogen regulations in Canada, USA, and internationally (Similarity Score: 0.5875)

ID 182: Advanced knowledge of current hydrogen regulatory systems (Similarity Score: 0.6691)

ID 629: Knowledge of climate targets and their implications for hydrogen (Similarity Score: 0.5739)

ID 184: Advanced understanding of policy developments in hydrogen (Similarity Score: 0.6402)

ID 620: Understanding of the interplay between different policy areas (environmental, energy, climate change) and their impact on hydrogen (Similarity Score: 0.6127)

ID 402: Advanced knowledge of regulatory systems governing hydrogen (Similarity Score: 0.6864)

ID 394: Understanding regulations for hydrogen infrastructure and operations (Similarity Score: 0.5982)

ID 90: Understanding the environmental and regulatory aspects of hydrogen-blending (Similarity Score: 0.6545)

ID 404: Understanding advanced policy considerations for hydrogen (Similarity Score: 0.6167)

#### 5.2.2.1: National and International Standards

ID 394: Understanding regulations for hydrogen infrastructure and operations (Similarity Score: 0.5998)

ID 402: Advanced knowledge of regulatory systems governing hydrogen (Similarity Score: 0.6481)

ID 619: Understanding of climate change policy and its influence on hydrogen regulations in Canada, USA, and internationally (Similarity Score: 0.6082)

ID 618: Understanding of evolving energy policy and regulatory frameworks in Canada, USA, and internationally (Similarity Score: 0.5300)

ID 183: Advanced knowledge of evolving standards in hydrogen industry (Similarity Score: 0.5832)

ID 182: Advanced knowledge of current hydrogen regulatory systems (Similarity Score: 0.6378)

ID 617: Understanding of current environmental policy and regulatory frameworks in Canada, USA, and internationally (Similarity Score: 0.4645)

ID 166: Understanding industry standards for hydrogen (Similarity Score: 0.6755)

ID 494: Understanding long-term regulatory environment and its impact on well design (Similarity Score: 0.5112)

ID 190: Understanding of industry standards for hydrogen (Similarity Score: 0.6644)

#### 5.2.2.2: Safety and Compliance Requirements

ID 402: Advanced knowledge of regulatory systems governing hydrogen (Similarity Score: 0.6492)

ID 494: Understanding long-term regulatory environment and its impact on well design (Similarity Score: 0.5202)

ID 629: Knowledge of climate targets and their implications for hydrogen (Similarity Score: 0.5558)

ID 165: Understanding of hydrogen-related regulations (Similarity Score: 0.6450)

ID 394: Understanding regulations for hydrogen infrastructure and operations (Similarity Score: 0.6495)

ID 189: Understanding of relevant hydrogen regulations (Similarity Score: 0.6889)

ID 416: Keeping current with regulatory, standard, and code changes in the hydrogen sector (Similarity Score: 0.5924)

ID 182: Advanced knowledge of current hydrogen regulatory systems (Similarity Score: 0.6374)

ID 561: In-depth understanding of hydrogen safety legislation (Similarity Score: 0.6162)

ID 231: Understanding of EMC/EMI compliance requirements (Similarity Score: 0.4419)

ID 417: Assessing the impact of changes in technology and regulations on safety requirements (Similarity Score: 0.4907)

ID 183: Advanced knowledge of evolving standards in hydrogen industry (Similarity Score: 0.5870)

ID 136: Evaluating project feasibility against commercial, technical, and non-technical requirements (Similarity Score: 0.4235)

ID 90: Understanding the environmental and regulatory aspects of hydrogen-blending (Similarity Score: 0.6390)

## 5.3: Industry Growth Projections

ID 462: Analyzing the economic impact of hydrogen value-chains (Similarity Score: 0.6394)

### 5.3.1: Techno-Economic Analysis

ID 198: Conduct techno-economic analysis (Similarity Score: 0.3329)

ID 462: Analyzing the economic impact of hydrogen value-chains (Similarity Score: 0.6494)

#### 5.3.1.1: Cost-Benefit Analysis

ID 462: Analyzing the economic impact of hydrogen value-chains (Similarity Score: 0.6309)

ID 134: Understanding the cost aspects of hydrogen technologies (Similarity Score: 0.5796)

ID 198: Conduct techno-economic analysis (Similarity Score: 0.3542)

ID 199: Compile and present reports based on techno-economic analysis (Similarity Score: 0.3767)

#### 5.3.1.3: Technology Feasibility Studies

ID 198: Conduct techno-economic analysis (Similarity Score: 0.3221)

### 5.3.2: Business Case Development

ID 163: Develop a business case for hydrogen projects (Similarity Score: 0.7282)

ID 164: Presenting business cases to relevant stakeholders (Similarity Score: 0.3942)

ID 142: Understanding how to match hydrogen technology with the needs of different fleets (Similarity Score: 0.4892)

#### 5.3.2.1: Strategic Business Planning

ID 163: Develop a business case for hydrogen projects (Similarity Score: 0.6859)

ID 164: Presenting business cases to relevant stakeholders (Similarity Score: 0.4011)

#### 5.3.2.2: Investment Justification

ID 164: Presenting business cases to relevant stakeholders (Similarity Score: 0.4009)

ID 163: Develop a business case for hydrogen projects (Similarity Score: 0.6725)

#### 5.3.2.3: Presentation and Reporting

ID 163: Develop a business case for hydrogen projects (Similarity Score: 0.6843)

ID 164: Presenting business cases to relevant stakeholders (Similarity Score: 0.4128)

### 5.3.3: Environmental Impact Assessment

ID 516: Migration modeling for carbon dioxide (CO2) storage (Similarity Score: 0.4417)

ID 255: Value proposition of hydrogen fuel cells for emissions targets (Similarity Score: 0.6011)

ID 462: Analyzing the economic impact of hydrogen value-chains (Similarity Score: 0.6688)

ID 326: Achieving cost savings through eco-driving practices (Similarity Score: 0.3016)

ID 629: Knowledge of climate targets and their implications for hydrogen (Similarity Score: 0.5661)

ID 502: Application of carbon dioxide (CO2) value-chain knowledge in the industry (Similarity Score: 0.3867)

ID 176: Measuring environmental impacts of hydrogen technologies (Similarity Score: 0.6891)

ID 177: Measuring social and governance impacts of hydrogen technologies (Similarity Score: 0.6353)

ID 348: Achieving cost savings through eco-driving practices (Similarity Score: 0.3016)

#### 5.3.3.1: Lifecycle Environmental Assessment

ID 348: Achieving cost savings through eco-driving practices (Similarity Score: 0.3090)

ID 516: Migration modeling for carbon dioxide (CO2) storage (Similarity Score: 0.4444)

ID 580: Understanding of long-term well integrity in carbon dioxide (CO2) environments (Similarity Score: 0.4042)

ID 177: Measuring social and governance impacts of hydrogen technologies (Similarity Score: 0.5851)

ID 502: Application of carbon dioxide (CO2) value-chain knowledge in the industry (Similarity Score: 0.3798)

ID 462: Analyzing the economic impact of hydrogen value-chains (Similarity Score: 0.6234)

ID 326: Achieving cost savings through eco-driving practices (Similarity Score: 0.3090)

ID 255: Value proposition of hydrogen fuel cells for emissions targets (Similarity Score: 0.5747)

#### 5.3.3.2: Sustainability Reporting and Compliance

ID 255: Value proposition of hydrogen fuel cells for emissions targets (Similarity Score: 0.5784)

ID 627: Knowledge of sustainability and ESG expectations (Similarity Score: 0.4171)

ID 580: Understanding of long-term well integrity in carbon dioxide (CO2) environments (Similarity Score: 0.4019)

ID 502: Application of carbon dioxide (CO2) value-chain knowledge in the industry (Similarity Score: 0.3912)

ID 177: Measuring social and governance impacts of hydrogen technologies (Similarity Score: 0.6027)

## 5.4: New Market Opportunities

ID 629: Knowledge of climate targets and their implications for hydrogen (Similarity Score: 0.5553)

ID 279: Knowledge of end-use applications in the hydrogen value chain (Similarity Score: 0.5466)

ID 183: Advanced knowledge of evolving standards in hydrogen industry (Similarity Score: 0.5965)

ID 380: Understanding end-use applications in the hydrogen value chain (Similarity Score: 0.5589)

ID 505: Knowledge of well completion solutions tailored for hydrogen environments (Similarity Score: 0.5673)

ID 142: Understanding how to match hydrogen technology with the needs of different fleets (Similarity Score: 0.5430)

ID 358: Selection and design of turbines for hydrogen blending (Similarity Score: 0.5239)

ID 175: Understanding the value proposition of hydrogen technologies related to ESG factors (Similarity Score: 0.5545)

ID 207: Knowledge of end-use applications within the hydrogen value chain (Similarity Score: 0.5463)

# 6: High-Pressure Hydrogen Gas Systems

ID 298: Selection and design of piping systems and fittings for high-pressure hydrogen (Similarity Score: 0.7161)

ID 312: Techniques for implementing cathodic protection in hydrogen systems (Similarity Score: 0.5493)

ID 336: Selection of pressure vessels for hydrogen fueling systems (Similarity Score: 0.6135)

ID 442: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.5869)

ID 313: Selection and design of hydrogen fuel tanks to withstand pressure (Similarity Score: 0.6202)

ID 149: Knowledge of turbine systems used in hydrogen blending (Similarity Score: 0.5744)

ID 424: Selection and design of vessels for hydrogen pressure and temperature variations (Similarity Score: 0.5034)

ID 332: Selection and design of vessels for high/low hydrogen pressure and hot/cold temperatures (Similarity Score: 0.5396)

ID 306: Selection and design of pumping systems for hot/cold hydrogen environments (Similarity Score: 0.6268)

ID 333: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.5869)

ID 305: Selection and design of compression systems for high/low hydrogen pressure (Similarity Score: 0.6921)

ID 402: Advanced knowledge of regulatory systems governing hydrogen (Similarity Score: 0.6246)

ID 141: Knowledge of hydrogen dispensing systems (Similarity Score: 0.5759)

ID 13: Knowledge of systems associated with hydrogen pipeline transmission (Similarity Score: 0.5851)

ID 31: Knowledge of hydrogen refueling systems (Similarity Score: 0.5980)

ID 423: Selection and design of air separation units for hydrogen pressure and temperature variations (Similarity Score: 0.5525)

ID 440: Selection and design of vessels to withstand hydrogen pressure and temperature variations (Similarity Score: 0.5087)

ID 314: Selection and design of piping systems and fittings for hydrogen (Similarity Score: 0.5908)

ID 299: Selection and design of valves and seals to withstand high hydrogen pressure (Similarity Score: 0.6117)

ID 385: Knowledge of gaseous hydrogen storage systems (Similarity Score: 0.6493)

ID 50: Appropriate selection of pressure vessels for hydrogen fueling (Similarity Score: 0.5794)

ID 418: Maintenance of mechanical systems under hydrogen pressure (Similarity Score: 0.6390)

ID 425: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.5869)

ID 315: Selection and design of valves and seals for hydrogen systems (Similarity Score: 0.5669)

ID 77: Maintenance of materials and equipment used in high-pressure hydrogen systems (Similarity Score: 0.6614)

ID 364: Selection and design of piping systems and fittings for hydrogen (Similarity Score: 0.5908)

ID 171: Appropriate selection and design of ventilation systems for hydrogen blending (Similarity Score: 0.5887)

ID 469: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.5869)

ID 487: Selection and design of vessels for hydrogen pressure and temperature variations (Similarity Score: 0.5034)

ID 125: Understanding the principles of hydrogen blending for heating (Similarity Score: 0.5361)

ID 409: Selection of turbines that are compatible with hydrogen pressure (Similarity Score: 0.4970)

ID 213: Design and selection of pressure vessels for hydrogen systems (Similarity Score: 0.6770)

ID 52: Appropriate selection of valves and seals for hydrogen fueling systems (Similarity Score: 0.5741)

ID 510: Selection and design of turbine systems to withstand hydrogen pressure and temperatures (Similarity Score: 0.6026)

ID 646: Selection of turbine systems suitable for hydrogen applications (Similarity Score: 0.5843)

ID 126: Understanding the impact of hydrogen blending on heating systems (Similarity Score: 0.6033)

ID 296: Selection and design of vessels to withstand high hydrogen pressure (Similarity Score: 0.6196)

ID 363: Selection and design of hydrogen fuel tanks to withstand pressure and temperature variations (Similarity Score: 0.5773)

ID 489: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.5869)

ID 354: Knowledge of advanced control systems for combined-cycle power generation using hydrogen (Similarity Score: 0.6136)

ID 297: Selection and design of compressors for high-pressure hydrogen systems (Similarity Score: 0.6943)

ID 507: Selection and design of combustion systems to withstand hydrogen pressure and temperatures (Similarity Score: 0.5546)

ID 509: Selection and design of pumping systems for hydrogen environments (Similarity Score: 0.6369)

ID 645: Design of compression systems to operate under hydrogen pressure and temperature (Similarity Score: 0.6115)

ID 361: Selection and design of piping systems for hydrogen blending (Similarity Score: 0.5920)

ID 467: Selection and design of vessels for hydrogen pressure and temperature variations (Similarity Score: 0.5034)

## 6.1: Hydrogen Pressure Considerations

ID 332: Selection and design of vessels for high/low hydrogen pressure and hot/cold temperatures (Similarity Score: 0.5709)

ID 331: Selection and design of electrolyzers to withstand hydrogen pressure and temperatures (Similarity Score: 0.5055)

ID 440: Selection and design of vessels to withstand hydrogen pressure and temperature variations (Similarity Score: 0.5376)

ID 25: Consideration of pressure requirements in hydrogen fueling systems (Similarity Score: 0.7533)

ID 364: Selection and design of piping systems and fittings for hydrogen (Similarity Score: 0.5847)

ID 305: Selection and design of compression systems for high/low hydrogen pressure (Similarity Score: 0.6521)

ID 490: Selection and design of valves and seals for hydrogen conditions (Similarity Score: 0.5850)

ID 116: Appropriate selection and design of pressure vessels to withstand hydrogen pressure and temperatures (Similarity Score: 0.5875)

ID 441: Selection and design of compressors to handle hydrogen pressure and temperature extremes (Similarity Score: 0.5564)

ID 306: Selection and design of pumping systems for hot/cold hydrogen environments (Similarity Score: 0.5937)

ID 467: Selection and design of vessels for hydrogen pressure and temperature variations (Similarity Score: 0.5402)

ID 266: Selection and design of pressure vessels (Similarity Score: 0.4573)

ID 363: Selection and design of hydrogen fuel tanks to withstand pressure and temperature variations (Similarity Score: 0.6304)

ID 315: Selection and design of valves and seals for hydrogen systems (Similarity Score: 0.5813)

ID 507: Selection and design of combustion systems to withstand hydrogen pressure and temperatures (Similarity Score: 0.5700)

ID 423: Selection and design of air separation units for hydrogen pressure and temperature variations (Similarity Score: 0.5637)

ID 314: Selection and design of piping systems and fittings for hydrogen (Similarity Score: 0.5847)

ID 127: Understanding safety considerations for hydrogen blending in heating systems (Similarity Score: 0.6630)

ID 509: Selection and design of pumping systems for hydrogen environments (Similarity Score: 0.6240)

ID 424: Selection and design of vessels for hydrogen pressure and temperature variations (Similarity Score: 0.5402)

ID 510: Selection and design of turbine systems to withstand hydrogen pressure and temperatures (Similarity Score: 0.5941)

ID 496: Design considerations for well based on changes in carbon dioxide (CO2) pressure over its lifetime (Similarity Score: 0.4179)

ID 313: Selection and design of hydrogen fuel tanks to withstand pressure (Similarity Score: 0.6635)

ID 213: Design and selection of pressure vessels for hydrogen systems (Similarity Score: 0.6837)

ID 333: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.5965)

ID 171: Appropriate selection and design of ventilation systems for hydrogen blending (Similarity Score: 0.6098)

ID 115: Appropriate selection and design of electrolyzers for hydrogen pressure and temperatures (Similarity Score: 0.5829)

ID 426: Selection and design of valves and seals to withstand hydrogen pressure and temperatures (Similarity Score: 0.5974)

ID 425: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.5965)

ID 365: Selection and design of valves and seals to withstand hydrogen conditions (Similarity Score: 0.5768)

ID 489: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.5965)

ID 118: Appropriate selection and design of piping systems and fittings to withstand hydrogen pressure and temperatures (Similarity Score: 0.6153)

ID 469: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.5965)

ID 299: Selection and design of valves and seals to withstand high hydrogen pressure (Similarity Score: 0.6393)

ID 336: Selection of pressure vessels for hydrogen fueling systems (Similarity Score: 0.6134)

ID 487: Selection and design of vessels for hydrogen pressure and temperature variations (Similarity Score: 0.5402)

ID 634: Well design considerations based on regulatory environment and pressure changes over time (Similarity Score: 0.4940)

ID 125: Understanding the principles of hydrogen blending for heating (Similarity Score: 0.5256)

ID 296: Selection and design of vessels to withstand high hydrogen pressure (Similarity Score: 0.6237)

ID 119: Appropriate selection and design of valves and seals to withstand hydrogen pressure and temperatures (Similarity Score: 0.6032)

ID 442: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.5965)

ID 117: Appropriate selection and design of compressors to withstand hydrogen pressure and temperatures (Similarity Score: 0.5518)

ID 50: Appropriate selection of pressure vessels for hydrogen fueling (Similarity Score: 0.6233)

ID 470: Selection and design of valves and seals to withstand hydrogen pressure and temperatures (Similarity Score: 0.5974)

ID 297: Selection and design of compressors for high-pressure hydrogen systems (Similarity Score: 0.6848)

ID 51: Appropriate selection of piping systems and fittings for hydrogen fueling (Similarity Score: 0.6033)

ID 466: Selection and design of electrolyzers to withstand hydrogen pressure and temperature variations (Similarity Score: 0.5007)

ID 298: Selection and design of piping systems and fittings for high-pressure hydrogen (Similarity Score: 0.7105)

ID 126: Understanding the impact of hydrogen blending on heating systems (Similarity Score: 0.5957)

ID 334: Selection and design of valves and seals for hydrogen conditions (Similarity Score: 0.5850)

ID 52: Appropriate selection of valves and seals for hydrogen fueling systems (Similarity Score: 0.6100)

### 6.1.1: Comparative Pressure Analysis

ID 487: Selection and design of vessels for hydrogen pressure and temperature variations (Similarity Score: 0.5045)

ID 213: Design and selection of pressure vessels for hydrogen systems (Similarity Score: 0.6211)

ID 126: Understanding the impact of hydrogen blending on heating systems (Similarity Score: 0.5692)

ID 297: Selection and design of compressors for high-pressure hydrogen systems (Similarity Score: 0.6511)

ID 298: Selection and design of piping systems and fittings for high-pressure hydrogen (Similarity Score: 0.6639)

ID 313: Selection and design of hydrogen fuel tanks to withstand pressure (Similarity Score: 0.6045)

ID 509: Selection and design of pumping systems for hydrogen environments (Similarity Score: 0.5989)

ID 423: Selection and design of air separation units for hydrogen pressure and temperature variations (Similarity Score: 0.5555)

ID 467: Selection and design of vessels for hydrogen pressure and temperature variations (Similarity Score: 0.5045)

ID 424: Selection and design of vessels for hydrogen pressure and temperature variations (Similarity Score: 0.5045)

### 6.1.2: Impact of High Pressure on System Design

ID 634: Well design considerations based on regulatory environment and pressure changes over time (Similarity Score: 0.4772)

ID 126: Understanding the impact of hydrogen blending on heating systems (Similarity Score: 0.5686)

ID 296: Selection and design of vessels to withstand high hydrogen pressure (Similarity Score: 0.5831)

ID 496: Design considerations for well based on changes in carbon dioxide (CO2) pressure over its lifetime (Similarity Score: 0.4289)

ID 332: Selection and design of vessels for high/low hydrogen pressure and hot/cold temperatures (Similarity Score: 0.5346)

#### 6.1.2.1: Pipeline Sizing

ID 634: Well design considerations based on regulatory environment and pressure changes over time (Similarity Score: 0.4663)

ID 104: Understanding the impact of high pressure on material integrity (Similarity Score: 0.4035)

ID 496: Design considerations for well based on changes in carbon dioxide (CO2) pressure over its lifetime (Similarity Score: 0.3973)

#### 6.1.2.2: Pipeline Density

ID 104: Understanding the impact of high pressure on material integrity (Similarity Score: 0.4161)

#### 6.1.2.3: Pressure Management

ID 496: Design considerations for well based on changes in carbon dioxide (CO2) pressure over its lifetime (Similarity Score: 0.4324)

ID 634: Well design considerations based on regulatory environment and pressure changes over time (Similarity Score: 0.4801)

## 6.2: Materials Selection for Hydrogen Pipelines

ID 360: Selection and design of valves and fittings for hydrogen blending (Similarity Score: 0.5896)

ID 216: Design and selection of coatings for protection against hydrogen (Similarity Score: 0.5332)

ID 371: Selection and design of turbines for hydrogen environments (Similarity Score: 0.6103)

ID 52: Appropriate selection of valves and seals for hydrogen fueling systems (Similarity Score: 0.6158)

ID 357: Selection and design of compression systems for hydrogen blending (Similarity Score: 0.6359)

ID 332: Selection and design of vessels for high/low hydrogen pressure and hot/cold temperatures (Similarity Score: 0.5279)

ID 50: Appropriate selection of pressure vessels for hydrogen fueling (Similarity Score: 0.6349)

ID 100: Selection of coatings for hydrogen blending (Similarity Score: 0.5344)

ID 540: Selection and design of pumping systems (Similarity Score: 0.4605)

ID 358: Selection and design of turbines for hydrogen blending (Similarity Score: 0.5733)

ID 215: Design and selection of valves and seals (Similarity Score: 0.3734)

ID 333: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.6492)

ID 76: Selection of equipment designed to withstand hydrogen temperatures (Similarity Score: 0.5488)

ID 101: Selection of odorants for hydrogen blending (Similarity Score: 0.5506)

ID 214: Design and selection of piping systems and fittings (Similarity Score: 0.4831)

ID 541: Selection and design of turbine systems (Similarity Score: 0.4258)

ID 334: Selection and design of valves and seals for hydrogen conditions (Similarity Score: 0.5866)

ID 409: Selection of turbines that are compatible with hydrogen pressure (Similarity Score: 0.5141)

ID 363: Selection and design of hydrogen fuel tanks to withstand pressure and temperature variations (Similarity Score: 0.6271)

ID 548: Selection of materials for carbon capture systems (Similarity Score: 0.4817)

ID 545: Selection of materials for carbon dioxide (CO2) pipelines (Similarity Score: 0.6124)

ID 74: Appropriate selection of materials to withstand hydrogen temperatures (Similarity Score: 0.6450)

ID 223: Selection and design of production equipment for hydrogen systems (Similarity Score: 0.6587)

ID 51: Appropriate selection of piping systems and fittings for hydrogen fueling (Similarity Score: 0.6633)

ID 364: Selection and design of piping systems and fittings for hydrogen (Similarity Score: 0.6414)

ID 336: Selection of pressure vessels for hydrogen fueling systems (Similarity Score: 0.6123)

ID 596: Selection and design of piping systems and fittings for carbon dioxide (CO2) environments (Similarity Score: 0.4429)

ID 53: Appropriate selection of coatings and insulation for hydrogen fueling systems (Similarity Score: 0.6480)

ID 359: Selection and design of combustion systems for hydrogen blending (Similarity Score: 0.5859)

ID 47: Knowledge of appropriate materials for hydrogen systems (Similarity Score: 0.6676)

ID 70: Selection of appropriate odorants for hydrogen systems (Similarity Score: 0.5920)

ID 73: Appropriate selection of materials to withstand hydrogen pressure (Similarity Score: 0.6877)

ID 217: Design and selection of insulation to withstand hydrogen conditions (Similarity Score: 0.6212)

ID 547: Selection and design of carbon capture equipment (Similarity Score: 0.4227)

ID 365: Selection and design of valves and seals to withstand hydrogen conditions (Similarity Score: 0.5858)

ID 539: Selection and design of compression systems (Similarity Score: 0.4605)

ID 331: Selection and design of electrolyzers to withstand hydrogen pressure and temperatures (Similarity Score: 0.5522)

ID 361: Selection and design of piping systems for hydrogen blending (Similarity Score: 0.6346)

ID 213: Design and selection of pressure vessels for hydrogen systems (Similarity Score: 0.6594)

ID 560: Thermal/flow modeling for sequestered gas and liquid compositions (Similarity Score: 0.4317)

ID 546: Application of coatings to protect carbon dioxide (CO2) pipelines (Similarity Score: 0.4224)

ID 99: Selection of materials for hydrogen blending (Similarity Score: 0.6740)

ID 370: Selection and design of hydrogen compression systems (Similarity Score: 0.6385)

ID 306: Selection and design of pumping systems for hot/cold hydrogen environments (Similarity Score: 0.6104)

ID 298: Selection and design of piping systems and fittings for high-pressure hydrogen (Similarity Score: 0.7191)

ID 149: Knowledge of turbine systems used in hydrogen blending (Similarity Score: 0.5589)

ID 489: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.6492)

ID 270: Selection and design of piping systems and BOP equipment (Similarity Score: 0.4469)

ID 442: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.6492)

ID 490: Selection and design of valves and seals for hydrogen conditions (Similarity Score: 0.5866)

ID 304: Selection and design of combustion systems for hydrogen environments (Similarity Score: 0.6101)

ID 269: Selection and design of pumps (Similarity Score: 0.4046)

ID 305: Selection and design of compression systems for high/low hydrogen pressure (Similarity Score: 0.6743)

ID 441: Selection and design of compressors to handle hydrogen pressure and temperature extremes (Similarity Score: 0.5620)

ID 495: Selection of materials for well design considering carbon dioxide (CO2) injection properties and potential corrosive elements (Similarity Score: 0.4649)

ID 268: Selection and design of steam generators and boilers (Similarity Score: 0.3376)

ID 297: Selection and design of compressors for high-pressure hydrogen systems (Similarity Score: 0.7138)

ID 173: Appropriate selection and design of flame detection systems (Similarity Score: 0.4423)

ID 438: Selection of coatings for corrosion protection in carbon dioxide (CO2) pump systems (Similarity Score: 0.3927)

ID 172: Appropriate selection and design of leak detection systems (Similarity Score: 0.5391)

ID 488: Selection and design of compressors to withstand hydrogen pressure and temperatures (Similarity Score: 0.5991)

ID 437: Selection of materials for carbon dioxide (CO2) pump facility equipment (Similarity Score: 0.5445)

ID 487: Selection and design of vessels for hydrogen pressure and temperature variations (Similarity Score: 0.5479)

ID 646: Selection of turbine systems suitable for hydrogen applications (Similarity Score: 0.6219)

ID 468: Selection and design of compressors for hydrogen environments (Similarity Score: 0.6666)

ID 467: Selection and design of vessels for hydrogen pressure and temperature variations (Similarity Score: 0.5479)

ID 469: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.6492)

ID 466: Selection and design of electrolyzers to withstand hydrogen pressure and temperature variations (Similarity Score: 0.5434)

ID 11: Knowledge of key instrumentation for hydrogen pipelines (Similarity Score: 0.6073)

ID 296: Selection and design of vessels to withstand high hydrogen pressure (Similarity Score: 0.6444)

ID 299: Selection and design of valves and seals to withstand high hydrogen pressure (Similarity Score: 0.6152)

ID 13: Knowledge of systems associated with hydrogen pipeline transmission (Similarity Score: 0.6036)

ID 179: Selection of instrumentation systems for hydrogen pipelines (Similarity Score: 0.6646)

ID 571: PVT characterization specific to sequestered gas (Similarity Score: 0.4009)

ID 119: Appropriate selection and design of valves and seals to withstand hydrogen pressure and temperatures (Similarity Score: 0.5775)

ID 178: Appropriate selection of electrical equipment for pipeline transmission of gaseous hydrogen (Similarity Score: 0.6351)

ID 118: Appropriate selection and design of piping systems and fittings to withstand hydrogen pressure and temperatures (Similarity Score: 0.6328)

ID 470: Selection and design of valves and seals to withstand hydrogen pressure and temperatures (Similarity Score: 0.5696)

ID 572: Thermal and flow modeling for sequestered gas composition (Similarity Score: 0.4108)

ID 117: Appropriate selection and design of compressors to withstand hydrogen pressure and temperatures (Similarity Score: 0.5926)

ID 524: Knowledge of stationary equipment required for pipeline transmission of liquid carbon dioxide (CO2) (Similarity Score: 0.4333)

ID 440: Selection and design of vessels to withstand hydrogen pressure and temperature variations (Similarity Score: 0.5649)

ID 307: Selection and design of turbines to withstand hydrogen conditions (Similarity Score: 0.6038)

ID 313: Selection and design of hydrogen fuel tanks to withstand pressure (Similarity Score: 0.6513)

ID 425: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.6492)

ID 525: Knowledge of stationary equipment required for pipeline transmission of gaseous carbon dioxide (CO2) (Similarity Score: 0.4401)

ID 263: Knowledge of selecting materials that can withstand hydrogen pressure and temperatures (Similarity Score: 0.6179)

ID 168: Knowledge of appropriate materials for hydrogen blending (Similarity Score: 0.6366)

ID 314: Selection and design of piping systems and fittings for hydrogen (Similarity Score: 0.6414)

ID 507: Selection and design of combustion systems to withstand hydrogen pressure and temperatures (Similarity Score: 0.5949)

ID 600: Selection of appropriate materials for carbon dioxide (CO2) compression facility maintenance (Similarity Score: 0.4793)

ID 508: Selection and design of compression systems for hydrogen pressure and temperature variations (Similarity Score: 0.6035)

ID 424: Selection and design of vessels for hydrogen pressure and temperature variations (Similarity Score: 0.5479)

ID 509: Selection and design of pumping systems for hydrogen environments (Similarity Score: 0.6532)

ID 423: Selection and design of air separation units for hydrogen pressure and temperature variations (Similarity Score: 0.5511)

ID 225: Selection of protective coatings for hydrogen production (Similarity Score: 0.5464)

ID 224: Selection of materials for hydrogen production systems (Similarity Score: 0.7089)

ID 315: Selection and design of valves and seals for hydrogen systems (Similarity Score: 0.5786)

ID 632: Well design based on understanding of hydrogen injection stream properties (Similarity Score: 0.5966)

ID 115: Appropriate selection and design of electrolyzers for hydrogen pressure and temperatures (Similarity Score: 0.5962)

ID 601: Selection of appropriate coatings for carbon dioxide (CO2) compression facility maintenance (Similarity Score: 0.4139)

ID 510: Selection and design of turbine systems to withstand hydrogen pressure and temperatures (Similarity Score: 0.6163)

ID 27: Appropriate selection of stationary equipment for hydrogen pipeline transmission (Similarity Score: 0.6239)

ID 28: Appropriate selection of rotating equipment for hydrogen pipeline transmission (Similarity Score: 0.5774)

ID 267: Selection and design of valves (Similarity Score: 0.3451)

ID 266: Selection and design of pressure vessels (Similarity Score: 0.4860)

ID 426: Selection and design of valves and seals to withstand hydrogen pressure and temperatures (Similarity Score: 0.5696)

ID 171: Appropriate selection and design of ventilation systems for hydrogen blending (Similarity Score: 0.6369)

ID 505: Knowledge of well completion solutions tailored for hydrogen environments (Similarity Score: 0.5935)

ID 116: Appropriate selection and design of pressure vessels to withstand hydrogen pressure and temperatures (Similarity Score: 0.5928)

ID 265: Selection and design of compressors to withstand hydrogen pressure and temperatures (Similarity Score: 0.5991)

ID 534: Knowledge of materials suitable for withstanding hydrogen pressure and temperatures (Similarity Score: 0.6247)

### 6.2.1: Material Requirements for High-Pressure Hydrogen

ID 74: Appropriate selection of materials to withstand hydrogen temperatures (Similarity Score: 0.5857)

ID 47: Knowledge of appropriate materials for hydrogen systems (Similarity Score: 0.6546)

ID 116: Appropriate selection and design of pressure vessels to withstand hydrogen pressure and temperatures (Similarity Score: 0.5525)

ID 601: Selection of appropriate coatings for carbon dioxide (CO2) compression facility maintenance (Similarity Score: 0.3830)

ID 263: Knowledge of selecting materials that can withstand hydrogen pressure and temperatures (Similarity Score: 0.5644)

ID 214: Design and selection of piping systems and fittings (Similarity Score: 0.4529)

ID 51: Appropriate selection of piping systems and fittings for hydrogen fueling (Similarity Score: 0.6140)

ID 600: Selection of appropriate materials for carbon dioxide (CO2) compression facility maintenance (Similarity Score: 0.4409)

ID 119: Appropriate selection and design of valves and seals to withstand hydrogen pressure and temperatures (Similarity Score: 0.5493)

ID 534: Knowledge of materials suitable for withstanding hydrogen pressure and temperatures (Similarity Score: 0.5868)

ID 73: Appropriate selection of materials to withstand hydrogen pressure (Similarity Score: 0.6204)

ID 117: Appropriate selection and design of compressors to withstand hydrogen pressure and temperatures (Similarity Score: 0.5432)

ID 495: Selection of materials for well design considering carbon dioxide (CO2) injection properties and potential corrosive elements (Similarity Score: 0.4677)

ID 168: Knowledge of appropriate materials for hydrogen blending (Similarity Score: 0.6185)

ID 298: Selection and design of piping systems and fittings for high-pressure hydrogen (Similarity Score: 0.6587)

ID 118: Appropriate selection and design of piping systems and fittings to withstand hydrogen pressure and temperatures (Similarity Score: 0.6084)

#### 6.2.1.1: Compatibility with Hydrogen

ID 495: Selection of materials for well design considering carbon dioxide (CO2) injection properties and potential corrosive elements (Similarity Score: 0.4536)

ID 214: Design and selection of piping systems and fittings (Similarity Score: 0.4496)

ID 51: Appropriate selection of piping systems and fittings for hydrogen fueling (Similarity Score: 0.5992)

ID 47: Knowledge of appropriate materials for hydrogen systems (Similarity Score: 0.6301)

ID 116: Appropriate selection and design of pressure vessels to withstand hydrogen pressure and temperatures (Similarity Score: 0.5340)

ID 117: Appropriate selection and design of compressors to withstand hydrogen pressure and temperatures (Similarity Score: 0.5340)

ID 118: Appropriate selection and design of piping systems and fittings to withstand hydrogen pressure and temperatures (Similarity Score: 0.6056)

#### 6.2.1.2: Strength and Durability

ID 495: Selection of materials for well design considering carbon dioxide (CO2) injection properties and potential corrosive elements (Similarity Score: 0.4609)

ID 118: Appropriate selection and design of piping systems and fittings to withstand hydrogen pressure and temperatures (Similarity Score: 0.5872)

ID 47: Knowledge of appropriate materials for hydrogen systems (Similarity Score: 0.6524)

#### 6.2.1.3: Corrosion Resistance

ID 131: Knowledge of correct application techniques for protective coatings (Similarity Score: 0.3609)

ID 495: Selection of materials for well design considering carbon dioxide (CO2) injection properties and potential corrosive elements (Similarity Score: 0.4431)

ID 438: Selection of coatings for corrosion protection in carbon dioxide (CO2) pump systems (Similarity Score: 0.4263)

ID 534: Knowledge of materials suitable for withstanding hydrogen pressure and temperatures (Similarity Score: 0.5865)

ID 49: Knowledge of appropriate coatings for hydrogen systems (Similarity Score: 0.5708)

ID 47: Knowledge of appropriate materials for hydrogen systems (Similarity Score: 0.6426)

ID 263: Knowledge of selecting materials that can withstand hydrogen pressure and temperatures (Similarity Score: 0.5642)

ID 214: Design and selection of piping systems and fittings (Similarity Score: 0.4381)

ID 74: Appropriate selection of materials to withstand hydrogen temperatures (Similarity Score: 0.5826)

ID 119: Appropriate selection and design of valves and seals to withstand hydrogen pressure and temperatures (Similarity Score: 0.5593)

ID 601: Selection of appropriate coatings for carbon dioxide (CO2) compression facility maintenance (Similarity Score: 0.3850)

ID 116: Appropriate selection and design of pressure vessels to withstand hydrogen pressure and temperatures (Similarity Score: 0.5502)

ID 118: Appropriate selection and design of piping systems and fittings to withstand hydrogen pressure and temperatures (Similarity Score: 0.6119)

ID 132: Knowledge of maintaining coatings to ensure long-term protection (Similarity Score: 0.3265)

ID 53: Appropriate selection of coatings and insulation for hydrogen fueling systems (Similarity Score: 0.5888)

ID 153: Assess integrity of piping systems and fittings (Similarity Score: 0.4441)

### 6.2.2: Comparison with Natural Gas Pipeline Materials

ID 364: Selection and design of piping systems and fittings for hydrogen (Similarity Score: 0.5871)

ID 214: Design and selection of piping systems and fittings (Similarity Score: 0.4448)

ID 534: Knowledge of materials suitable for withstanding hydrogen pressure and temperatures (Similarity Score: 0.5888)

ID 267: Selection and design of valves (Similarity Score: 0.3371)

ID 47: Knowledge of appropriate materials for hydrogen systems (Similarity Score: 0.6311)

ID 314: Selection and design of piping systems and fittings for hydrogen (Similarity Score: 0.5871)

ID 424: Selection and design of vessels for hydrogen pressure and temperature variations (Similarity Score: 0.5086)

ID 467: Selection and design of vessels for hydrogen pressure and temperature variations (Similarity Score: 0.5086)

ID 263: Knowledge of selecting materials that can withstand hydrogen pressure and temperatures (Similarity Score: 0.5800)

ID 425: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.5877)

ID 600: Selection of appropriate materials for carbon dioxide (CO2) compression facility maintenance (Similarity Score: 0.4341)

ID 363: Selection and design of hydrogen fuel tanks to withstand pressure and temperature variations (Similarity Score: 0.5875)

ID 266: Selection and design of pressure vessels (Similarity Score: 0.4755)

ID 116: Appropriate selection and design of pressure vessels to withstand hydrogen pressure and temperatures (Similarity Score: 0.5540)

ID 440: Selection and design of vessels to withstand hydrogen pressure and temperature variations (Similarity Score: 0.5150)

ID 118: Appropriate selection and design of piping systems and fittings to withstand hydrogen pressure and temperatures (Similarity Score: 0.5923)

ID 442: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.5877)

ID 560: Thermal/flow modeling for sequestered gas and liquid compositions (Similarity Score: 0.4039)

ID 596: Selection and design of piping systems and fittings for carbon dioxide (CO2) environments (Similarity Score: 0.4094)

ID 495: Selection of materials for well design considering carbon dioxide (CO2) injection properties and potential corrosive elements (Similarity Score: 0.4829)

ID 469: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.5877)

ID 487: Selection and design of vessels for hydrogen pressure and temperature variations (Similarity Score: 0.5086)

ID 541: Selection and design of turbine systems (Similarity Score: 0.3975)

ID 117: Appropriate selection and design of compressors to withstand hydrogen pressure and temperatures (Similarity Score: 0.5334)

ID 270: Selection and design of piping systems and BOP equipment (Similarity Score: 0.4034)

ID 298: Selection and design of piping systems and fittings for high-pressure hydrogen (Similarity Score: 0.6587)

ID 50: Appropriate selection of pressure vessels for hydrogen fueling (Similarity Score: 0.5715)

ID 333: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.5877)

ID 489: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.5877)

ID 269: Selection and design of pumps (Similarity Score: 0.3837)

ID 51: Appropriate selection of piping systems and fittings for hydrogen fueling (Similarity Score: 0.6030)

#### 6.2.2.1: Steel vs. Composite Materials

ID 266: Selection and design of pressure vessels (Similarity Score: 0.4531)

ID 118: Appropriate selection and design of piping systems and fittings to withstand hydrogen pressure and temperatures (Similarity Score: 0.5805)

ID 495: Selection of materials for well design considering carbon dioxide (CO2) injection properties and potential corrosive elements (Similarity Score: 0.4472)

ID 116: Appropriate selection and design of pressure vessels to withstand hydrogen pressure and temperatures (Similarity Score: 0.5465)

#### 6.2.2.2: Material Costs and Availability

ID 495: Selection of materials for well design considering carbon dioxide (CO2) injection properties and potential corrosive elements (Similarity Score: 0.4562)

## 6.3: Pipeline Design and Construction

ID 314: Selection and design of piping systems and fittings for hydrogen (Similarity Score: 0.6203)

ID 297: Selection and design of compressors for high-pressure hydrogen systems (Similarity Score: 0.7194)

ID 214: Design and selection of piping systems and fittings (Similarity Score: 0.4445)

ID 296: Selection and design of vessels to withstand high hydrogen pressure (Similarity Score: 0.6425)

ID 299: Selection and design of valves and seals to withstand high hydrogen pressure (Similarity Score: 0.6062)

ID 313: Selection and design of hydrogen fuel tanks to withstand pressure (Similarity Score: 0.6101)

ID 298: Selection and design of piping systems and fittings for high-pressure hydrogen (Similarity Score: 0.7170)

ID 361: Selection and design of piping systems for hydrogen blending (Similarity Score: 0.6150)

ID 333: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.6103)

ID 632: Well design based on understanding of hydrogen injection stream properties (Similarity Score: 0.6165)

ID 334: Selection and design of valves and seals for hydrogen conditions (Similarity Score: 0.5606)

ID 265: Selection and design of compressors to withstand hydrogen pressure and temperatures (Similarity Score: 0.5484)

ID 360: Selection and design of valves and fittings for hydrogen blending (Similarity Score: 0.5687)

ID 266: Selection and design of pressure vessels (Similarity Score: 0.4676)

ID 307: Selection and design of turbines to withstand hydrogen conditions (Similarity Score: 0.5739)

ID 270: Selection and design of piping systems and BOP equipment (Similarity Score: 0.4390)

ID 306: Selection and design of pumping systems for hot/cold hydrogen environments (Similarity Score: 0.5933)

ID 268: Selection and design of steam generators and boilers (Similarity Score: 0.3372)

ID 332: Selection and design of vessels for high/low hydrogen pressure and hot/cold temperatures (Similarity Score: 0.5517)

ID 358: Selection and design of turbines for hydrogen blending (Similarity Score: 0.5795)

ID 269: Selection and design of pumps (Similarity Score: 0.3865)

ID 305: Selection and design of compression systems for high/low hydrogen pressure (Similarity Score: 0.6626)

ID 264: Selection and design of steam and combustion turbines for hydrogen systems (Similarity Score: 0.6195)

ID 315: Selection and design of valves and seals for hydrogen systems (Similarity Score: 0.5773)

ID 509: Selection and design of pumping systems for hydrogen environments (Similarity Score: 0.6458)

ID 487: Selection and design of vessels for hydrogen pressure and temperature variations (Similarity Score: 0.5258)

ID 11: Knowledge of key instrumentation for hydrogen pipelines (Similarity Score: 0.5641)

ID 213: Design and selection of pressure vessels for hydrogen systems (Similarity Score: 0.6743)

ID 182: Advanced knowledge of current hydrogen regulatory systems (Similarity Score: 0.6054)

ID 467: Selection and design of vessels for hydrogen pressure and temperature variations (Similarity Score: 0.5258)

ID 364: Selection and design of piping systems and fittings for hydrogen (Similarity Score: 0.6203)

ID 540: Selection and design of pumping systems (Similarity Score: 0.4969)

ID 468: Selection and design of compressors for hydrogen environments (Similarity Score: 0.6179)

ID 13: Knowledge of systems associated with hydrogen pipeline transmission (Similarity Score: 0.6234)

ID 469: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.6103)

ID 485: Design of power generation systems for hydrogen blending (Similarity Score: 0.6041)

ID 370: Selection and design of hydrogen compression systems (Similarity Score: 0.6433)

ID 425: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.6103)

ID 371: Selection and design of turbines for hydrogen environments (Similarity Score: 0.6008)

ID 488: Selection and design of compressors to withstand hydrogen pressure and temperatures (Similarity Score: 0.5484)

ID 489: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.6103)

ID 546: Application of coatings to protect carbon dioxide (CO2) pipelines (Similarity Score: 0.3907)

ID 541: Selection and design of turbine systems (Similarity Score: 0.4227)

ID 409: Selection of turbines that are compatible with hydrogen pressure (Similarity Score: 0.4814)

ID 171: Appropriate selection and design of ventilation systems for hydrogen blending (Similarity Score: 0.5867)

ID 490: Selection and design of valves and seals for hydrogen conditions (Similarity Score: 0.5606)

ID 442: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.6103)

ID 440: Selection and design of vessels to withstand hydrogen pressure and temperature variations (Similarity Score: 0.5202)

ID 423: Selection and design of air separation units for hydrogen pressure and temperature variations (Similarity Score: 0.5125)

ID 510: Selection and design of turbine systems to withstand hydrogen pressure and temperatures (Similarity Score: 0.5811)

ID 441: Selection and design of compressors to handle hydrogen pressure and temperature extremes (Similarity Score: 0.5381)

ID 505: Knowledge of well completion solutions tailored for hydrogen environments (Similarity Score: 0.5494)

ID 424: Selection and design of vessels for hydrogen pressure and temperature variations (Similarity Score: 0.5258)

### 6.3.1: Design Considerations for Hydrogen Pipelines

ID 541: Selection and design of turbine systems (Similarity Score: 0.4216)

ID 470: Selection and design of valves and seals to withstand hydrogen pressure and temperatures (Similarity Score: 0.5467)

ID 119: Appropriate selection and design of valves and seals to withstand hydrogen pressure and temperatures (Similarity Score: 0.5522)

ID 313: Selection and design of hydrogen fuel tanks to withstand pressure (Similarity Score: 0.6179)

ID 487: Selection and design of vessels for hydrogen pressure and temperature variations (Similarity Score: 0.5184)

ID 306: Selection and design of pumping systems for hot/cold hydrogen environments (Similarity Score: 0.5874)

ID 426: Selection and design of valves and seals to withstand hydrogen pressure and temperatures (Similarity Score: 0.5467)

ID 118: Appropriate selection and design of piping systems and fittings to withstand hydrogen pressure and temperatures (Similarity Score: 0.5739)

ID 488: Selection and design of compressors to withstand hydrogen pressure and temperatures (Similarity Score: 0.5482)

ID 489: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.6162)

ID 307: Selection and design of turbines to withstand hydrogen conditions (Similarity Score: 0.5492)

ID 270: Selection and design of piping systems and BOP equipment (Similarity Score: 0.4198)

ID 634: Well design considerations based on regulatory environment and pressure changes over time (Similarity Score: 0.4727)

ID 425: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.6162)

ID 334: Selection and design of valves and seals for hydrogen conditions (Similarity Score: 0.5743)

ID 214: Design and selection of piping systems and fittings (Similarity Score: 0.4525)

ID 315: Selection and design of valves and seals for hydrogen systems (Similarity Score: 0.5819)

ID 333: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.6162)

ID 13: Knowledge of systems associated with hydrogen pipeline transmission (Similarity Score: 0.5767)

ID 299: Selection and design of valves and seals to withstand high hydrogen pressure (Similarity Score: 0.6117)

ID 442: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.6162)

ID 116: Appropriate selection and design of pressure vessels to withstand hydrogen pressure and temperatures (Similarity Score: 0.5457)

ID 298: Selection and design of piping systems and fittings for high-pressure hydrogen (Similarity Score: 0.7278)

ID 632: Well design based on understanding of hydrogen injection stream properties (Similarity Score: 0.5699)

ID 490: Selection and design of valves and seals for hydrogen conditions (Similarity Score: 0.5743)

ID 424: Selection and design of vessels for hydrogen pressure and temperature variations (Similarity Score: 0.5184)

ID 467: Selection and design of vessels for hydrogen pressure and temperature variations (Similarity Score: 0.5184)

ID 540: Selection and design of pumping systems (Similarity Score: 0.5008)

ID 332: Selection and design of vessels for high/low hydrogen pressure and hot/cold temperatures (Similarity Score: 0.5731)

ID 314: Selection and design of piping systems and fittings for hydrogen (Similarity Score: 0.6222)

ID 468: Selection and design of compressors for hydrogen environments (Similarity Score: 0.6224)

ID 296: Selection and design of vessels to withstand high hydrogen pressure (Similarity Score: 0.6208)

ID 441: Selection and design of compressors to handle hydrogen pressure and temperature extremes (Similarity Score: 0.5555)

ID 117: Appropriate selection and design of compressors to withstand hydrogen pressure and temperatures (Similarity Score: 0.5508)

ID 297: Selection and design of compressors for high-pressure hydrogen systems (Similarity Score: 0.7148)

ID 469: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.6162)

ID 305: Selection and design of compression systems for high/low hydrogen pressure (Similarity Score: 0.6381)

ID 265: Selection and design of compressors to withstand hydrogen pressure and temperatures (Similarity Score: 0.5482)

ID 268: Selection and design of steam generators and boilers (Similarity Score: 0.3584)

ID 596: Selection and design of piping systems and fittings for carbon dioxide (CO2) environments (Similarity Score: 0.4185)

ID 361: Selection and design of piping systems for hydrogen blending (Similarity Score: 0.5942)

ID 267: Selection and design of valves (Similarity Score: 0.3559)

ID 371: Selection and design of turbines for hydrogen environments (Similarity Score: 0.5970)

ID 363: Selection and design of hydrogen fuel tanks to withstand pressure and temperature variations (Similarity Score: 0.5848)

ID 510: Selection and design of turbine systems to withstand hydrogen pressure and temperatures (Similarity Score: 0.5683)

ID 215: Design and selection of valves and seals (Similarity Score: 0.3666)

ID 358: Selection and design of turbines for hydrogen blending (Similarity Score: 0.5520)

ID 496: Design considerations for well based on changes in carbon dioxide (CO2) pressure over its lifetime (Similarity Score: 0.4059)

ID 364: Selection and design of piping systems and fittings for hydrogen (Similarity Score: 0.6222)

ID 266: Selection and design of pressure vessels (Similarity Score: 0.4910)

ID 264: Selection and design of steam and combustion turbines for hydrogen systems (Similarity Score: 0.6075)

ID 360: Selection and design of valves and fittings for hydrogen blending (Similarity Score: 0.5796)

ID 171: Appropriate selection and design of ventilation systems for hydrogen blending (Similarity Score: 0.6094)

ID 365: Selection and design of valves and seals to withstand hydrogen conditions (Similarity Score: 0.5576)

ID 213: Design and selection of pressure vessels for hydrogen systems (Similarity Score: 0.6668)

ID 269: Selection and design of pumps (Similarity Score: 0.4195)

ID 509: Selection and design of pumping systems for hydrogen environments (Similarity Score: 0.6488)

#### 6.3.1.1: Stress and Strain Analysis

ID 116: Appropriate selection and design of pressure vessels to withstand hydrogen pressure and temperatures (Similarity Score: 0.5479)

ID 117: Appropriate selection and design of compressors to withstand hydrogen pressure and temperatures (Similarity Score: 0.5511)

ID 299: Selection and design of valves and seals to withstand high hydrogen pressure (Similarity Score: 0.5987)

ID 363: Selection and design of hydrogen fuel tanks to withstand pressure and temperature variations (Similarity Score: 0.5837)

ID 267: Selection and design of valves (Similarity Score: 0.3227)

ID 297: Selection and design of compressors for high-pressure hydrogen systems (Similarity Score: 0.6553)

ID 296: Selection and design of vessels to withstand high hydrogen pressure (Similarity Score: 0.6075)

ID 332: Selection and design of vessels for high/low hydrogen pressure and hot/cold temperatures (Similarity Score: 0.5474)

ID 266: Selection and design of pressure vessels (Similarity Score: 0.4760)

ID 119: Appropriate selection and design of valves and seals to withstand hydrogen pressure and temperatures (Similarity Score: 0.5509)

ID 313: Selection and design of hydrogen fuel tanks to withstand pressure (Similarity Score: 0.6159)

ID 496: Design considerations for well based on changes in carbon dioxide (CO2) pressure over its lifetime (Similarity Score: 0.4249)

ID 213: Design and selection of pressure vessels for hydrogen systems (Similarity Score: 0.6162)

ID 634: Well design considerations based on regulatory environment and pressure changes over time (Similarity Score: 0.5003)

ID 441: Selection and design of compressors to handle hydrogen pressure and temperature extremes (Similarity Score: 0.5387)

#### 6.3.1.2: Leak Detection and Prevention

ID 360: Selection and design of valves and fittings for hydrogen blending (Similarity Score: 0.5460)

ID 332: Selection and design of vessels for high/low hydrogen pressure and hot/cold temperatures (Similarity Score: 0.5269)

ID 72: Understanding leak detection techniques involving odorants (Similarity Score: 0.4567)

ID 598: Selection and design of valves and seals for carbon dioxide (CO2) environments (Similarity Score: 0.4072)

ID 298: Selection and design of piping systems and fittings for high-pressure hydrogen (Similarity Score: 0.6828)

ID 364: Selection and design of piping systems and fittings for hydrogen (Similarity Score: 0.5911)

ID 267: Selection and design of valves (Similarity Score: 0.3382)

ID 172: Appropriate selection and design of leak detection systems (Similarity Score: 0.5858)

ID 214: Design and selection of piping systems and fittings (Similarity Score: 0.4422)

ID 314: Selection and design of piping systems and fittings for hydrogen (Similarity Score: 0.5911)

ID 596: Selection and design of piping systems and fittings for carbon dioxide (CO2) environments (Similarity Score: 0.4339)

ID 546: Application of coatings to protect carbon dioxide (CO2) pipelines (Similarity Score: 0.3932)

ID 171: Appropriate selection and design of ventilation systems for hydrogen blending (Similarity Score: 0.5744)

ID 215: Design and selection of valves and seals (Similarity Score: 0.3674)

#### 6.3.1.3: Thermal Expansion and Contraction

ID 267: Selection and design of valves (Similarity Score: 0.3207)

ID 467: Selection and design of vessels for hydrogen pressure and temperature variations (Similarity Score: 0.4939)

ID 297: Selection and design of compressors for high-pressure hydrogen systems (Similarity Score: 0.6710)

ID 171: Appropriate selection and design of ventilation systems for hydrogen blending (Similarity Score: 0.5846)

ID 424: Selection and design of vessels for hydrogen pressure and temperature variations (Similarity Score: 0.4939)

ID 540: Selection and design of pumping systems (Similarity Score: 0.4674)

ID 298: Selection and design of piping systems and fittings for high-pressure hydrogen (Similarity Score: 0.6749)

ID 332: Selection and design of vessels for high/low hydrogen pressure and hot/cold temperatures (Similarity Score: 0.5165)

ID 487: Selection and design of vessels for hydrogen pressure and temperature variations (Similarity Score: 0.4939)

ID 509: Selection and design of pumping systems for hydrogen environments (Similarity Score: 0.6063)

ID 13: Knowledge of systems associated with hydrogen pipeline transmission (Similarity Score: 0.5691)

ID 441: Selection and design of compressors to handle hydrogen pressure and temperature extremes (Similarity Score: 0.5363)

ID 541: Selection and design of turbine systems (Similarity Score: 0.4123)

ID 268: Selection and design of steam generators and boilers (Similarity Score: 0.3503)

### 6.3.2: Construction Best Practices

ID 315: Selection and design of valves and seals for hydrogen systems (Similarity Score: 0.5706)

ID 490: Selection and design of valves and seals for hydrogen conditions (Similarity Score: 0.5588)

ID 441: Selection and design of compressors to handle hydrogen pressure and temperature extremes (Similarity Score: 0.5172)

ID 314: Selection and design of piping systems and fittings for hydrogen (Similarity Score: 0.5929)

ID 213: Design and selection of pressure vessels for hydrogen systems (Similarity Score: 0.6274)

ID 505: Knowledge of well completion solutions tailored for hydrogen environments (Similarity Score: 0.5603)

ID 361: Selection and design of piping systems for hydrogen blending (Similarity Score: 0.5790)

ID 509: Selection and design of pumping systems for hydrogen environments (Similarity Score: 0.6272)

ID 424: Selection and design of vessels for hydrogen pressure and temperature variations (Similarity Score: 0.5004)

ID 214: Design and selection of piping systems and fittings (Similarity Score: 0.4418)

ID 307: Selection and design of turbines to withstand hydrogen conditions (Similarity Score: 0.5448)

ID 425: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.5925)

ID 442: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.5925)

ID 13: Knowledge of systems associated with hydrogen pipeline transmission (Similarity Score: 0.5820)

ID 467: Selection and design of vessels for hydrogen pressure and temperature variations (Similarity Score: 0.5004)

ID 360: Selection and design of valves and fittings for hydrogen blending (Similarity Score: 0.5470)

ID 546: Application of coatings to protect carbon dioxide (CO2) pipelines (Similarity Score: 0.4187)

ID 269: Selection and design of pumps (Similarity Score: 0.3819)

ID 489: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.5925)

ID 270: Selection and design of piping systems and BOP equipment (Similarity Score: 0.4363)

ID 268: Selection and design of steam generators and boilers (Similarity Score: 0.3317)

ID 173: Appropriate selection and design of flame detection systems (Similarity Score: 0.4057)

ID 153: Assess integrity of piping systems and fittings (Similarity Score: 0.4458)

ID 371: Selection and design of turbines for hydrogen environments (Similarity Score: 0.5899)

ID 596: Selection and design of piping systems and fittings for carbon dioxide (CO2) environments (Similarity Score: 0.4220)

ID 334: Selection and design of valves and seals for hydrogen conditions (Similarity Score: 0.5588)

ID 487: Selection and design of vessels for hydrogen pressure and temperature variations (Similarity Score: 0.5004)

ID 299: Selection and design of valves and seals to withstand high hydrogen pressure (Similarity Score: 0.5921)

ID 469: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.5925)

ID 541: Selection and design of turbine systems (Similarity Score: 0.4203)

ID 370: Selection and design of hydrogen compression systems (Similarity Score: 0.6082)

ID 358: Selection and design of turbines for hydrogen blending (Similarity Score: 0.5433)

ID 171: Appropriate selection and design of ventilation systems for hydrogen blending (Similarity Score: 0.5802)

ID 332: Selection and design of vessels for high/low hydrogen pressure and hot/cold temperatures (Similarity Score: 0.5180)

ID 540: Selection and design of pumping systems (Similarity Score: 0.4799)

ID 364: Selection and design of piping systems and fittings for hydrogen (Similarity Score: 0.5929)

ID 296: Selection and design of vessels to withstand high hydrogen pressure (Similarity Score: 0.6024)

ID 266: Selection and design of pressure vessels (Similarity Score: 0.4663)

ID 333: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.5925)

ID 298: Selection and design of piping systems and fittings for high-pressure hydrogen (Similarity Score: 0.6720)

ID 297: Selection and design of compressors for high-pressure hydrogen systems (Similarity Score: 0.6590)

ID 632: Well design based on understanding of hydrogen injection stream properties (Similarity Score: 0.5796)

#### 6.3.2.1: Welding and Jointing Techniques

ID 469: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.5942)

ID 173: Appropriate selection and design of flame detection systems (Similarity Score: 0.4043)

ID 298: Selection and design of piping systems and fittings for high-pressure hydrogen (Similarity Score: 0.6636)

ID 268: Selection and design of steam generators and boilers (Similarity Score: 0.3226)

ID 153: Assess integrity of piping systems and fittings (Similarity Score: 0.4416)

ID 270: Selection and design of piping systems and BOP equipment (Similarity Score: 0.4200)

ID 442: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.5942)

ID 489: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.5942)

ID 244: Understanding welding procedures for hydrogen systems (Similarity Score: 0.6686)

ID 245: Techniques for welding in hydrogen environments (Similarity Score: 0.6150)

ID 425: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.5942)

ID 214: Design and selection of piping systems and fittings (Similarity Score: 0.4583)

ID 546: Application of coatings to protect carbon dioxide (CO2) pipelines (Similarity Score: 0.3998)

ID 361: Selection and design of piping systems for hydrogen blending (Similarity Score: 0.5828)

ID 333: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.5942)

ID 406: Understanding welding processes that are compatible with hydrogen (Similarity Score: 0.5801)

ID 314: Selection and design of piping systems and fittings for hydrogen (Similarity Score: 0.5967)

ID 407: Understanding the procedures necessary for welding in hydrogen environments (Similarity Score: 0.6284)

ID 541: Selection and design of turbine systems (Similarity Score: 0.3839)

ID 360: Selection and design of valves and fittings for hydrogen blending (Similarity Score: 0.5487)

ID 358: Selection and design of turbines for hydrogen blending (Similarity Score: 0.5280)

ID 596: Selection and design of piping systems and fittings for carbon dioxide (CO2) environments (Similarity Score: 0.4521)

ID 364: Selection and design of piping systems and fittings for hydrogen (Similarity Score: 0.5967)

#### 6.3.2.2: Installation and Testing Procedures

ID 13: Knowledge of systems associated with hydrogen pipeline transmission (Similarity Score: 0.5860)

ID 365: Selection and design of valves and seals to withstand hydrogen conditions (Similarity Score: 0.5630)

ID 267: Selection and design of valves (Similarity Score: 0.3428)

ID 171: Appropriate selection and design of ventilation systems for hydrogen blending (Similarity Score: 0.5774)

ID 315: Selection and design of valves and seals for hydrogen systems (Similarity Score: 0.5908)

ID 299: Selection and design of valves and seals to withstand high hydrogen pressure (Similarity Score: 0.6007)

ID 173: Appropriate selection and design of flame detection systems (Similarity Score: 0.4052)

ID 425: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.6135)

ID 490: Selection and design of valves and seals for hydrogen conditions (Similarity Score: 0.5778)

ID 270: Selection and design of piping systems and BOP equipment (Similarity Score: 0.4339)

ID 298: Selection and design of piping systems and fittings for high-pressure hydrogen (Similarity Score: 0.6904)

ID 489: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.6135)

ID 153: Assess integrity of piping systems and fittings (Similarity Score: 0.4574)

ID 297: Selection and design of compressors for high-pressure hydrogen systems (Similarity Score: 0.6481)

ID 632: Well design based on understanding of hydrogen injection stream properties (Similarity Score: 0.5713)

ID 334: Selection and design of valves and seals for hydrogen conditions (Similarity Score: 0.5778)

ID 540: Selection and design of pumping systems (Similarity Score: 0.4714)

ID 541: Selection and design of turbine systems (Similarity Score: 0.4055)

ID 470: Selection and design of valves and seals to withstand hydrogen pressure and temperatures (Similarity Score: 0.5455)

ID 469: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.6135)

ID 333: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.6135)

ID 598: Selection and design of valves and seals for carbon dioxide (CO2) environments (Similarity Score: 0.4146)

ID 546: Application of coatings to protect carbon dioxide (CO2) pipelines (Similarity Score: 0.3991)

ID 442: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.6135)

ID 371: Selection and design of turbines for hydrogen environments (Similarity Score: 0.5722)

ID 364: Selection and design of piping systems and fittings for hydrogen (Similarity Score: 0.6147)

ID 214: Design and selection of piping systems and fittings (Similarity Score: 0.4694)

ID 426: Selection and design of valves and seals to withstand hydrogen pressure and temperatures (Similarity Score: 0.5455)

ID 213: Design and selection of pressure vessels for hydrogen systems (Similarity Score: 0.6154)

ID 361: Selection and design of piping systems for hydrogen blending (Similarity Score: 0.5784)

ID 215: Design and selection of valves and seals (Similarity Score: 0.3831)

ID 509: Selection and design of pumping systems for hydrogen environments (Similarity Score: 0.6240)

ID 314: Selection and design of piping systems and fittings for hydrogen (Similarity Score: 0.6147)

ID 596: Selection and design of piping systems and fittings for carbon dioxide (CO2) environments (Similarity Score: 0.4425)

ID 441: Selection and design of compressors to handle hydrogen pressure and temperature extremes (Similarity Score: 0.5175)

ID 360: Selection and design of valves and fittings for hydrogen blending (Similarity Score: 0.5677)

## 6.4: Safety and Operational Planning

ID 171: Appropriate selection and design of ventilation systems for hydrogen blending (Similarity Score: 0.5990)

ID 561: In-depth understanding of hydrogen safety legislation (Similarity Score: 0.5986)

ID 125: Understanding the principles of hydrogen blending for heating (Similarity Score: 0.5341)

ID 364: Selection and design of piping systems and fittings for hydrogen (Similarity Score: 0.6255)

ID 358: Selection and design of turbines for hydrogen blending (Similarity Score: 0.5268)

ID 146: Instrumented system analysis for hydrogen processes (Similarity Score: 0.6317)

ID 487: Selection and design of vessels for hydrogen pressure and temperature variations (Similarity Score: 0.5125)

ID 127: Understanding safety considerations for hydrogen blending in heating systems (Similarity Score: 0.6713)

ID 238: Keeping up-to-date with changes in hydrogen standards (Similarity Score: 0.5671)

ID 123: Continuous improvement of hydrogen fueling station operations (Similarity Score: 0.5803)

ID 541: Selection and design of turbine systems (Similarity Score: 0.3918)

ID 285: Knowledge of instrumentation systems for hydrogen fueling (Similarity Score: 0.6472)

ID 121: Management of hydrogen fueling stations (Similarity Score: 0.6577)

ID 208: Understanding fueling standards for hydrogen products (Similarity Score: 0.6197)

ID 49: Knowledge of appropriate coatings for hydrogen systems (Similarity Score: 0.5667)

ID 646: Selection of turbine systems suitable for hydrogen applications (Similarity Score: 0.5892)

ID 244: Understanding welding procedures for hydrogen systems (Similarity Score: 0.6091)

ID 1: Experience with hydrogen fueling equipment and systems (Similarity Score: 0.6624)

ID 632: Well design based on understanding of hydrogen injection stream properties (Similarity Score: 0.5629)

ID 506: Application of well completion techniques to ensure safe hydrogen extraction (Similarity Score: 0.5415)

ID 334: Selection and design of valves and seals for hydrogen conditions (Similarity Score: 0.6098)

ID 572: Thermal and flow modeling for sequestered gas composition (Similarity Score: 0.4214)

ID 119: Appropriate selection and design of valves and seals to withstand hydrogen pressure and temperatures (Similarity Score: 0.5858)

ID 470: Selection and design of valves and seals to withstand hydrogen pressure and temperatures (Similarity Score: 0.6017)

ID 105: Understanding the risk of hydrogen embrittlement in high pressure environments (Similarity Score: 0.6776)

ID 128: Understanding efficiency and performance factors when using hydrogen blending for heating (Similarity Score: 0.5853)

ID 507: Selection and design of combustion systems to withstand hydrogen pressure and temperatures (Similarity Score: 0.6109)

ID 359: Selection and design of combustion systems for hydrogen blending (Similarity Score: 0.5919)

ID 488: Selection and design of compressors to withstand hydrogen pressure and temperatures (Similarity Score: 0.5467)

ID 152: Assess integrity of vessels and tanks for hydrogen pressure and temperatures (Similarity Score: 0.5961)

ID 509: Selection and design of pumping systems for hydrogen environments (Similarity Score: 0.6306)

ID 50: Appropriate selection of pressure vessels for hydrogen fueling (Similarity Score: 0.5966)

ID 370: Selection and design of hydrogen compression systems (Similarity Score: 0.6123)

ID 354: Knowledge of advanced control systems for combined-cycle power generation using hydrogen (Similarity Score: 0.6451)

ID 371: Selection and design of turbines for hydrogen environments (Similarity Score: 0.5798)

ID 360: Selection and design of valves and fittings for hydrogen blending (Similarity Score: 0.5582)

ID 213: Design and selection of pressure vessels for hydrogen systems (Similarity Score: 0.6703)

ID 77: Maintenance of materials and equipment used in high-pressure hydrogen systems (Similarity Score: 0.6614)

ID 265: Selection and design of compressors to withstand hydrogen pressure and temperatures (Similarity Score: 0.5467)

ID 361: Selection and design of piping systems for hydrogen blending (Similarity Score: 0.6075)

ID 264: Selection and design of steam and combustion turbines for hydrogen systems (Similarity Score: 0.6293)

ID 216: Design and selection of coatings for protection against hydrogen (Similarity Score: 0.5365)

ID 560: Thermal/flow modeling for sequestered gas and liquid compositions (Similarity Score: 0.4280)

ID 169: Knowledge of seals compatible with hydrogen blending (Similarity Score: 0.5170)

ID 510: Selection and design of turbine systems to withstand hydrogen pressure and temperatures (Similarity Score: 0.6179)

ID 505: Knowledge of well completion solutions tailored for hydrogen environments (Similarity Score: 0.5777)

ID 53: Appropriate selection of coatings and insulation for hydrogen fueling systems (Similarity Score: 0.5877)

ID 239: Keeping up-to-date with changes in hydrogen codes (Similarity Score: 0.5105)

ID 490: Selection and design of valves and seals for hydrogen conditions (Similarity Score: 0.6098)

ID 52: Appropriate selection of valves and seals for hydrogen fueling systems (Similarity Score: 0.6281)

ID 363: Selection and design of hydrogen fuel tanks to withstand pressure and temperature variations (Similarity Score: 0.5923)

ID 270: Selection and design of piping systems and BOP equipment (Similarity Score: 0.4318)

ID 51: Appropriate selection of piping systems and fittings for hydrogen fueling (Similarity Score: 0.6142)

ID 385: Knowledge of gaseous hydrogen storage systems (Similarity Score: 0.6648)

ID 89: Understanding operational adjustments needed for hydrogen-blending (Similarity Score: 0.5882)

ID 365: Selection and design of valves and seals to withstand hydrogen conditions (Similarity Score: 0.6154)

ID 153: Assess integrity of piping systems and fittings (Similarity Score: 0.4450)

ID 629: Knowledge of climate targets and their implications for hydrogen (Similarity Score: 0.5645)

ID 336: Selection of pressure vessels for hydrogen fueling systems (Similarity Score: 0.5970)

ID 489: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.6273)

ID 126: Understanding the impact of hydrogen blending on heating systems (Similarity Score: 0.5944)

ID 571: PVT characterization specific to sequestered gas (Similarity Score: 0.4087)

ID 118: Appropriate selection and design of piping systems and fittings to withstand hydrogen pressure and temperatures (Similarity Score: 0.5859)

ID 31: Knowledge of hydrogen refueling systems (Similarity Score: 0.6512)

ID 315: Selection and design of valves and seals for hydrogen systems (Similarity Score: 0.6235)

ID 117: Appropriate selection and design of compressors to withstand hydrogen pressure and temperatures (Similarity Score: 0.5352)

ID 33: Safety procedures during hydrogen refueling (Similarity Score: 0.6642)

ID 443: Selection and design of valves and seals to maintain integrity under hydrogen conditions (Similarity Score: 0.5791)

ID 300: Knowledge of key instrumentation for ventilation systems in hydrogen blending (Similarity Score: 0.5821)

ID 442: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.6273)

ID 415: Staying informed about updates in hydrogen technology (Similarity Score: 0.5699)

ID 13: Knowledge of systems associated with hydrogen pipeline transmission (Similarity Score: 0.6074)

ID 402: Advanced knowledge of regulatory systems governing hydrogen (Similarity Score: 0.6455)

ID 299: Selection and design of valves and seals to withstand high hydrogen pressure (Similarity Score: 0.6566)

ID 183: Advanced knowledge of evolving standards in hydrogen industry (Similarity Score: 0.5932)

ID 11: Knowledge of key instrumentation for hydrogen pipelines (Similarity Score: 0.5758)

ID 562: Application of hydrogen safety codes and standards in operations (Similarity Score: 0.6644)

ID 403: In-depth knowledge of standards for hydrogen infrastructure and operations (Similarity Score: 0.5916)

ID 149: Knowledge of turbine systems used in hydrogen blending (Similarity Score: 0.5829)

ID 423: Selection and design of air separation units for hydrogen pressure and temperature variations (Similarity Score: 0.5316)

ID 304: Selection and design of combustion systems for hydrogen environments (Similarity Score: 0.6295)

ID 426: Selection and design of valves and seals to withstand hydrogen pressure and temperatures (Similarity Score: 0.6017)

ID 115: Appropriate selection and design of electrolyzers for hydrogen pressure and temperatures (Similarity Score: 0.5435)

ID 312: Techniques for implementing cathodic protection in hydrogen systems (Similarity Score: 0.5527)

ID 425: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.6273)

ID 307: Selection and design of turbines to withstand hydrogen conditions (Similarity Score: 0.5845)

ID 25: Consideration of pressure requirements in hydrogen fueling systems (Similarity Score: 0.6809)

ID 313: Selection and design of hydrogen fuel tanks to withstand pressure (Similarity Score: 0.6320)

ID 439: Selection of seals for carbon dioxide (CO2) pump systems to ensure system integrity (Similarity Score: 0.4430)

ID 440: Selection and design of vessels to withstand hydrogen pressure and temperature variations (Similarity Score: 0.5343)

ID 306: Selection and design of pumping systems for hot/cold hydrogen environments (Similarity Score: 0.5937)

ID 424: Selection and design of vessels for hydrogen pressure and temperature variations (Similarity Score: 0.5125)

ID 305: Selection and design of compression systems for high/low hydrogen pressure (Similarity Score: 0.6512)

ID 314: Selection and design of piping systems and fittings for hydrogen (Similarity Score: 0.6255)

ID 116: Appropriate selection and design of pressure vessels to withstand hydrogen pressure and temperatures (Similarity Score: 0.5601)

ID 441: Selection and design of compressors to handle hydrogen pressure and temperature extremes (Similarity Score: 0.5268)

ID 397: Knowledge of control systems for hydrogen blending in power generation (Similarity Score: 0.6093)

ID 395: Understanding best environmental practices in hydrogen operations (Similarity Score: 0.6975)

ID 223: Selection and design of production equipment for hydrogen systems (Similarity Score: 0.6496)

ID 467: Selection and design of vessels for hydrogen pressure and temperature variations (Similarity Score: 0.5125)

ID 333: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.6273)

ID 469: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.6273)

ID 237: Keeping up-to-date with changes in hydrogen regulations (Similarity Score: 0.5819)

ID 296: Selection and design of vessels to withstand high hydrogen pressure (Similarity Score: 0.6410)

ID 182: Advanced knowledge of current hydrogen regulatory systems (Similarity Score: 0.6583)

ID 332: Selection and design of vessels for high/low hydrogen pressure and hot/cold temperatures (Similarity Score: 0.5445)

ID 392: Knowledge of operational adjustments for hydrogen blending (Similarity Score: 0.6285)

ID 331: Selection and design of electrolyzers to withstand hydrogen pressure and temperatures (Similarity Score: 0.5164)

ID 150: Knowledge of combustion systems in hydrogen blending (Similarity Score: 0.5917)

ID 48: Knowledge of appropriate seals for hydrogen systems (Similarity Score: 0.6503)

ID 297: Selection and design of compressors for high-pressure hydrogen systems (Similarity Score: 0.6752)

ID 91: Advanced understanding of general safety protocols for hydrogen (Similarity Score: 0.6978)

ID 236: Staying current with advances in hydrogen technology (Similarity Score: 0.5770)

ID 93: Advanced understanding of personal protective equipment (PPE) for hydrogen environments (Similarity Score: 0.4800)

ID 246: Ensuring quality and safety of welds in hydrogen systems (Similarity Score: 0.6291)

ID 298: Selection and design of piping systems and fittings for high-pressure hydrogen (Similarity Score: 0.7131)

ID 466: Selection and design of electrolyzers to withstand hydrogen pressure and temperature variations (Similarity Score: 0.4980)

### 6.4.1: Safety Protocols for High-Pressure Hydrogen

ID 61: Understanding general safety protocols for working with hydrogen (Similarity Score: 0.7502)

ID 314: Selection and design of piping systems and fittings for hydrogen (Similarity Score: 0.6325)

ID 361: Selection and design of piping systems for hydrogen blending (Similarity Score: 0.5961)

ID 466: Selection and design of electrolyzers to withstand hydrogen pressure and temperature variations (Similarity Score: 0.4933)

ID 332: Selection and design of vessels for high/low hydrogen pressure and hot/cold temperatures (Similarity Score: 0.5472)

ID 440: Selection and design of vessels to withstand hydrogen pressure and temperature variations (Similarity Score: 0.5201)

ID 424: Selection and design of vessels for hydrogen pressure and temperature variations (Similarity Score: 0.5065)

ID 52: Appropriate selection of valves and seals for hydrogen fueling systems (Similarity Score: 0.6345)

ID 51: Appropriate selection of piping systems and fittings for hydrogen fueling (Similarity Score: 0.6393)

ID 126: Understanding the impact of hydrogen blending on heating systems (Similarity Score: 0.5483)

ID 11: Knowledge of key instrumentation for hydrogen pipelines (Similarity Score: 0.5843)

ID 333: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.6350)

ID 469: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.6350)

ID 116: Appropriate selection and design of pressure vessels to withstand hydrogen pressure and temperatures (Similarity Score: 0.5683)

ID 127: Understanding safety considerations for hydrogen blending in heating systems (Similarity Score: 0.6714)

ID 425: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.6350)

ID 505: Knowledge of well completion solutions tailored for hydrogen environments (Similarity Score: 0.5469)

ID 426: Selection and design of valves and seals to withstand hydrogen pressure and temperatures (Similarity Score: 0.5976)

ID 1: Experience with hydrogen fueling equipment and systems (Similarity Score: 0.6304)

ID 470: Selection and design of valves and seals to withstand hydrogen pressure and temperatures (Similarity Score: 0.5976)

ID 395: Understanding best environmental practices in hydrogen operations (Similarity Score: 0.6562)

ID 571: PVT characterization specific to sequestered gas (Similarity Score: 0.3990)

ID 115: Appropriate selection and design of electrolyzers for hydrogen pressure and temperatures (Similarity Score: 0.5493)

ID 507: Selection and design of combustion systems to withstand hydrogen pressure and temperatures (Similarity Score: 0.5733)

ID 296: Selection and design of vessels to withstand high hydrogen pressure (Similarity Score: 0.6021)

ID 285: Knowledge of instrumentation systems for hydrogen fueling (Similarity Score: 0.6257)

ID 331: Selection and design of electrolyzers to withstand hydrogen pressure and temperatures (Similarity Score: 0.5088)

ID 441: Selection and design of compressors to handle hydrogen pressure and temperature extremes (Similarity Score: 0.5247)

ID 561: In-depth understanding of hydrogen safety legislation (Similarity Score: 0.6211)

ID 119: Appropriate selection and design of valves and seals to withstand hydrogen pressure and temperatures (Similarity Score: 0.5950)

ID 118: Appropriate selection and design of piping systems and fittings to withstand hydrogen pressure and temperatures (Similarity Score: 0.6042)

ID 50: Appropriate selection of pressure vessels for hydrogen fueling (Similarity Score: 0.6025)

ID 33: Safety procedures during hydrogen refueling (Similarity Score: 0.6506)

ID 299: Selection and design of valves and seals to withstand high hydrogen pressure (Similarity Score: 0.6351)

ID 13: Knowledge of systems associated with hydrogen pipeline transmission (Similarity Score: 0.5672)

ID 300: Knowledge of key instrumentation for ventilation systems in hydrogen blending (Similarity Score: 0.5799)

ID 443: Selection and design of valves and seals to maintain integrity under hydrogen conditions (Similarity Score: 0.5761)

ID 246: Ensuring quality and safety of welds in hydrogen systems (Similarity Score: 0.6199)

ID 365: Selection and design of valves and seals to withstand hydrogen conditions (Similarity Score: 0.6025)

ID 91: Advanced understanding of general safety protocols for hydrogen (Similarity Score: 0.7615)

ID 489: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.6350)

ID 48: Knowledge of appropriate seals for hydrogen systems (Similarity Score: 0.6641)

ID 117: Appropriate selection and design of compressors to withstand hydrogen pressure and temperatures (Similarity Score: 0.5353)

ID 415: Staying informed about updates in hydrogen technology (Similarity Score: 0.5367)

ID 315: Selection and design of valves and seals for hydrogen systems (Similarity Score: 0.6106)

ID 487: Selection and design of vessels for hydrogen pressure and temperature variations (Similarity Score: 0.5065)

ID 562: Application of hydrogen safety codes and standards in operations (Similarity Score: 0.6634)

ID 394: Understanding regulations for hydrogen infrastructure and operations (Similarity Score: 0.6003)

ID 467: Selection and design of vessels for hydrogen pressure and temperature variations (Similarity Score: 0.5065)

ID 364: Selection and design of piping systems and fittings for hydrogen (Similarity Score: 0.6325)

ID 442: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.6350)

ID 392: Knowledge of operational adjustments for hydrogen blending (Similarity Score: 0.5931)

ID 298: Selection and design of piping systems and fittings for high-pressure hydrogen (Similarity Score: 0.7185)

ID 360: Selection and design of valves and fittings for hydrogen blending (Similarity Score: 0.5634)

ID 490: Selection and design of valves and seals for hydrogen conditions (Similarity Score: 0.6051)

ID 336: Selection of pressure vessels for hydrogen fueling systems (Similarity Score: 0.5890)

ID 334: Selection and design of valves and seals for hydrogen conditions (Similarity Score: 0.6051)

ID 137: Knowledge of relevant codes for hydrogen fueling station equipment (Similarity Score: 0.5961)

ID 208: Understanding fueling standards for hydrogen products (Similarity Score: 0.6195)

ID 239: Keeping up-to-date with changes in hydrogen codes (Similarity Score: 0.5076)

ID 213: Design and selection of pressure vessels for hydrogen systems (Similarity Score: 0.6473)

ID 182: Advanced knowledge of current hydrogen regulatory systems (Similarity Score: 0.6132)

ID 238: Keeping up-to-date with changes in hydrogen standards (Similarity Score: 0.5611)

ID 169: Knowledge of seals compatible with hydrogen blending (Similarity Score: 0.5189)

ID 237: Keeping up-to-date with changes in hydrogen regulations (Similarity Score: 0.5799)

ID 171: Appropriate selection and design of ventilation systems for hydrogen blending (Similarity Score: 0.5920)

ID 214: Design and selection of piping systems and fittings (Similarity Score: 0.4383)

#### 6.4.1.1: Risk Assessment and Mitigation

ID 561: In-depth understanding of hydrogen safety legislation (Similarity Score: 0.6142)

ID 51: Appropriate selection of piping systems and fittings for hydrogen fueling (Similarity Score: 0.5995)

ID 118: Appropriate selection and design of piping systems and fittings to withstand hydrogen pressure and temperatures (Similarity Score: 0.5898)

ID 52: Appropriate selection of valves and seals for hydrogen fueling systems (Similarity Score: 0.5949)

ID 469: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.6036)

ID 364: Selection and design of piping systems and fittings for hydrogen (Similarity Score: 0.5990)

ID 91: Advanced understanding of general safety protocols for hydrogen (Similarity Score: 0.7363)

ID 116: Appropriate selection and design of pressure vessels to withstand hydrogen pressure and temperatures (Similarity Score: 0.5458)

ID 237: Keeping up-to-date with changes in hydrogen regulations (Similarity Score: 0.5523)

ID 333: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.6036)

ID 426: Selection and design of valves and seals to withstand hydrogen pressure and temperatures (Similarity Score: 0.5771)

ID 153: Assess integrity of piping systems and fittings (Similarity Score: 0.4405)

ID 119: Appropriate selection and design of valves and seals to withstand hydrogen pressure and temperatures (Similarity Score: 0.5746)

ID 562: Application of hydrogen safety codes and standards in operations (Similarity Score: 0.6576)

ID 507: Selection and design of combustion systems to withstand hydrogen pressure and temperatures (Similarity Score: 0.5558)

ID 489: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.6036)

ID 334: Selection and design of valves and seals for hydrogen conditions (Similarity Score: 0.5680)

ID 48: Knowledge of appropriate seals for hydrogen systems (Similarity Score: 0.6304)

ID 442: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.6036)

ID 332: Selection and design of vessels for high/low hydrogen pressure and hot/cold temperatures (Similarity Score: 0.5200)

ID 299: Selection and design of valves and seals to withstand high hydrogen pressure (Similarity Score: 0.6110)

ID 470: Selection and design of valves and seals to withstand hydrogen pressure and temperatures (Similarity Score: 0.5771)

ID 365: Selection and design of valves and seals to withstand hydrogen conditions (Similarity Score: 0.5808)

ID 314: Selection and design of piping systems and fittings for hydrogen (Similarity Score: 0.5990)

ID 505: Knowledge of well completion solutions tailored for hydrogen environments (Similarity Score: 0.5440)

ID 298: Selection and design of piping systems and fittings for high-pressure hydrogen (Similarity Score: 0.6764)

ID 61: Understanding general safety protocols for working with hydrogen (Similarity Score: 0.7239)

ID 127: Understanding safety considerations for hydrogen blending in heating systems (Similarity Score: 0.6413)

ID 490: Selection and design of valves and seals for hydrogen conditions (Similarity Score: 0.5680)

ID 315: Selection and design of valves and seals for hydrogen systems (Similarity Score: 0.5737)

ID 246: Ensuring quality and safety of welds in hydrogen systems (Similarity Score: 0.6087)

ID 425: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.6036)

#### 6.4.1.2: Emergency Response Planning

ID 425: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.5890)

ID 490: Selection and design of valves and seals for hydrogen conditions (Similarity Score: 0.5530)

ID 470: Selection and design of valves and seals to withstand hydrogen pressure and temperatures (Similarity Score: 0.5601)

ID 442: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.5890)

ID 489: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.5890)

ID 119: Appropriate selection and design of valves and seals to withstand hydrogen pressure and temperatures (Similarity Score: 0.5649)

ID 364: Selection and design of piping systems and fittings for hydrogen (Similarity Score: 0.5862)

ID 365: Selection and design of valves and seals to withstand hydrogen conditions (Similarity Score: 0.5610)

ID 314: Selection and design of piping systems and fittings for hydrogen (Similarity Score: 0.5862)

ID 298: Selection and design of piping systems and fittings for high-pressure hydrogen (Similarity Score: 0.6770)

ID 296: Selection and design of vessels to withstand high hydrogen pressure (Similarity Score: 0.5802)

ID 332: Selection and design of vessels for high/low hydrogen pressure and hot/cold temperatures (Similarity Score: 0.5253)

ID 91: Advanced understanding of general safety protocols for hydrogen (Similarity Score: 0.7102)

ID 334: Selection and design of valves and seals for hydrogen conditions (Similarity Score: 0.5530)

ID 50: Appropriate selection of pressure vessels for hydrogen fueling (Similarity Score: 0.5786)

ID 469: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.5890)

ID 127: Understanding safety considerations for hydrogen blending in heating systems (Similarity Score: 0.6269)

ID 51: Appropriate selection of piping systems and fittings for hydrogen fueling (Similarity Score: 0.6012)

ID 315: Selection and design of valves and seals for hydrogen systems (Similarity Score: 0.5614)

ID 299: Selection and design of valves and seals to withstand high hydrogen pressure (Similarity Score: 0.6030)

ID 116: Appropriate selection and design of pressure vessels to withstand hydrogen pressure and temperatures (Similarity Score: 0.5501)

ID 333: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.5890)

ID 118: Appropriate selection and design of piping systems and fittings to withstand hydrogen pressure and temperatures (Similarity Score: 0.5782)

ID 426: Selection and design of valves and seals to withstand hydrogen pressure and temperatures (Similarity Score: 0.5601)

ID 48: Knowledge of appropriate seals for hydrogen systems (Similarity Score: 0.6212)

ID 52: Appropriate selection of valves and seals for hydrogen fueling systems (Similarity Score: 0.5934)

### 6.4.2: Operation and Maintenance

ID 423: Selection and design of air separation units for hydrogen pressure and temperature variations (Similarity Score: 0.5147)

ID 402: Advanced knowledge of regulatory systems governing hydrogen (Similarity Score: 0.6319)

ID 571: PVT characterization specific to sequestered gas (Similarity Score: 0.3915)

ID 572: Thermal and flow modeling for sequestered gas composition (Similarity Score: 0.3939)

ID 296: Selection and design of vessels to withstand high hydrogen pressure (Similarity Score: 0.6018)

ID 424: Selection and design of vessels for hydrogen pressure and temperature variations (Similarity Score: 0.5006)

ID 442: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.6079)

ID 489: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.6079)

ID 221: Understanding of installation procedures unique to hydrogen (Similarity Score: 0.6092)

ID 339: Maintenance of pressure vessels in fueling operations (Similarity Score: 0.5262)

ID 237: Keeping up-to-date with changes in hydrogen regulations (Similarity Score: 0.5891)

ID 119: Appropriate selection and design of valves and seals to withstand hydrogen pressure and temperatures (Similarity Score: 0.5719)

ID 403: In-depth knowledge of standards for hydrogen infrastructure and operations (Similarity Score: 0.6017)

ID 169: Knowledge of seals compatible with hydrogen blending (Similarity Score: 0.5148)

ID 510: Selection and design of turbine systems to withstand hydrogen pressure and temperatures (Similarity Score: 0.5906)

ID 54: Maintenance of pressure vessels in hydrogen fueling systems (Similarity Score: 0.6375)

ID 439: Selection of seals for carbon dioxide (CO2) pump systems to ensure system integrity (Similarity Score: 0.4688)

ID 536: Knowledge of components that can endure hydrogen pressure and temperatures (Similarity Score: 0.5015)

ID 52: Appropriate selection of valves and seals for hydrogen fueling systems (Similarity Score: 0.6245)

ID 51: Appropriate selection of piping systems and fittings for hydrogen fueling (Similarity Score: 0.6013)

ID 395: Understanding best environmental practices in hydrogen operations (Similarity Score: 0.6923)

ID 334: Selection and design of valves and seals for hydrogen conditions (Similarity Score: 0.6037)

ID 264: Selection and design of steam and combustion turbines for hydrogen systems (Similarity Score: 0.6041)

ID 385: Knowledge of gaseous hydrogen storage systems (Similarity Score: 0.6614)

ID 239: Keeping up-to-date with changes in hydrogen codes (Similarity Score: 0.5228)

ID 50: Appropriate selection of pressure vessels for hydrogen fueling (Similarity Score: 0.5756)

ID 314: Selection and design of piping systems and fittings for hydrogen (Similarity Score: 0.6052)

ID 598: Selection and design of valves and seals for carbon dioxide (CO2) environments (Similarity Score: 0.4057)

ID 392: Knowledge of operational adjustments for hydrogen blending (Similarity Score: 0.6280)

ID 315: Selection and design of valves and seals for hydrogen systems (Similarity Score: 0.6170)

ID 270: Selection and design of piping systems and BOP equipment (Similarity Score: 0.4360)

ID 48: Knowledge of appropriate seals for hydrogen systems (Similarity Score: 0.6461)

ID 55: Maintenance of piping systems, valves, and fittings in hydrogen fueling systems (Similarity Score: 0.6506)

ID 605: Maintenance of vessels to withstand hydrogen pressure and temperatures (Similarity Score: 0.5813)

ID 426: Selection and design of valves and seals to withstand hydrogen pressure and temperatures (Similarity Score: 0.5882)

ID 607: Maintenance of piping systems and fittings under hydrogen conditions (Similarity Score: 0.6523)

ID 311: Knowledge of cathodic protection equipment to prevent hydrogen corrosion (Similarity Score: 0.5662)

ID 89: Understanding operational adjustments needed for hydrogen-blending (Similarity Score: 0.5916)

ID 470: Selection and design of valves and seals to withstand hydrogen pressure and temperatures (Similarity Score: 0.5882)

ID 490: Selection and design of valves and seals for hydrogen conditions (Similarity Score: 0.6037)

ID 120: Maintenance of electrolyzers, vessels, compressors, piping systems, valves, and seals to withstand hydrogen pressure and temperatures (Similarity Score: 0.5672)

ID 425: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.6079)

ID 441: Selection and design of compressors to handle hydrogen pressure and temperature extremes (Similarity Score: 0.5179)

ID 336: Selection of pressure vessels for hydrogen fueling systems (Similarity Score: 0.5788)

ID 149: Knowledge of turbine systems used in hydrogen blending (Similarity Score: 0.5653)

ID 121: Management of hydrogen fueling stations (Similarity Score: 0.6722)

ID 123: Continuous improvement of hydrogen fueling station operations (Similarity Score: 0.6260)

ID 440: Selection and design of vessels to withstand hydrogen pressure and temperature variations (Similarity Score: 0.5124)

ID 316: Maintenance of fuel tanks, piping, valves, and seals in hydrogen systems (Similarity Score: 0.6676)

ID 313: Selection and design of hydrogen fuel tanks to withstand pressure (Similarity Score: 0.5991)

ID 126: Understanding the impact of hydrogen blending on heating systems (Similarity Score: 0.5621)

ID 238: Keeping up-to-date with changes in hydrogen standards (Similarity Score: 0.5828)

ID 285: Knowledge of instrumentation systems for hydrogen fueling (Similarity Score: 0.6474)

ID 56: Maintenance of coatings and insulation in hydrogen fueling systems (Similarity Score: 0.6122)

ID 236: Staying current with advances in hydrogen technology (Similarity Score: 0.5513)

ID 307: Selection and design of turbines to withstand hydrogen conditions (Similarity Score: 0.5515)

ID 333: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.6079)

ID 299: Selection and design of valves and seals to withstand high hydrogen pressure (Similarity Score: 0.6319)

ID 509: Selection and design of pumping systems for hydrogen environments (Similarity Score: 0.6098)

ID 1: Experience with hydrogen fueling equipment and systems (Similarity Score: 0.6713)

ID 183: Advanced knowledge of evolving standards in hydrogen industry (Similarity Score: 0.5879)

ID 505: Knowledge of well completion solutions tailored for hydrogen environments (Similarity Score: 0.5591)

ID 304: Selection and design of combustion systems for hydrogen environments (Similarity Score: 0.6018)

ID 247: Maintenance of pressure vessels in hydrogen fueling systems (Similarity Score: 0.6375)

ID 608: Maintenance of valves and seals to withstand hydrogen pressure and temperatures (Similarity Score: 0.6251)

ID 467: Selection and design of vessels for hydrogen pressure and temperature variations (Similarity Score: 0.5006)

ID 152: Assess integrity of vessels and tanks for hydrogen pressure and temperatures (Similarity Score: 0.5984)

ID 361: Selection and design of piping systems for hydrogen blending (Similarity Score: 0.5824)

ID 182: Advanced knowledge of current hydrogen regulatory systems (Similarity Score: 0.6373)

ID 415: Staying informed about updates in hydrogen technology (Similarity Score: 0.5607)

ID 248: Maintenance of vaporizers in hydrogen fueling systems (Similarity Score: 0.6455)

ID 33: Safety procedures during hydrogen refueling (Similarity Score: 0.6545)

ID 213: Design and selection of pressure vessels for hydrogen systems (Similarity Score: 0.6470)

ID 469: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.6079)

ID 150: Knowledge of combustion systems in hydrogen blending (Similarity Score: 0.5753)

ID 507: Selection and design of combustion systems to withstand hydrogen pressure and temperatures (Similarity Score: 0.5833)

ID 116: Appropriate selection and design of pressure vessels to withstand hydrogen pressure and temperatures (Similarity Score: 0.5413)

ID 300: Knowledge of key instrumentation for ventilation systems in hydrogen blending (Similarity Score: 0.5754)

ID 511: Maintenance of combustion, compression, pumping, and turbine systems to ensure reliability under hydrogen conditions (Similarity Score: 0.6496)

ID 443: Selection and design of valves and seals to maintain integrity under hydrogen conditions (Similarity Score: 0.5984)

ID 506: Application of well completion techniques to ensure safe hydrogen extraction (Similarity Score: 0.5427)

ID 31: Knowledge of hydrogen refueling systems (Similarity Score: 0.6456)

ID 562: Application of hydrogen safety codes and standards in operations (Similarity Score: 0.6576)

ID 153: Assess integrity of piping systems and fittings (Similarity Score: 0.4478)

ID 13: Knowledge of systems associated with hydrogen pipeline transmission (Similarity Score: 0.6029)

ID 354: Knowledge of advanced control systems for combined-cycle power generation using hydrogen (Similarity Score: 0.6256)

ID 365: Selection and design of valves and seals to withstand hydrogen conditions (Similarity Score: 0.6054)

ID 246: Ensuring quality and safety of welds in hydrogen systems (Similarity Score: 0.6383)

ID 411: Maintenance of turbines to ensure reliability under hydrogen pressure (Similarity Score: 0.6329)

ID 332: Selection and design of vessels for high/low hydrogen pressure and hot/cold temperatures (Similarity Score: 0.5341)

ID 351: Maintenance of piping systems and fittings under hydrogen conditions (Similarity Score: 0.6523)

ID 366: Maintenance of fuel tanks, piping, valves, and seals in hydrogen systems (Similarity Score: 0.6676)

ID 349: Maintenance of vessels to withstand hydrogen pressure and temperatures (Similarity Score: 0.5813)

ID 127: Understanding safety considerations for hydrogen blending in heating systems (Similarity Score: 0.6381)

ID 306: Selection and design of pumping systems for hot/cold hydrogen environments (Similarity Score: 0.5752)

ID 137: Knowledge of relevant codes for hydrogen fueling station equipment (Similarity Score: 0.5948)

ID 308: Maintenance of key systems to withstand hydrogen pressure and temperatures (Similarity Score: 0.6262)

ID 298: Selection and design of piping systems and fittings for high-pressure hydrogen (Similarity Score: 0.6835)

ID 560: Thermal/flow modeling for sequestered gas and liquid compositions (Similarity Score: 0.4014)

ID 364: Selection and design of piping systems and fittings for hydrogen (Similarity Score: 0.6052)

ID 77: Maintenance of materials and equipment used in high-pressure hydrogen systems (Similarity Score: 0.7044)

ID 487: Selection and design of vessels for hydrogen pressure and temperature variations (Similarity Score: 0.5006)

ID 11: Knowledge of key instrumentation for hydrogen pipelines (Similarity Score: 0.5661)

ID 418: Maintenance of mechanical systems under hydrogen pressure (Similarity Score: 0.6487)

#### 6.4.2.1: Monitoring and Inspection

ID 13: Knowledge of systems associated with hydrogen pipeline transmission (Similarity Score: 0.5898)

ID 443: Selection and design of valves and seals to maintain integrity under hydrogen conditions (Similarity Score: 0.5804)

ID 246: Ensuring quality and safety of welds in hydrogen systems (Similarity Score: 0.6067)

ID 31: Knowledge of hydrogen refueling systems (Similarity Score: 0.6289)

ID 354: Knowledge of advanced control systems for combined-cycle power generation using hydrogen (Similarity Score: 0.6005)

ID 314: Selection and design of piping systems and fittings for hydrogen (Similarity Score: 0.5969)

ID 239: Keeping up-to-date with changes in hydrogen codes (Similarity Score: 0.5080)

ID 469: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.5903)

ID 285: Knowledge of instrumentation systems for hydrogen fueling (Similarity Score: 0.6556)

ID 48: Knowledge of appropriate seals for hydrogen systems (Similarity Score: 0.6298)

ID 109: Maintenance of flame detection systems for hydrogen blending (Similarity Score: 0.5879)

ID 219: Assess integrity of welds under hydrogen pressure (Similarity Score: 0.5886)

ID 146: Instrumented system analysis for hydrogen processes (Similarity Score: 0.6564)

ID 333: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.5903)

ID 426: Selection and design of valves and seals to withstand hydrogen pressure and temperatures (Similarity Score: 0.5679)

ID 392: Knowledge of operational adjustments for hydrogen blending (Similarity Score: 0.6165)

ID 385: Knowledge of gaseous hydrogen storage systems (Similarity Score: 0.6376)

ID 439: Selection of seals for carbon dioxide (CO2) pump systems to ensure system integrity (Similarity Score: 0.4617)

ID 213: Design and selection of pressure vessels for hydrogen systems (Similarity Score: 0.6400)

ID 623: Stay up to date on carbon dioxide (CO2) monitoring technology (Similarity Score: 0.3856)

ID 223: Selection and design of production equipment for hydrogen systems (Similarity Score: 0.6407)

ID 315: Selection and design of valves and seals for hydrogen systems (Similarity Score: 0.6078)

ID 334: Selection and design of valves and seals for hydrogen conditions (Similarity Score: 0.5886)

ID 395: Understanding best environmental practices in hydrogen operations (Similarity Score: 0.6537)

ID 52: Appropriate selection of valves and seals for hydrogen fueling systems (Similarity Score: 0.6126)

ID 238: Keeping up-to-date with changes in hydrogen standards (Similarity Score: 0.5590)

ID 360: Selection and design of valves and fittings for hydrogen blending (Similarity Score: 0.5455)

ID 147: Conducting operation readiness inspections (Similarity Score: 0.4238)

ID 144: Conducting hazard risk analysis and reviews (Similarity Score: 0.4449)

ID 270: Selection and design of piping systems and BOP equipment (Similarity Score: 0.4274)

ID 152: Assess integrity of vessels and tanks for hydrogen pressure and temperatures (Similarity Score: 0.6111)

ID 608: Maintenance of valves and seals to withstand hydrogen pressure and temperatures (Similarity Score: 0.5923)

ID 1: Experience with hydrogen fueling equipment and systems (Similarity Score: 0.6689)

ID 33: Safety procedures during hydrogen refueling (Similarity Score: 0.6436)

ID 338: Selection of instrumentation and controls for fueling operations (Similarity Score: 0.4745)

ID 119: Appropriate selection and design of valves and seals to withstand hydrogen pressure and temperatures (Similarity Score: 0.5507)

ID 299: Selection and design of valves and seals to withstand high hydrogen pressure (Similarity Score: 0.6079)

ID 127: Understanding safety considerations for hydrogen blending in heating systems (Similarity Score: 0.6093)

ID 365: Selection and design of valves and seals to withstand hydrogen conditions (Similarity Score: 0.5806)

ID 424: Selection and design of vessels for hydrogen pressure and temperature variations (Similarity Score: 0.5013)

ID 489: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.5903)

ID 467: Selection and design of vessels for hydrogen pressure and temperature variations (Similarity Score: 0.5013)

ID 298: Selection and design of piping systems and fittings for high-pressure hydrogen (Similarity Score: 0.6687)

ID 339: Maintenance of pressure vessels in fueling operations (Similarity Score: 0.4990)

ID 571: PVT characterization specific to sequestered gas (Similarity Score: 0.4052)

ID 423: Selection and design of air separation units for hydrogen pressure and temperature variations (Similarity Score: 0.5253)

ID 237: Keeping up-to-date with changes in hydrogen regulations (Similarity Score: 0.5624)

ID 11: Knowledge of key instrumentation for hydrogen pipelines (Similarity Score: 0.5911)

ID 153: Assess integrity of piping systems and fittings (Similarity Score: 0.4535)

ID 137: Knowledge of relevant codes for hydrogen fueling station equipment (Similarity Score: 0.6072)

ID 182: Advanced knowledge of current hydrogen regulatory systems (Similarity Score: 0.6176)

ID 332: Selection and design of vessels for high/low hydrogen pressure and hot/cold temperatures (Similarity Score: 0.5172)

ID 470: Selection and design of valves and seals to withstand hydrogen pressure and temperatures (Similarity Score: 0.5679)

ID 442: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.5903)

ID 487: Selection and design of vessels for hydrogen pressure and temperature variations (Similarity Score: 0.5013)

ID 364: Selection and design of piping systems and fittings for hydrogen (Similarity Score: 0.5969)

ID 123: Continuous improvement of hydrogen fueling station operations (Similarity Score: 0.6122)

ID 300: Knowledge of key instrumentation for ventilation systems in hydrogen blending (Similarity Score: 0.5906)

ID 120: Maintenance of electrolyzers, vessels, compressors, piping systems, valves, and seals to withstand hydrogen pressure and temperatures (Similarity Score: 0.5629)

ID 121: Management of hydrogen fueling stations (Similarity Score: 0.6613)

ID 415: Staying informed about updates in hydrogen technology (Similarity Score: 0.5570)

ID 89: Understanding operational adjustments needed for hydrogen-blending (Similarity Score: 0.5754)

ID 336: Selection of pressure vessels for hydrogen fueling systems (Similarity Score: 0.5791)

ID 562: Application of hydrogen safety codes and standards in operations (Similarity Score: 0.6442)

ID 425: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.5903)

ID 490: Selection and design of valves and seals for hydrogen conditions (Similarity Score: 0.5886)

#### 6.4.2.2: Pressure Control Systems

ID 77: Maintenance of materials and equipment used in high-pressure hydrogen systems (Similarity Score: 0.6764)

ID 11: Knowledge of key instrumentation for hydrogen pipelines (Similarity Score: 0.5662)

ID 141: Knowledge of hydrogen dispensing systems (Similarity Score: 0.5680)

ID 608: Maintenance of valves and seals to withstand hydrogen pressure and temperatures (Similarity Score: 0.5954)

ID 336: Selection of pressure vessels for hydrogen fueling systems (Similarity Score: 0.5865)

ID 364: Selection and design of piping systems and fittings for hydrogen (Similarity Score: 0.5947)

ID 285: Knowledge of instrumentation systems for hydrogen fueling (Similarity Score: 0.6673)

ID 270: Selection and design of piping systems and BOP equipment (Similarity Score: 0.4353)

ID 605: Maintenance of vessels to withstand hydrogen pressure and temperatures (Similarity Score: 0.5601)

ID 392: Knowledge of operational adjustments for hydrogen blending (Similarity Score: 0.6043)

ID 137: Knowledge of relevant codes for hydrogen fueling station equipment (Similarity Score: 0.6081)

ID 349: Maintenance of vessels to withstand hydrogen pressure and temperatures (Similarity Score: 0.5601)

ID 13: Knowledge of systems associated with hydrogen pipeline transmission (Similarity Score: 0.6293)

ID 366: Maintenance of fuel tanks, piping, valves, and seals in hydrogen systems (Similarity Score: 0.6573)

ID 334: Selection and design of valves and seals for hydrogen conditions (Similarity Score: 0.5673)

ID 314: Selection and design of piping systems and fittings for hydrogen (Similarity Score: 0.5947)

ID 338: Selection of instrumentation and controls for fueling operations (Similarity Score: 0.4959)

ID 308: Maintenance of key systems to withstand hydrogen pressure and temperatures (Similarity Score: 0.6229)

ID 52: Appropriate selection of valves and seals for hydrogen fueling systems (Similarity Score: 0.6038)

ID 361: Selection and design of piping systems for hydrogen blending (Similarity Score: 0.5721)

ID 120: Maintenance of electrolyzers, vessels, compressors, piping systems, valves, and seals to withstand hydrogen pressure and temperatures (Similarity Score: 0.5815)

ID 89: Understanding operational adjustments needed for hydrogen-blending (Similarity Score: 0.5675)

ID 489: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.5872)

ID 511: Maintenance of combustion, compression, pumping, and turbine systems to ensure reliability under hydrogen conditions (Similarity Score: 0.6260)

ID 299: Selection and design of valves and seals to withstand high hydrogen pressure (Similarity Score: 0.5991)

ID 439: Selection of seals for carbon dioxide (CO2) pump systems to ensure system integrity (Similarity Score: 0.4659)

ID 213: Design and selection of pressure vessels for hydrogen systems (Similarity Score: 0.6438)

ID 442: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.5872)

ID 123: Continuous improvement of hydrogen fueling station operations (Similarity Score: 0.6083)

ID 385: Knowledge of gaseous hydrogen storage systems (Similarity Score: 0.6680)

ID 149: Knowledge of turbine systems used in hydrogen blending (Similarity Score: 0.5559)

ID 311: Knowledge of cathodic protection equipment to prevent hydrogen corrosion (Similarity Score: 0.5716)

ID 365: Selection and design of valves and seals to withstand hydrogen conditions (Similarity Score: 0.5719)

ID 300: Knowledge of key instrumentation for ventilation systems in hydrogen blending (Similarity Score: 0.5919)

ID 298: Selection and design of piping systems and fittings for high-pressure hydrogen (Similarity Score: 0.6610)

ID 354: Knowledge of advanced control systems for combined-cycle power generation using hydrogen (Similarity Score: 0.6524)

ID 54: Maintenance of pressure vessels in hydrogen fueling systems (Similarity Score: 0.6346)

ID 339: Maintenance of pressure vessels in fueling operations (Similarity Score: 0.5022)

ID 490: Selection and design of valves and seals for hydrogen conditions (Similarity Score: 0.5673)

ID 310: Knowledge of instrumentation systems in hydrogen transmission (Similarity Score: 0.6122)

ID 121: Management of hydrogen fueling stations (Similarity Score: 0.6740)

ID 247: Maintenance of pressure vessels in hydrogen fueling systems (Similarity Score: 0.6346)

ID 248: Maintenance of vaporizers in hydrogen fueling systems (Similarity Score: 0.6127)

ID 402: Advanced knowledge of regulatory systems governing hydrogen (Similarity Score: 0.6291)

ID 31: Knowledge of hydrogen refueling systems (Similarity Score: 0.6489)

ID 469: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.5872)

ID 315: Selection and design of valves and seals for hydrogen systems (Similarity Score: 0.5984)

ID 418: Maintenance of mechanical systems under hydrogen pressure (Similarity Score: 0.6481)

ID 333: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.5872)

ID 507: Selection and design of combustion systems to withstand hydrogen pressure and temperatures (Similarity Score: 0.5509)

ID 48: Knowledge of appropriate seals for hydrogen systems (Similarity Score: 0.6280)

ID 425: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.5872)

ID 397: Knowledge of control systems for hydrogen blending in power generation (Similarity Score: 0.6218)

ID 423: Selection and design of air separation units for hydrogen pressure and temperature variations (Similarity Score: 0.5287)

ID 316: Maintenance of fuel tanks, piping, valves, and seals in hydrogen systems (Similarity Score: 0.6573)

ID 182: Advanced knowledge of current hydrogen regulatory systems (Similarity Score: 0.6236)

ID 150: Knowledge of combustion systems in hydrogen blending (Similarity Score: 0.5623)

ID 426: Selection and design of valves and seals to withstand hydrogen pressure and temperatures (Similarity Score: 0.5622)

ID 510: Selection and design of turbine systems to withstand hydrogen pressure and temperatures (Similarity Score: 0.5714)

ID 1: Experience with hydrogen fueling equipment and systems (Similarity Score: 0.6757)

ID 470: Selection and design of valves and seals to withstand hydrogen pressure and temperatures (Similarity Score: 0.5622)

ID 223: Selection and design of production equipment for hydrogen systems (Similarity Score: 0.6373)

#### 6.4.2.3: Regular Maintenance Procedures

ID 333: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.5885)

ID 507: Selection and design of combustion systems to withstand hydrogen pressure and temperatures (Similarity Score: 0.5597)

ID 246: Ensuring quality and safety of welds in hydrogen systems (Similarity Score: 0.6101)

ID 439: Selection of seals for carbon dioxide (CO2) pump systems to ensure system integrity (Similarity Score: 0.4688)

ID 418: Maintenance of mechanical systems under hydrogen pressure (Similarity Score: 0.6394)

ID 182: Advanced knowledge of current hydrogen regulatory systems (Similarity Score: 0.6083)

ID 469: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.5885)

ID 509: Selection and design of pumping systems for hydrogen environments (Similarity Score: 0.5950)

ID 159: Maintenance of piping systems, fittings, valves, and seals (Similarity Score: 0.5002)

ID 366: Maintenance of fuel tanks, piping, valves, and seals in hydrogen systems (Similarity Score: 0.6730)

ID 248: Maintenance of vaporizers in hydrogen fueling systems (Similarity Score: 0.6287)

ID 237: Keeping up-to-date with changes in hydrogen regulations (Similarity Score: 0.5839)

ID 605: Maintenance of vessels to withstand hydrogen pressure and temperatures (Similarity Score: 0.5738)

ID 31: Knowledge of hydrogen refueling systems (Similarity Score: 0.6214)

ID 54: Maintenance of pressure vessels in hydrogen fueling systems (Similarity Score: 0.6327)

ID 89: Understanding operational adjustments needed for hydrogen-blending (Similarity Score: 0.5764)

ID 510: Selection and design of turbine systems to withstand hydrogen pressure and temperatures (Similarity Score: 0.5691)

ID 120: Maintenance of electrolyzers, vessels, compressors, piping systems, valves, and seals to withstand hydrogen pressure and temperatures (Similarity Score: 0.5740)

ID 470: Selection and design of valves and seals to withstand hydrogen pressure and temperatures (Similarity Score: 0.5766)

ID 441: Selection and design of compressors to handle hydrogen pressure and temperature extremes (Similarity Score: 0.5125)

ID 308: Maintenance of key systems to withstand hydrogen pressure and temperatures (Similarity Score: 0.6127)

ID 339: Maintenance of pressure vessels in fueling operations (Similarity Score: 0.5352)

ID 606: Maintenance of compressors to withstand hydrogen pressure and temperatures (Similarity Score: 0.5723)

ID 442: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.5885)

ID 77: Maintenance of materials and equipment used in high-pressure hydrogen systems (Similarity Score: 0.7005)

ID 443: Selection and design of valves and seals to maintain integrity under hydrogen conditions (Similarity Score: 0.5959)

ID 489: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.5885)

ID 285: Knowledge of instrumentation systems for hydrogen fueling (Similarity Score: 0.6273)

ID 119: Appropriate selection and design of valves and seals to withstand hydrogen pressure and temperatures (Similarity Score: 0.5655)

ID 316: Maintenance of fuel tanks, piping, valves, and seals in hydrogen systems (Similarity Score: 0.6730)

ID 351: Maintenance of piping systems and fittings under hydrogen conditions (Similarity Score: 0.6424)

ID 123: Continuous improvement of hydrogen fueling station operations (Similarity Score: 0.6067)

ID 56: Maintenance of coatings and insulation in hydrogen fueling systems (Similarity Score: 0.5976)

ID 426: Selection and design of valves and seals to withstand hydrogen pressure and temperatures (Similarity Score: 0.5766)

ID 55: Maintenance of piping systems, valves, and fittings in hydrogen fueling systems (Similarity Score: 0.6535)

ID 395: Understanding best environmental practices in hydrogen operations (Similarity Score: 0.6699)

ID 238: Keeping up-to-date with changes in hydrogen standards (Similarity Score: 0.5707)

ID 425: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.5885)

ID 1: Experience with hydrogen fueling equipment and systems (Similarity Score: 0.6577)

ID 490: Selection and design of valves and seals for hydrogen conditions (Similarity Score: 0.5903)

ID 315: Selection and design of valves and seals for hydrogen systems (Similarity Score: 0.6040)

ID 247: Maintenance of pressure vessels in hydrogen fueling systems (Similarity Score: 0.6327)

ID 298: Selection and design of piping systems and fittings for high-pressure hydrogen (Similarity Score: 0.6636)

ID 13: Knowledge of systems associated with hydrogen pipeline transmission (Similarity Score: 0.5807)

ID 511: Maintenance of combustion, compression, pumping, and turbine systems to ensure reliability under hydrogen conditions (Similarity Score: 0.6433)

ID 392: Knowledge of operational adjustments for hydrogen blending (Similarity Score: 0.6046)

ID 364: Selection and design of piping systems and fittings for hydrogen (Similarity Score: 0.5839)

ID 270: Selection and design of piping systems and BOP equipment (Similarity Score: 0.4289)

ID 239: Keeping up-to-date with changes in hydrogen codes (Similarity Score: 0.5142)

ID 33: Safety procedures during hydrogen refueling (Similarity Score: 0.6495)

ID 299: Selection and design of valves and seals to withstand high hydrogen pressure (Similarity Score: 0.6152)

ID 52: Appropriate selection of valves and seals for hydrogen fueling systems (Similarity Score: 0.6163)

ID 334: Selection and design of valves and seals for hydrogen conditions (Similarity Score: 0.5903)

ID 349: Maintenance of vessels to withstand hydrogen pressure and temperatures (Similarity Score: 0.5738)

ID 213: Design and selection of pressure vessels for hydrogen systems (Similarity Score: 0.6238)

ID 385: Knowledge of gaseous hydrogen storage systems (Similarity Score: 0.6396)

ID 314: Selection and design of piping systems and fittings for hydrogen (Similarity Score: 0.5839)

ID 365: Selection and design of valves and seals to withstand hydrogen conditions (Similarity Score: 0.5916)

ID 221: Understanding of installation procedures unique to hydrogen (Similarity Score: 0.6159)

ID 415: Staying informed about updates in hydrogen technology (Similarity Score: 0.5376)

ID 48: Knowledge of appropriate seals for hydrogen systems (Similarity Score: 0.6303)

ID 607: Maintenance of piping systems and fittings under hydrogen conditions (Similarity Score: 0.6424)

ID 127: Understanding safety considerations for hydrogen blending in heating systems (Similarity Score: 0.6045)

ID 608: Maintenance of valves and seals to withstand hydrogen pressure and temperatures (Similarity Score: 0.6226)

# 7: Understanding Hydrogen Fuel Cells

ID 167: Understanding of codes related to hydrogen systems (Similarity Score: 0.5979)

ID 244: Understanding welding procedures for hydrogen systems (Similarity Score: 0.6082)

ID 38: Understanding of hydrogen technologies (Similarity Score: 0.7976)

ID 276: Understanding the hydrogen production value chain (Similarity Score: 0.6352)

ID 377: Understanding the hydrogen production value chain (Similarity Score: 0.6352)

ID 254: Understanding of how hydrogen fuel cell technology works (Similarity Score: 0.8141)

ID 150: Knowledge of combustion systems in hydrogen blending (Similarity Score: 0.5919)

ID 111: Knowledge of fuel cell technology (Similarity Score: 0.6440)

ID 641: Knowledge of hydrogen technologies (Similarity Score: 0.7031)

ID 630: Understanding of hydrogen technologies in relation to ESG factors (Similarity Score: 0.6244)

ID 139: Knowledge of hydrogen production technology (Similarity Score: 0.6906)

ID 10: Understanding hydrogen's role in addressing climate change (Similarity Score: 0.6459)

ID 133: Understanding of hydrogen technologies (Similarity Score: 0.7976)

ID 205: Understanding the hydrogen distribution value chain (Similarity Score: 0.6436)

ID 383: Understanding of dispensing technology for hydrogen (Similarity Score: 0.6241)

ID 208: Understanding fueling standards for hydrogen products (Similarity Score: 0.6652)

ID 584: Understanding of reservoir data for hydrogen storage efficiency (Similarity Score: 0.5531)

ID 44: Understanding of hydrogen blending in power generation (Similarity Score: 0.6589)

ID 204: Understanding the hydrogen gas production value chain (Similarity Score: 0.5796)

ID 141: Knowledge of hydrogen dispensing systems (Similarity Score: 0.5942)

ID 206: Understanding the hydrogen storage value chain (Similarity Score: 0.6479)

ID 285: Knowledge of instrumentation systems for hydrogen fueling (Similarity Score: 0.6009)

ID 88: Understanding the principles of hydrogen-blending in power generation (Similarity Score: 0.6018)

ID 381: Understanding of hydrogen production technology (Similarity Score: 0.7658)

ID 583: Understanding of reservoir data interpretation for hydrogen injection (Similarity Score: 0.5014)

ID 283: Knowledge of pros and cons of various fuel cell technologies (Similarity Score: 0.5320)

ID 195: Knowledge of fuel cell technology (Similarity Score: 0.6440)

ID 255: Value proposition of hydrogen fuel cells for emissions targets (Similarity Score: 0.5538)

ID 280: Understanding the principles of fuel cell technology (Similarity Score: 0.6269)

ID 643: Understanding the climate change implications of hydrogen technologies (Similarity Score: 0.6793)

ID 7: Knowledge of hydrogen technologies (Similarity Score: 0.7031)

ID 31: Knowledge of hydrogen refueling systems (Similarity Score: 0.6536)

ID 282: Knowledge of the processes within fuel cells (Similarity Score: 0.6382)

ID 385: Knowledge of gaseous hydrogen storage systems (Similarity Score: 0.6419)

ID 126: Understanding the impact of hydrogen blending on heating systems (Similarity Score: 0.5484)

ID 135: Understanding the carbon impact of hydrogen technologies (Similarity Score: 0.5934)

ID 6: Experience with hydrogen dispensing (Similarity Score: 0.4827)

## 7.1: Types of Hydrogen Fuel Cells

ID 283: Knowledge of pros and cons of various fuel cell technologies (Similarity Score: 0.4979)

ID 112: Knowledge of different types of fuel cells (Similarity Score: 0.7004)

### 7.1.1: Proton Exchange Membrane (PEM) Fuel Cells

ID 192: Understanding the hydrogen production process using PEM electrolyzers (Similarity Score: 0.6286)

ID 79: Understanding electrochemical reactions in PEM electrolyzers (Similarity Score: 0.5511)

ID 81: Knowledge of key components in PEM electrolyzers (Similarity Score: 0.5293)

ID 193: Knowledge of key components in PEM electrolyzers (Similarity Score: 0.5293)

ID 80: Understanding the process of hydrogen production using PEM electrolyzers (Similarity Score: 0.6152)

ID 82: Understanding process optimization for hydrogen production in PEM electrolyzers (Similarity Score: 0.6024)

ID 194: Knowledge of process optimization techniques in PEM electrolyzers (Similarity Score: 0.4709)

### 7.1.4: Solid Oxide (SOFC) Fuel Cells

ID 533: Understanding of fluid characterization for carbon dioxide (CO2) injection (Similarity Score: 0.3669)

## 7.2: Components of Hydrogen Fuel Cells

ID 150: Knowledge of combustion systems in hydrogen blending (Similarity Score: 0.5780)

ID 281: Knowledge of key components in fuel cells (Similarity Score: 0.7318)

ID 31: Knowledge of hydrogen refueling systems (Similarity Score: 0.5967)

ID 283: Knowledge of pros and cons of various fuel cell technologies (Similarity Score: 0.5334)

ID 111: Knowledge of fuel cell technology (Similarity Score: 0.5956)

ID 167: Understanding of codes related to hydrogen systems (Similarity Score: 0.5800)

ID 280: Understanding the principles of fuel cell technology (Similarity Score: 0.5718)

ID 195: Knowledge of fuel cell technology (Similarity Score: 0.5956)

ID 113: Understanding of fuel cell components and processes (Similarity Score: 0.7459)

ID 501: Understanding the components of carbon dioxide (CO2) value-chains (Similarity Score: 0.3883)

ID 461: Understanding the components of hydrogen gas value-chains (Similarity Score: 0.6128)

ID 632: Well design based on understanding of hydrogen injection stream properties (Similarity Score: 0.5574)

### 7.2.1: Membranes and Electrolytes

ID 193: Knowledge of key components in PEM electrolyzers (Similarity Score: 0.5387)

ID 356: Understanding interconnection applications in renewable energy powered electrolyzers (Similarity Score: 0.4759)

ID 413: Knowledge of rectification technology for electrolyzer plants (Similarity Score: 0.4097)

ID 292: Knowledge of key instrumentation systems for electrolyzers (Similarity Score: 0.4664)

ID 321: Understanding of control systems for electrolyzers (Similarity Score: 0.5112)

ID 114: Understanding of hydro-electric power trains (Similarity Score: 0.3323)

ID 81: Knowledge of key components in PEM electrolyzers (Similarity Score: 0.5387)

ID 68: Understanding of safety protocols in electrolyzer control systems (Similarity Score: 0.4600)

### 7.2.2: Electrodes (Anode and Cathode)

ID 501: Understanding the components of carbon dioxide (CO2) value-chains (Similarity Score: 0.3781)

ID 636: Knowledge of electrical equipment associated with carbon capture (Similarity Score: 0.4043)

ID 613: PVT characterization specific to sequestered carbon dioxide (CO2) composition (Similarity Score: 0.3807)

ID 565: Understanding of the carbon dioxide (CO2) value chain, including production, transportation, and storage (Similarity Score: 0.3695)

### 7.2.3: Catalysts

ID 501: Understanding the components of carbon dioxide (CO2) value-chains (Similarity Score: 0.3615)

ID 135: Understanding the carbon impact of hydrogen technologies (Similarity Score: 0.5560)

ID 113: Understanding of fuel cell components and processes (Similarity Score: 0.6881)

ID 150: Knowledge of combustion systems in hydrogen blending (Similarity Score: 0.5901)

ID 283: Knowledge of pros and cons of various fuel cell technologies (Similarity Score: 0.5428)

### 7.2.4: Bipolar Plates

ID 233: Experience with codes related to electrical systems in road vehicles (Similarity Score: 0.3274)

## 7.3: Chemical and Electrical Processes

ID 111: Knowledge of fuel cell technology (Similarity Score: 0.5921)

ID 284: Knowledge of electrical equipment used in hydrogen fueling systems (Similarity Score: 0.6646)

ID 65: Knowledge of control systems in electrolyzer hydrogen production plants (Similarity Score: 0.6273)

ID 283: Knowledge of pros and cons of various fuel cell technologies (Similarity Score: 0.5096)

ID 282: Knowledge of the processes within fuel cells (Similarity Score: 0.6929)

ID 114: Understanding of hydro-electric power trains (Similarity Score: 0.3588)

ID 641: Knowledge of hydrogen technologies (Similarity Score: 0.6488)

ID 221: Understanding of installation procedures unique to hydrogen (Similarity Score: 0.6069)

ID 88: Understanding the principles of hydrogen-blending in power generation (Similarity Score: 0.6325)

ID 381: Understanding of hydrogen production technology (Similarity Score: 0.7477)

ID 636: Knowledge of electrical equipment associated with carbon capture (Similarity Score: 0.4123)

ID 396: Understanding of automated process systems in power generation using hydrogen blending (Similarity Score: 0.6828)

ID 125: Understanding the principles of hydrogen blending for heating (Similarity Score: 0.5375)

ID 383: Understanding of dispensing technology for hydrogen (Similarity Score: 0.6036)

ID 204: Understanding the hydrogen gas production value chain (Similarity Score: 0.5834)

ID 175: Understanding the value proposition of hydrogen technologies related to ESG factors (Similarity Score: 0.5522)

ID 463: Understanding carbon capture processes (Similarity Score: 0.5118)

ID 195: Knowledge of fuel cell technology (Similarity Score: 0.5921)

ID 276: Understanding the hydrogen production value chain (Similarity Score: 0.6268)

ID 356: Understanding interconnection applications in renewable energy powered electrolyzers (Similarity Score: 0.4676)

ID 113: Understanding of fuel cell components and processes (Similarity Score: 0.7004)

ID 254: Understanding of how hydrogen fuel cell technology works (Similarity Score: 0.7584)

ID 244: Understanding welding procedures for hydrogen systems (Similarity Score: 0.6500)

ID 31: Knowledge of hydrogen refueling systems (Similarity Score: 0.6198)

ID 80: Understanding the process of hydrogen production using PEM electrolyzers (Similarity Score: 0.6129)

ID 464: Understanding separation and purification techniques in carbon capture (Similarity Score: 0.4232)

ID 390: Understanding of the combined-cycle power generation process using hydrogen blending (Similarity Score: 0.5738)

ID 465: Understanding liquefaction processes in carbon capture (Similarity Score: 0.5377)

ID 133: Understanding of hydrogen technologies (Similarity Score: 0.7379)

ID 135: Understanding the carbon impact of hydrogen technologies (Similarity Score: 0.5873)

ID 498: Understanding of carbon dioxide (CO2) liquification processes (Similarity Score: 0.4601)

ID 38: Understanding of hydrogen technologies (Similarity Score: 0.7379)

ID 139: Knowledge of hydrogen production technology (Similarity Score: 0.6718)

ID 280: Understanding the principles of fuel cell technology (Similarity Score: 0.5882)

ID 479: Understanding of carbon capture process (Similarity Score: 0.5042)

ID 141: Knowledge of hydrogen dispensing systems (Similarity Score: 0.5806)

ID 150: Knowledge of combustion systems in hydrogen blending (Similarity Score: 0.6112)

ID 573: Understanding of carbon capture and separation processes (Similarity Score: 0.4687)

ID 192: Understanding the hydrogen production process using PEM electrolyzers (Similarity Score: 0.6201)

ID 637: Knowledge of systems used in carbon separation, purification, and liquefaction processes (Similarity Score: 0.4529)

ID 44: Understanding of hydrogen blending in power generation (Similarity Score: 0.6658)

ID 377: Understanding the hydrogen production value chain (Similarity Score: 0.6268)

ID 630: Understanding of hydrogen technologies in relation to ESG factors (Similarity Score: 0.6330)

ID 126: Understanding the impact of hydrogen blending on heating systems (Similarity Score: 0.5531)

ID 7: Knowledge of hydrogen technologies (Similarity Score: 0.6488)

ID 397: Knowledge of control systems for hydrogen blending in power generation (Similarity Score: 0.5941)

### 7.3.1: Electrochemical Reactions

ID 396: Understanding of automated process systems in power generation using hydrogen blending (Similarity Score: 0.6408)

ID 630: Understanding of hydrogen technologies in relation to ESG factors (Similarity Score: 0.6013)

ID 356: Understanding interconnection applications in renewable energy powered electrolyzers (Similarity Score: 0.5181)

ID 65: Knowledge of control systems in electrolyzer hydrogen production plants (Similarity Score: 0.6362)

ID 79: Understanding electrochemical reactions in PEM electrolyzers (Similarity Score: 0.5450)

ID 80: Understanding the process of hydrogen production using PEM electrolyzers (Similarity Score: 0.6193)

ID 114: Understanding of hydro-electric power trains (Similarity Score: 0.3601)

ID 192: Understanding the hydrogen production process using PEM electrolyzers (Similarity Score: 0.6248)

ID 479: Understanding of carbon capture process (Similarity Score: 0.4558)

ID 465: Understanding liquefaction processes in carbon capture (Similarity Score: 0.4927)

ID 44: Understanding of hydrogen blending in power generation (Similarity Score: 0.6258)

ID 413: Knowledge of rectification technology for electrolyzer plants (Similarity Score: 0.4531)

ID 88: Understanding the principles of hydrogen-blending in power generation (Similarity Score: 0.5920)

ID 293: Knowledge of key electrical equipment in electrolyzer hydrogen production (Similarity Score: 0.6279)

ID 284: Knowledge of electrical equipment used in hydrogen fueling systems (Similarity Score: 0.6188)

### 7.3.2: Ion Exchange Mechanisms

ID 356: Understanding interconnection applications in renewable energy powered electrolyzers (Similarity Score: 0.4764)

ID 206: Understanding the hydrogen storage value chain (Similarity Score: 0.5984)

### 7.3.3: Electron Flow and Power Generation

ID 284: Knowledge of electrical equipment used in hydrogen fueling systems (Similarity Score: 0.6190)

ID 192: Understanding the hydrogen production process using PEM electrolyzers (Similarity Score: 0.6291)

ID 114: Understanding of hydro-electric power trains (Similarity Score: 0.3305)

ID 397: Knowledge of control systems for hydrogen blending in power generation (Similarity Score: 0.5987)

ID 283: Knowledge of pros and cons of various fuel cell technologies (Similarity Score: 0.4927)

ID 276: Understanding the hydrogen production value chain (Similarity Score: 0.5972)

ID 381: Understanding of hydrogen production technology (Similarity Score: 0.7314)

ID 390: Understanding of the combined-cycle power generation process using hydrogen blending (Similarity Score: 0.5907)

ID 396: Understanding of automated process systems in power generation using hydrogen blending (Similarity Score: 0.6786)

ID 282: Knowledge of the processes within fuel cells (Similarity Score: 0.6314)

ID 465: Understanding liquefaction processes in carbon capture (Similarity Score: 0.4962)

ID 377: Understanding the hydrogen production value chain (Similarity Score: 0.5972)

ID 88: Understanding the principles of hydrogen-blending in power generation (Similarity Score: 0.6437)

ID 44: Understanding of hydrogen blending in power generation (Similarity Score: 0.6814)

ID 139: Knowledge of hydrogen production technology (Similarity Score: 0.6651)

ID 354: Knowledge of advanced control systems for combined-cycle power generation using hydrogen (Similarity Score: 0.6051)

ID 630: Understanding of hydrogen technologies in relation to ESG factors (Similarity Score: 0.6117)

ID 244: Understanding welding procedures for hydrogen systems (Similarity Score: 0.6094)

ID 80: Understanding the process of hydrogen production using PEM electrolyzers (Similarity Score: 0.6219)

## 7.4: Advantages and Disadvantages

ID 255: Value proposition of hydrogen fuel cells for emissions targets (Similarity Score: 0.5545)

ID 42: Understanding the social disadvantages of hydrogen (Similarity Score: 0.7071)

ID 40: Understanding the economic disadvantages of hydrogen (Similarity Score: 0.7835)

ID 39: Understanding the economic advantages of hydrogen (Similarity Score: 0.7139)

ID 134: Understanding the cost aspects of hydrogen technologies (Similarity Score: 0.5919)

ID 256: Value proposition of hydrogen fuel cells in terms of cost-effectiveness (Similarity Score: 0.6308)

ID 41: Understanding the social advantages of hydrogen (Similarity Score: 0.6304)

### 7.4.1: Operating Conditions

ID 134: Understanding the cost aspects of hydrogen technologies (Similarity Score: 0.5667)

ID 42: Understanding the social disadvantages of hydrogen (Similarity Score: 0.6542)

ID 40: Understanding the economic disadvantages of hydrogen (Similarity Score: 0.7401)

ID 39: Understanding the economic advantages of hydrogen (Similarity Score: 0.6708)

ID 283: Knowledge of pros and cons of various fuel cell technologies (Similarity Score: 0.5095)

ID 255: Value proposition of hydrogen fuel cells for emissions targets (Similarity Score: 0.5482)

ID 256: Value proposition of hydrogen fuel cells in terms of cost-effectiveness (Similarity Score: 0.6303)

#### 7.4.1.1: Operating Temperatures

ID 536: Knowledge of components that can endure hydrogen pressure and temperatures (Similarity Score: 0.5182)

ID 510: Selection and design of turbine systems to withstand hydrogen pressure and temperatures (Similarity Score: 0.5648)

ID 26: Consideration of temperature requirements in hydrogen fueling systems (Similarity Score: 0.6113)

ID 507: Selection and design of combustion systems to withstand hydrogen pressure and temperatures (Similarity Score: 0.5930)

#### 7.4.1.2: Pressure Requirements

ID 426: Selection and design of valves and seals to withstand hydrogen pressure and temperatures (Similarity Score: 0.5527)

ID 26: Consideration of temperature requirements in hydrogen fueling systems (Similarity Score: 0.6003)

ID 536: Knowledge of components that can endure hydrogen pressure and temperatures (Similarity Score: 0.5508)

ID 507: Selection and design of combustion systems to withstand hydrogen pressure and temperatures (Similarity Score: 0.6118)

ID 331: Selection and design of electrolyzers to withstand hydrogen pressure and temperatures (Similarity Score: 0.5036)

ID 25: Consideration of pressure requirements in hydrogen fueling systems (Similarity Score: 0.7270)

ID 119: Appropriate selection and design of valves and seals to withstand hydrogen pressure and temperatures (Similarity Score: 0.5498)

ID 363: Selection and design of hydrogen fuel tanks to withstand pressure and temperature variations (Similarity Score: 0.6385)

ID 470: Selection and design of valves and seals to withstand hydrogen pressure and temperatures (Similarity Score: 0.5527)

ID 313: Selection and design of hydrogen fuel tanks to withstand pressure (Similarity Score: 0.6520)

ID 116: Appropriate selection and design of pressure vessels to withstand hydrogen pressure and temperatures (Similarity Score: 0.5345)

ID 466: Selection and design of electrolyzers to withstand hydrogen pressure and temperature variations (Similarity Score: 0.4922)

ID 510: Selection and design of turbine systems to withstand hydrogen pressure and temperatures (Similarity Score: 0.5916)

ID 608: Maintenance of valves and seals to withstand hydrogen pressure and temperatures (Similarity Score: 0.5885)

### 7.4.2: Efficiency and Performance

ID 128: Understanding efficiency and performance factors when using hydrogen blending for heating (Similarity Score: 0.5943)

ID 42: Understanding the social disadvantages of hydrogen (Similarity Score: 0.6687)

ID 326: Achieving cost savings through eco-driving practices (Similarity Score: 0.3304)

ID 275: Achieving cost savings through eco-driving (Similarity Score: 0.3380)

ID 348: Achieving cost savings through eco-driving practices (Similarity Score: 0.3304)

ID 40: Understanding the economic disadvantages of hydrogen (Similarity Score: 0.7448)

ID 255: Value proposition of hydrogen fuel cells for emissions targets (Similarity Score: 0.5777)

ID 256: Value proposition of hydrogen fuel cells in terms of cost-effectiveness (Similarity Score: 0.6695)

ID 134: Understanding the cost aspects of hydrogen technologies (Similarity Score: 0.6032)

ID 39: Understanding the economic advantages of hydrogen (Similarity Score: 0.6856)

### 7.4.3: Waste and By-Products

ID 348: Achieving cost savings through eco-driving practices (Similarity Score: 0.2988)

ID 326: Achieving cost savings through eco-driving practices (Similarity Score: 0.2988)

ID 255: Value proposition of hydrogen fuel cells for emissions targets (Similarity Score: 0.5777)

### 7.4.4: Application Contexts

ID 256: Value proposition of hydrogen fuel cells in terms of cost-effectiveness (Similarity Score: 0.6495)

ID 255: Value proposition of hydrogen fuel cells for emissions targets (Similarity Score: 0.5921)

ID 275: Achieving cost savings through eco-driving (Similarity Score: 0.3136)

ID 279: Knowledge of end-use applications in the hydrogen value chain (Similarity Score: 0.5802)

ID 380: Understanding end-use applications in the hydrogen value chain (Similarity Score: 0.5892)

ID 39: Understanding the economic advantages of hydrogen (Similarity Score: 0.7002)

ID 207: Knowledge of end-use applications within the hydrogen value chain (Similarity Score: 0.5778)

ID 348: Achieving cost savings through eco-driving practices (Similarity Score: 0.3100)

ID 142: Understanding how to match hydrogen technology with the needs of different fleets (Similarity Score: 0.5033)

ID 326: Achieving cost savings through eco-driving practices (Similarity Score: 0.3100)

ID 134: Understanding the cost aspects of hydrogen technologies (Similarity Score: 0.6231)

ID 40: Understanding the economic disadvantages of hydrogen (Similarity Score: 0.7719)

ID 42: Understanding the social disadvantages of hydrogen (Similarity Score: 0.6968)

# 8: Fuel Cell Maintenance and Replacement

ID 197: Conducting basic maintenance on fuel cell vehicles (Similarity Score: 0.7344)

ID 325: Optimizing fuel consumption in vehicle operations (Similarity Score: 0.4136)

ID 347: Optimizing fuel consumption in vehicle operations (Similarity Score: 0.4136)

## 8.1: Identification of Degraded Fuel Cells

ID 196: Ability to inspect fuel cell vehicles (Similarity Score: 0.5060)

#### 8.1.1.2: Visual Inspection Indicators

ID 196: Ability to inspect fuel cell vehicles (Similarity Score: 0.5047)

#### 8.1.1.3: Diagnostic Testing Results

ID 196: Ability to inspect fuel cell vehicles (Similarity Score: 0.5084)

## 8.2: Decision-Making for Replacement

ID 325: Optimizing fuel consumption in vehicle operations (Similarity Score: 0.4219)

ID 347: Optimizing fuel consumption in vehicle operations (Similarity Score: 0.4219)

## 8.3: Arranging for Fuel Cell Replacement

ID 197: Conducting basic maintenance on fuel cell vehicles (Similarity Score: 0.7628)

ID 347: Optimizing fuel consumption in vehicle operations (Similarity Score: 0.3831)

ID 325: Optimizing fuel consumption in vehicle operations (Similarity Score: 0.3831)

### 8.3.1: Sourcing and Ordering Replacement Units

ID 197: Conducting basic maintenance on fuel cell vehicles (Similarity Score: 0.6885)

### 8.3.2: Scheduling Replacement Operations

ID 325: Optimizing fuel consumption in vehicle operations (Similarity Score: 0.3976)

ID 347: Optimizing fuel consumption in vehicle operations (Similarity Score: 0.3976)

ID 197: Conducting basic maintenance on fuel cell vehicles (Similarity Score: 0.7029)

## 8.4: Undertaking Fuel Cell Replacement

ID 325: Optimizing fuel consumption in vehicle operations (Similarity Score: 0.3992)

ID 347: Optimizing fuel consumption in vehicle operations (Similarity Score: 0.3992)

ID 197: Conducting basic maintenance on fuel cell vehicles (Similarity Score: 0.7559)

### 8.4.2: Installation of New Fuel Cells

ID 197: Conducting basic maintenance on fuel cell vehicles (Similarity Score: 0.6866)

# 9: Interpretation and Application of Technical Drawings in Hydrogen Systems

ID 560: Thermal/flow modeling for sequestered gas and liquid compositions (Similarity Score: 0.4428)

ID 146: Instrumented system analysis for hydrogen processes (Similarity Score: 0.6538)

ID 312: Techniques for implementing cathodic protection in hydrogen systems (Similarity Score: 0.5950)

ID 493: Application of modeling techniques to predict hydrogen-water-mineral interactions (Similarity Score: 0.5578)

ID 489: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.6107)

ID 425: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.6107)

ID 576: Understanding of cavern engineering fundamentals for hydrogen injection (Similarity Score: 0.5636)

ID 442: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.6107)

ID 333: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.6107)

ID 407: Understanding the procedures necessary for welding in hydrogen environments (Similarity Score: 0.6244)

ID 564: Application of carbon capture and storage related codes in project implementation (Similarity Score: 0.4426)

ID 533: Understanding of fluid characterization for carbon dioxide (CO2) injection (Similarity Score: 0.3746)

ID 244: Understanding welding procedures for hydrogen systems (Similarity Score: 0.6703)

ID 469: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.6107)

ID 364: Selection and design of piping systems and fittings for hydrogen (Similarity Score: 0.6039)

ID 578: Understanding of fluid characterization in cavern environments (Similarity Score: 0.3503)

ID 361: Selection and design of piping systems for hydrogen blending (Similarity Score: 0.5769)

ID 572: Thermal and flow modeling for sequestered gas composition (Similarity Score: 0.4265)

ID 314: Selection and design of piping systems and fittings for hydrogen (Similarity Score: 0.6039)

ID 583: Understanding of reservoir data interpretation for hydrogen injection (Similarity Score: 0.5393)

## 9.1: Understanding Technical Drawings and Diagrams

ID 572: Thermal and flow modeling for sequestered gas composition (Similarity Score: 0.3891)

ID 560: Thermal/flow modeling for sequestered gas and liquid compositions (Similarity Score: 0.4057)

ID 13: Knowledge of systems associated with hydrogen pipeline transmission (Similarity Score: 0.5685)

ID 576: Understanding of cavern engineering fundamentals for hydrogen injection (Similarity Score: 0.5431)

ID 244: Understanding welding procedures for hydrogen systems (Similarity Score: 0.6461)

ID 583: Understanding of reservoir data interpretation for hydrogen injection (Similarity Score: 0.4866)

### 9.1.3: Decoding Engineering Drawings

ID 576: Understanding of cavern engineering fundamentals for hydrogen injection (Similarity Score: 0.5552)

ID 579: Understanding of well completion solutions for carbon dioxide (CO2) based on subsurface conditions (Similarity Score: 0.3558)

## 9.2: Application of Standards and Regulations

ID 425: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.5998)

ID 562: Application of hydrogen safety codes and standards in operations (Similarity Score: 0.6709)

ID 469: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.5998)

ID 394: Understanding regulations for hydrogen infrastructure and operations (Similarity Score: 0.6206)

ID 314: Selection and design of piping systems and fittings for hydrogen (Similarity Score: 0.5866)

ID 596: Selection and design of piping systems and fittings for carbon dioxide (CO2) environments (Similarity Score: 0.4176)

ID 239: Keeping up-to-date with changes in hydrogen codes (Similarity Score: 0.5020)

ID 333: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.5998)

ID 364: Selection and design of piping systems and fittings for hydrogen (Similarity Score: 0.5866)

ID 533: Understanding of fluid characterization for carbon dioxide (CO2) injection (Similarity Score: 0.3814)

ID 442: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.5998)

ID 564: Application of carbon capture and storage related codes in project implementation (Similarity Score: 0.4656)

ID 489: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.5998)

ID 237: Keeping up-to-date with changes in hydrogen regulations (Similarity Score: 0.5547)

### 9.2.1: Identifying Relevant Standards

ID 136: Evaluating project feasibility against commercial, technical, and non-technical requirements (Similarity Score: 0.4222)

ID 564: Application of carbon capture and storage related codes in project implementation (Similarity Score: 0.4629)

ID 533: Understanding of fluid characterization for carbon dioxide (CO2) injection (Similarity Score: 0.3673)

ID 562: Application of hydrogen safety codes and standards in operations (Similarity Score: 0.6399)

ID 596: Selection and design of piping systems and fittings for carbon dioxide (CO2) environments (Similarity Score: 0.4187)

### 9.2.2: Applying Regulatory Requirements

ID 136: Evaluating project feasibility against commercial, technical, and non-technical requirements (Similarity Score: 0.4389)

ID 237: Keeping up-to-date with changes in hydrogen regulations (Similarity Score: 0.5456)

ID 394: Understanding regulations for hydrogen infrastructure and operations (Similarity Score: 0.6170)

ID 564: Application of carbon capture and storage related codes in project implementation (Similarity Score: 0.4408)

ID 562: Application of hydrogen safety codes and standards in operations (Similarity Score: 0.6568)

ID 416: Keeping current with regulatory, standard, and code changes in the hydrogen sector (Similarity Score: 0.5895)

ID 417: Assessing the impact of changes in technology and regulations on safety requirements (Similarity Score: 0.4817)

### 9.2.3: Ensuring Compliance with Safety Standards

ID 314: Selection and design of piping systems and fittings for hydrogen (Similarity Score: 0.5797)

ID 564: Application of carbon capture and storage related codes in project implementation (Similarity Score: 0.4457)

ID 333: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.5904)

ID 562: Application of hydrogen safety codes and standards in operations (Similarity Score: 0.6741)

ID 469: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.5904)

ID 183: Advanced knowledge of evolving standards in hydrogen industry (Similarity Score: 0.5830)

ID 239: Keeping up-to-date with changes in hydrogen codes (Similarity Score: 0.5133)

ID 425: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.5904)

ID 237: Keeping up-to-date with changes in hydrogen regulations (Similarity Score: 0.5523)

ID 489: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.5904)

ID 442: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.5904)

ID 364: Selection and design of piping systems and fittings for hydrogen (Similarity Score: 0.5797)

## 9.4: Hazardous Area Requirements

ID 564: Application of carbon capture and storage related codes in project implementation (Similarity Score: 0.4728)

ID 136: Evaluating project feasibility against commercial, technical, and non-technical requirements (Similarity Score: 0.4517)

ID 209: Knowledge of certification requirements for hydrogen products (Similarity Score: 0.6523)

ID 533: Understanding of fluid characterization for carbon dioxide (CO2) injection (Similarity Score: 0.3802)

ID 63: Understanding personal protective equipment (PPE) requirements for hydrogen work (Similarity Score: 0.5103)

ID 601: Selection of appropriate coatings for carbon dioxide (CO2) compression facility maintenance (Similarity Score: 0.3728)

ID 417: Assessing the impact of changes in technology and regulations on safety requirements (Similarity Score: 0.4539)

ID 394: Understanding regulations for hydrogen infrastructure and operations (Similarity Score: 0.6305)

ID 562: Application of hydrogen safety codes and standards in operations (Similarity Score: 0.6683)

ID 505: Knowledge of well completion solutions tailored for hydrogen environments (Similarity Score: 0.5669)

ID 189: Understanding of relevant hydrogen regulations (Similarity Score: 0.6792)

### 9.4.1: Identifying Hazardous Zones

ID 489: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.5966)

ID 136: Evaluating project feasibility against commercial, technical, and non-technical requirements (Similarity Score: 0.4351)

ID 601: Selection of appropriate coatings for carbon dioxide (CO2) compression facility maintenance (Similarity Score: 0.4077)

ID 596: Selection and design of piping systems and fittings for carbon dioxide (CO2) environments (Similarity Score: 0.4452)

ID 442: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.5966)

ID 579: Understanding of well completion solutions for carbon dioxide (CO2) based on subsurface conditions (Similarity Score: 0.3436)

ID 49: Knowledge of appropriate coatings for hydrogen systems (Similarity Score: 0.5626)

ID 191: Knowledge of relevant codes applicable to hydrogen (Similarity Score: 0.6219)

ID 137: Knowledge of relevant codes for hydrogen fueling station equipment (Similarity Score: 0.6090)

ID 564: Application of carbon capture and storage related codes in project implementation (Similarity Score: 0.4864)

ID 394: Understanding regulations for hydrogen infrastructure and operations (Similarity Score: 0.6243)

ID 505: Knowledge of well completion solutions tailored for hydrogen environments (Similarity Score: 0.5463)

ID 63: Understanding personal protective equipment (PPE) requirements for hydrogen work (Similarity Score: 0.4893)

ID 533: Understanding of fluid characterization for carbon dioxide (CO2) injection (Similarity Score: 0.3824)

ID 239: Keeping up-to-date with changes in hydrogen codes (Similarity Score: 0.4992)

ID 562: Application of hydrogen safety codes and standards in operations (Similarity Score: 0.6677)

ID 469: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.5966)

ID 425: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.5966)

ID 333: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.5966)

### 9.4.2: Safety Measures for Hazardous Areas

ID 136: Evaluating project feasibility against commercial, technical, and non-technical requirements (Similarity Score: 0.4577)

ID 63: Understanding personal protective equipment (PPE) requirements for hydrogen work (Similarity Score: 0.5218)

ID 394: Understanding regulations for hydrogen infrastructure and operations (Similarity Score: 0.6261)

ID 48: Knowledge of appropriate seals for hydrogen systems (Similarity Score: 0.6055)

ID 49: Knowledge of appropriate coatings for hydrogen systems (Similarity Score: 0.5603)

ID 562: Application of hydrogen safety codes and standards in operations (Similarity Score: 0.7017)

ID 417: Assessing the impact of changes in technology and regulations on safety requirements (Similarity Score: 0.4943)

ID 209: Knowledge of certification requirements for hydrogen products (Similarity Score: 0.6648)

ID 564: Application of carbon capture and storage related codes in project implementation (Similarity Score: 0.4622)

ID 533: Understanding of fluid characterization for carbon dioxide (CO2) injection (Similarity Score: 0.3703)

### 9.4.3: Operational Implications in Hazardous Environments

ID 392: Knowledge of operational adjustments for hydrogen blending (Similarity Score: 0.5794)

ID 417: Assessing the impact of changes in technology and regulations on safety requirements (Similarity Score: 0.4469)

ID 89: Understanding operational adjustments needed for hydrogen-blending (Similarity Score: 0.5718)

ID 533: Understanding of fluid characterization for carbon dioxide (CO2) injection (Similarity Score: 0.3991)

ID 562: Application of hydrogen safety codes and standards in operations (Similarity Score: 0.6503)

ID 63: Understanding personal protective equipment (PPE) requirements for hydrogen work (Similarity Score: 0.4898)

ID 505: Knowledge of well completion solutions tailored for hydrogen environments (Similarity Score: 0.5601)

ID 394: Understanding regulations for hydrogen infrastructure and operations (Similarity Score: 0.6116)

ID 564: Application of carbon capture and storage related codes in project implementation (Similarity Score: 0.4834)

ID 596: Selection and design of piping systems and fittings for carbon dioxide (CO2) environments (Similarity Score: 0.4199)

ID 579: Understanding of well completion solutions for carbon dioxide (CO2) based on subsurface conditions (Similarity Score: 0.3620)

ID 136: Evaluating project feasibility against commercial, technical, and non-technical requirements (Similarity Score: 0.4449)

ID 554: Understanding fluid characterization in carbon dioxide (CO2) injection contexts (Similarity Score: 0.4044)

# 10: Cooling Systems in Hydrogen Production Plants

ID 419: Maintenance of mechanical systems to withstand temperature variations in hydrogen environments (Similarity Score: 0.6103)

ID 307: Selection and design of turbines to withstand hydrogen conditions (Similarity Score: 0.5577)

ID 510: Selection and design of turbine systems to withstand hydrogen pressure and temperatures (Similarity Score: 0.5814)

ID 646: Selection of turbine systems suitable for hydrogen applications (Similarity Score: 0.6121)

ID 32: Operation of hydrogen dispensing systems (Similarity Score: 0.6342)

ID 589: Understanding of control systems used in SMR/ATR hydrogen production plants (Similarity Score: 0.6000)

ID 409: Selection of turbines that are compatible with hydrogen pressure (Similarity Score: 0.4944)

ID 486: Maintenance of power generation systems for hydrogen blending (Similarity Score: 0.6197)

ID 306: Selection and design of pumping systems for hot/cold hydrogen environments (Similarity Score: 0.6198)

ID 397: Knowledge of control systems for hydrogen blending in power generation (Similarity Score: 0.6076)

ID 65: Knowledge of control systems in electrolyzer hydrogen production plants (Similarity Score: 0.6509)

ID 141: Knowledge of hydrogen dispensing systems (Similarity Score: 0.5650)

ID 4: Experience with hydrogen cooling systems (Similarity Score: 0.6860)

ID 423: Selection and design of air separation units for hydrogen pressure and temperature variations (Similarity Score: 0.5504)

ID 149: Knowledge of turbine systems used in hydrogen blending (Similarity Score: 0.6040)

ID 371: Selection and design of turbines for hydrogen environments (Similarity Score: 0.5649)

ID 264: Selection and design of steam and combustion turbines for hydrogen systems (Similarity Score: 0.6100)

ID 126: Understanding the impact of hydrogen blending on heating systems (Similarity Score: 0.5682)

## 10.1: Types of Cooling Systems

ID 149: Knowledge of turbine systems used in hydrogen blending (Similarity Score: 0.5802)

ID 646: Selection of turbine systems suitable for hydrogen applications (Similarity Score: 0.6252)

ID 423: Selection and design of air separation units for hydrogen pressure and temperature variations (Similarity Score: 0.5291)

ID 510: Selection and design of turbine systems to withstand hydrogen pressure and temperatures (Similarity Score: 0.5626)

ID 409: Selection of turbines that are compatible with hydrogen pressure (Similarity Score: 0.4696)

ID 264: Selection and design of steam and combustion turbines for hydrogen systems (Similarity Score: 0.6035)

ID 307: Selection and design of turbines to withstand hydrogen conditions (Similarity Score: 0.5512)

ID 306: Selection and design of pumping systems for hot/cold hydrogen environments (Similarity Score: 0.6103)

### 10.1.1: Cooling Systems for Electrolysers

ID 65: Knowledge of control systems in electrolyzer hydrogen production plants (Similarity Score: 0.6938)

ID 293: Knowledge of key electrical equipment in electrolyzer hydrogen production (Similarity Score: 0.6175)

ID 466: Selection and design of electrolyzers to withstand hydrogen pressure and temperature variations (Similarity Score: 0.5020)

ID 306: Selection and design of pumping systems for hot/cold hydrogen environments (Similarity Score: 0.5704)

ID 412: Optimization of rectification systems for electrolyzer plants (Similarity Score: 0.4545)

ID 229: Maintenance of electrical equipment in electrolyzer plants (Similarity Score: 0.4970)

ID 413: Knowledge of rectification technology for electrolyzer plants (Similarity Score: 0.4116)

ID 227: Selection of key electrical equipment for an electrolyzer hydrogen production plant (Similarity Score: 0.6601)

ID 228: Selection of electronic systems for electrolyzer hydrogen production (Similarity Score: 0.6394)

### 10.1.2: Cooling Systems for Compressors

ID 488: Selection and design of compressors to withstand hydrogen pressure and temperatures (Similarity Score: 0.5625)

ID 468: Selection and design of compressors for hydrogen environments (Similarity Score: 0.6312)

ID 265: Selection and design of compressors to withstand hydrogen pressure and temperatures (Similarity Score: 0.5625)

ID 149: Knowledge of turbine systems used in hydrogen blending (Similarity Score: 0.5844)

ID 441: Selection and design of compressors to handle hydrogen pressure and temperature extremes (Similarity Score: 0.5693)

ID 423: Selection and design of air separation units for hydrogen pressure and temperature variations (Similarity Score: 0.5280)

ID 306: Selection and design of pumping systems for hot/cold hydrogen environments (Similarity Score: 0.5874)

ID 409: Selection of turbines that are compatible with hydrogen pressure (Similarity Score: 0.4982)

ID 541: Selection and design of turbine systems (Similarity Score: 0.3878)

ID 646: Selection of turbine systems suitable for hydrogen applications (Similarity Score: 0.6177)

### 10.1.3: Cooling Systems for Storage Units

ID 646: Selection of turbine systems suitable for hydrogen applications (Similarity Score: 0.5727)

## 10.2: Operation of Cooling Systems

ID 65: Knowledge of control systems in electrolyzer hydrogen production plants (Similarity Score: 0.6729)

ID 304: Selection and design of combustion systems for hydrogen environments (Similarity Score: 0.6033)

ID 354: Knowledge of advanced control systems for combined-cycle power generation using hydrogen (Similarity Score: 0.6060)

ID 306: Selection and design of pumping systems for hot/cold hydrogen environments (Similarity Score: 0.6238)

ID 510: Selection and design of turbine systems to withstand hydrogen pressure and temperatures (Similarity Score: 0.5740)

ID 409: Selection of turbines that are compatible with hydrogen pressure (Similarity Score: 0.4681)

ID 264: Selection and design of steam and combustion turbines for hydrogen systems (Similarity Score: 0.6214)

ID 141: Knowledge of hydrogen dispensing systems (Similarity Score: 0.5841)

ID 4: Experience with hydrogen cooling systems (Similarity Score: 0.6879)

ID 397: Knowledge of control systems for hydrogen blending in power generation (Similarity Score: 0.6169)

ID 371: Selection and design of turbines for hydrogen environments (Similarity Score: 0.5698)

ID 31: Knowledge of hydrogen refueling systems (Similarity Score: 0.6004)

ID 423: Selection and design of air separation units for hydrogen pressure and temperature variations (Similarity Score: 0.5649)

ID 149: Knowledge of turbine systems used in hydrogen blending (Similarity Score: 0.6108)

ID 223: Selection and design of production equipment for hydrogen systems (Similarity Score: 0.6523)

ID 589: Understanding of control systems used in SMR/ATR hydrogen production plants (Similarity Score: 0.6257)

ID 307: Selection and design of turbines to withstand hydrogen conditions (Similarity Score: 0.5630)

ID 32: Operation of hydrogen dispensing systems (Similarity Score: 0.6813)

ID 646: Selection of turbine systems suitable for hydrogen applications (Similarity Score: 0.6145)

### 10.2.1: Cooling Mechanisms and Principles

ID 306: Selection and design of pumping systems for hot/cold hydrogen environments (Similarity Score: 0.5768)

ID 423: Selection and design of air separation units for hydrogen pressure and temperature variations (Similarity Score: 0.5303)

ID 510: Selection and design of turbine systems to withstand hydrogen pressure and temperatures (Similarity Score: 0.5848)

ID 307: Selection and design of turbines to withstand hydrogen conditions (Similarity Score: 0.5571)

ID 419: Maintenance of mechanical systems to withstand temperature variations in hydrogen environments (Similarity Score: 0.6266)

ID 65: Knowledge of control systems in electrolyzer hydrogen production plants (Similarity Score: 0.6456)

ID 141: Knowledge of hydrogen dispensing systems (Similarity Score: 0.5586)

ID 418: Maintenance of mechanical systems under hydrogen pressure (Similarity Score: 0.6167)

ID 149: Knowledge of turbine systems used in hydrogen blending (Similarity Score: 0.5818)

ID 125: Understanding the principles of hydrogen blending for heating (Similarity Score: 0.5732)

ID 4: Experience with hydrogen cooling systems (Similarity Score: 0.6813)

ID 264: Selection and design of steam and combustion turbines for hydrogen systems (Similarity Score: 0.6133)

### 10.2.2: Flow and Heat Exchange Processes

ID 306: Selection and design of pumping systems for hot/cold hydrogen environments (Similarity Score: 0.6037)

ID 65: Knowledge of control systems in electrolyzer hydrogen production plants (Similarity Score: 0.6615)

ID 423: Selection and design of air separation units for hydrogen pressure and temperature variations (Similarity Score: 0.5456)

ID 589: Understanding of control systems used in SMR/ATR hydrogen production plants (Similarity Score: 0.6061)

ID 141: Knowledge of hydrogen dispensing systems (Similarity Score: 0.5558)

ID 32: Operation of hydrogen dispensing systems (Similarity Score: 0.6217)

ID 149: Knowledge of turbine systems used in hydrogen blending (Similarity Score: 0.5643)

### 10.2.3: Control Systems for Temperature Regulation

ID 419: Maintenance of mechanical systems to withstand temperature variations in hydrogen environments (Similarity Score: 0.6193)

ID 423: Selection and design of air separation units for hydrogen pressure and temperature variations (Similarity Score: 0.5363)

ID 589: Understanding of control systems used in SMR/ATR hydrogen production plants (Similarity Score: 0.6374)

ID 567: Understanding control systems in carbon capture plants (Similarity Score: 0.4751)

ID 65: Knowledge of control systems in electrolyzer hydrogen production plants (Similarity Score: 0.6609)

## 10.3: Benefits of Cooling Systems

ID 4: Experience with hydrogen cooling systems (Similarity Score: 0.7142)

ID 412: Optimization of rectification systems for electrolyzer plants (Similarity Score: 0.4134)

ID 126: Understanding the impact of hydrogen blending on heating systems (Similarity Score: 0.5795)

### 10.3.1: Efficiency Improvements

ID 128: Understanding efficiency and performance factors when using hydrogen blending for heating (Similarity Score: 0.5898)

ID 123: Continuous improvement of hydrogen fueling station operations (Similarity Score: 0.5771)

ID 149: Knowledge of turbine systems used in hydrogen blending (Similarity Score: 0.5683)

ID 4: Experience with hydrogen cooling systems (Similarity Score: 0.7136)

ID 126: Understanding the impact of hydrogen blending on heating systems (Similarity Score: 0.5768)

ID 412: Optimization of rectification systems for electrolyzer plants (Similarity Score: 0.4418)

### 10.3.2: Equipment Longevity

ID 132: Knowledge of maintaining coatings to ensure long-term protection (Similarity Score: 0.3499)

ID 435: Maintenance of electrical systems in carbon capture plants (Similarity Score: 0.5076)

ID 412: Optimization of rectification systems for electrolyzer plants (Similarity Score: 0.4129)

ID 4: Experience with hydrogen cooling systems (Similarity Score: 0.6879)

ID 550: Maintenance of carbon capture systems and materials (Similarity Score: 0.4363)

ID 236: Staying current with advances in hydrogen technology (Similarity Score: 0.5504)

### 10.3.3: Safety Enhancements

ID 31: Knowledge of hydrogen refueling systems (Similarity Score: 0.6063)

ID 236: Staying current with advances in hydrogen technology (Similarity Score: 0.5510)

ID 126: Understanding the impact of hydrogen blending on heating systems (Similarity Score: 0.5939)

ID 4: Experience with hydrogen cooling systems (Similarity Score: 0.7226)

ID 412: Optimization of rectification systems for electrolyzer plants (Similarity Score: 0.4164)

ID 549: Application of coatings to protect carbon capture systems (Similarity Score: 0.3638)

ID 149: Knowledge of turbine systems used in hydrogen blending (Similarity Score: 0.5710)

## 10.4: Maintenance and Monitoring

ID 149: Knowledge of turbine systems used in hydrogen blending (Similarity Score: 0.5915)

ID 419: Maintenance of mechanical systems to withstand temperature variations in hydrogen environments (Similarity Score: 0.6703)

ID 542: Maintenance of compression, pumping, and turbine systems (Similarity Score: 0.5317)

ID 31: Knowledge of hydrogen refueling systems (Similarity Score: 0.6086)

ID 520: Maintenance of instrumentation systems in SMR and/or ATR hydrogen production plant (Similarity Score: 0.6876)

ID 439: Selection of seals for carbon dioxide (CO2) pump systems to ensure system integrity (Similarity Score: 0.4715)

ID 435: Maintenance of electrical systems in carbon capture plants (Similarity Score: 0.5610)

ID 56: Maintenance of coatings and insulation in hydrogen fueling systems (Similarity Score: 0.6296)

ID 541: Selection and design of turbine systems (Similarity Score: 0.3963)

ID 389: Maintenance of high-power electrical equipment in electrolyzer systems (Similarity Score: 0.4510)

ID 351: Maintenance of piping systems and fittings under hydrogen conditions (Similarity Score: 0.6425)

ID 418: Maintenance of mechanical systems under hydrogen pressure (Similarity Score: 0.6709)

ID 32: Operation of hydrogen dispensing systems (Similarity Score: 0.6328)

ID 203: Maintenance of electronic systems in hydrogen blending power generation (Similarity Score: 0.6770)

ID 328: Troubleshooting hydrogen fuel dispensing equipment (Similarity Score: 0.6004)

ID 67: Knowledge of monitoring systems for electrolyzer hydrogen production plants (Similarity Score: 0.7204)

ID 30: Maintenance of rotating equipment in hydrogen pipeline systems (Similarity Score: 0.6637)

ID 606: Maintenance of compressors to withstand hydrogen pressure and temperatures (Similarity Score: 0.6351)

ID 458: Maintenance of key instrumentation systems in carbon capture plants (Similarity Score: 0.5780)

ID 550: Maintenance of carbon capture systems and materials (Similarity Score: 0.4552)

ID 409: Selection of turbines that are compatible with hydrogen pressure (Similarity Score: 0.4865)

ID 362: Maintenance of compression, turbines, combustion, and related systems for hydrogen blending (Similarity Score: 0.6282)

ID 423: Selection and design of air separation units for hydrogen pressure and temperature variations (Similarity Score: 0.5335)

ID 411: Maintenance of turbines to ensure reliability under hydrogen pressure (Similarity Score: 0.7032)

ID 65: Knowledge of control systems in electrolyzer hydrogen production plants (Similarity Score: 0.6580)

ID 28: Appropriate selection of rotating equipment for hydrogen pipeline transmission (Similarity Score: 0.5511)

ID 397: Knowledge of control systems for hydrogen blending in power generation (Similarity Score: 0.6088)

ID 621: Maintenance of power generation equipment used in combined-cycle systems with hydrogen blending (Similarity Score: 0.6425)

ID 446: Maintenance of equipment in Autothermal Reforming (ATR) hydrogen production (Similarity Score: 0.5958)

ID 622: Maintenance of systems for hydrogen blending in combined-cycle power generation (Similarity Score: 0.6351)

ID 76: Selection of equipment designed to withstand hydrogen temperatures (Similarity Score: 0.5485)

ID 599: Maintenance of vessels, piping systems, cryogenic systems, valves, and seals (Similarity Score: 0.4872)

ID 366: Maintenance of fuel tanks, piping, valves, and seals in hydrogen systems (Similarity Score: 0.6772)

ID 373: Maintenance of turbines in hydrogen environments (Similarity Score: 0.6877)

ID 77: Maintenance of materials and equipment used in high-pressure hydrogen systems (Similarity Score: 0.6645)

ID 352: Maintenance of valves and seals in hydrogen systems (Similarity Score: 0.6910)

ID 415: Staying informed about updates in hydrogen technology (Similarity Score: 0.5390)

ID 350: Maintenance of compressors for hydrogen conditions (Similarity Score: 0.7050)

ID 78: Maintenance of materials and equipment used in high-temperature hydrogen systems (Similarity Score: 0.7024)

ID 335: Maintenance of key hydrogen systems to ensure reliability under varying conditions (Similarity Score: 0.6794)

ID 421: Maintenance of electrical systems in hydrogen production and storage environments (Similarity Score: 0.7411)

ID 223: Selection and design of production equipment for hydrogen systems (Similarity Score: 0.6564)

ID 157: Maintenance of compressors for hydrogen systems (Similarity Score: 0.7380)

ID 120: Maintenance of electrolyzers, vessels, compressors, piping systems, valves, and seals to withstand hydrogen pressure and temperatures (Similarity Score: 0.5922)

ID 590: Optimization of control systems in SMR/ATR hydrogen production processes (Similarity Score: 0.5814)

ID 608: Maintenance of valves and seals to withstand hydrogen pressure and temperatures (Similarity Score: 0.6133)

ID 300: Knowledge of key instrumentation for ventilation systems in hydrogen blending (Similarity Score: 0.5698)

ID 570: Monitoring and inspection of carbon capture systems for maintenance (Similarity Score: 0.5935)

ID 230: Maintenance of electronic systems in electrolyzer plants (Similarity Score: 0.5743)

ID 648: Maintenance of turbine systems to ensure reliability under hydrogen conditions (Similarity Score: 0.7205)

ID 229: Maintenance of electrical equipment in electrolyzer plants (Similarity Score: 0.4993)

ID 319: Maintenance of instrumentation systems in electrolyzer hydrogen production (Similarity Score: 0.6859)

ID 121: Management of hydrogen fueling stations (Similarity Score: 0.6819)

ID 306: Selection and design of pumping systems for hot/cold hydrogen environments (Similarity Score: 0.5959)

ID 307: Selection and design of turbines to withstand hydrogen conditions (Similarity Score: 0.5486)

ID 228: Selection of electronic systems for electrolyzer hydrogen production (Similarity Score: 0.5915)

ID 308: Maintenance of key systems to withstand hydrogen pressure and temperatures (Similarity Score: 0.6771)

ID 109: Maintenance of flame detection systems for hydrogen blending (Similarity Score: 0.6213)

ID 250: Maintenance of dispensers in hydrogen fueling systems (Similarity Score: 0.6281)

ID 107: Maintenance of ventilation systems for hydrogen blending (Similarity Score: 0.6810)

ID 248: Maintenance of vaporizers in hydrogen fueling systems (Similarity Score: 0.6718)

ID 316: Maintenance of fuel tanks, piping, valves, and seals in hydrogen systems (Similarity Score: 0.6772)

ID 594: Maintenance of turbine systems for carbon dioxide (CO2) environments (Similarity Score: 0.5465)

ID 646: Selection of turbine systems suitable for hydrogen applications (Similarity Score: 0.5992)

ID 251: Maintenance of pumps in hydrogen fueling systems (Similarity Score: 0.7008)

ID 158: Maintenance of turbines in hydrogen systems (Similarity Score: 0.7498)

ID 486: Maintenance of power generation systems for hydrogen blending (Similarity Score: 0.6875)

ID 607: Maintenance of piping systems and fittings under hydrogen conditions (Similarity Score: 0.6425)

ID 589: Understanding of control systems used in SMR/ATR hydrogen production plants (Similarity Score: 0.6079)

ID 123: Continuous improvement of hydrogen fueling station operations (Similarity Score: 0.5935)

ID 504: Maintenance of electrical and electronic systems in SMR and/or ATR hydrogen production (Similarity Score: 0.6322)

ID 511: Maintenance of combustion, compression, pumping, and turbine systems to ensure reliability under hydrogen conditions (Similarity Score: 0.6652)

ID 284: Knowledge of electrical equipment used in hydrogen fueling systems (Similarity Score: 0.6001)

ID 510: Selection and design of turbine systems to withstand hydrogen pressure and temperatures (Similarity Score: 0.5777)

ID 609: Maintenance of coatings and insulation to protect against hydrogen conditions (Similarity Score: 0.5466)

ID 4: Experience with hydrogen cooling systems (Similarity Score: 0.6882)

### 10.4.1: Routine Maintenance Procedures

ID 251: Maintenance of pumps in hydrogen fueling systems (Similarity Score: 0.7026)

ID 308: Maintenance of key systems to withstand hydrogen pressure and temperatures (Similarity Score: 0.6680)

ID 389: Maintenance of high-power electrical equipment in electrolyzer systems (Similarity Score: 0.4653)

ID 541: Selection and design of turbine systems (Similarity Score: 0.3902)

ID 228: Selection of electronic systems for electrolyzer hydrogen production (Similarity Score: 0.5816)

ID 350: Maintenance of compressors for hydrogen conditions (Similarity Score: 0.6965)

ID 30: Maintenance of rotating equipment in hydrogen pipeline systems (Similarity Score: 0.6794)

ID 599: Maintenance of vessels, piping systems, cryogenic systems, valves, and seals (Similarity Score: 0.5008)

ID 520: Maintenance of instrumentation systems in SMR and/or ATR hydrogen production plant (Similarity Score: 0.6875)

ID 32: Operation of hydrogen dispensing systems (Similarity Score: 0.6314)

ID 109: Maintenance of flame detection systems for hydrogen blending (Similarity Score: 0.5982)

ID 458: Maintenance of key instrumentation systems in carbon capture plants (Similarity Score: 0.5743)

ID 107: Maintenance of ventilation systems for hydrogen blending (Similarity Score: 0.6542)

ID 229: Maintenance of electrical equipment in electrolyzer plants (Similarity Score: 0.5093)

ID 250: Maintenance of dispensers in hydrogen fueling systems (Similarity Score: 0.6346)

ID 4: Experience with hydrogen cooling systems (Similarity Score: 0.6684)

ID 248: Maintenance of vaporizers in hydrogen fueling systems (Similarity Score: 0.6571)

ID 427: Maintenance of air separation units, vessels, piping systems, valves, and seals (Similarity Score: 0.5080)

ID 421: Maintenance of electrical systems in hydrogen production and storage environments (Similarity Score: 0.7254)

ID 594: Maintenance of turbine systems for carbon dioxide (CO2) environments (Similarity Score: 0.5193)

ID 646: Selection of turbine systems suitable for hydrogen applications (Similarity Score: 0.5703)

ID 335: Maintenance of key hydrogen systems to ensure reliability under varying conditions (Similarity Score: 0.6793)

ID 418: Maintenance of mechanical systems under hydrogen pressure (Similarity Score: 0.6509)

ID 28: Appropriate selection of rotating equipment for hydrogen pipeline transmission (Similarity Score: 0.5617)

ID 589: Understanding of control systems used in SMR/ATR hydrogen production plants (Similarity Score: 0.5994)

ID 78: Maintenance of materials and equipment used in high-temperature hydrogen systems (Similarity Score: 0.7080)

ID 284: Knowledge of electrical equipment used in hydrogen fueling systems (Similarity Score: 0.5983)

ID 352: Maintenance of valves and seals in hydrogen systems (Similarity Score: 0.6856)

ID 149: Knowledge of turbine systems used in hydrogen blending (Similarity Score: 0.5643)

ID 56: Maintenance of coatings and insulation in hydrogen fueling systems (Similarity Score: 0.6101)

ID 157: Maintenance of compressors for hydrogen systems (Similarity Score: 0.7312)

ID 120: Maintenance of electrolyzers, vessels, compressors, piping systems, valves, and seals to withstand hydrogen pressure and temperatures (Similarity Score: 0.5900)

ID 368: Maintenance of systems supporting PEM electrolyzers (Similarity Score: 0.4648)

ID 65: Knowledge of control systems in electrolyzer hydrogen production plants (Similarity Score: 0.6401)

ID 366: Maintenance of fuel tanks, piping, valves, and seals in hydrogen systems (Similarity Score: 0.6801)

ID 608: Maintenance of valves and seals to withstand hydrogen pressure and temperatures (Similarity Score: 0.5985)

ID 606: Maintenance of compressors to withstand hydrogen pressure and temperatures (Similarity Score: 0.6265)

ID 504: Maintenance of electrical and electronic systems in SMR and/or ATR hydrogen production (Similarity Score: 0.6296)

ID 67: Knowledge of monitoring systems for electrolyzer hydrogen production plants (Similarity Score: 0.6906)

ID 411: Maintenance of turbines to ensure reliability under hydrogen pressure (Similarity Score: 0.6655)

ID 158: Maintenance of turbines in hydrogen systems (Similarity Score: 0.7175)

ID 607: Maintenance of piping systems and fittings under hydrogen conditions (Similarity Score: 0.6293)

ID 550: Maintenance of carbon capture systems and materials (Similarity Score: 0.4437)

ID 486: Maintenance of power generation systems for hydrogen blending (Similarity Score: 0.6556)

ID 471: Maintenance of electrolyzers, vessels, compressors, piping systems, valves, and seals (Similarity Score: 0.5080)

ID 511: Maintenance of combustion, compression, pumping, and turbine systems to ensure reliability under hydrogen conditions (Similarity Score: 0.6484)

ID 439: Selection of seals for carbon dioxide (CO2) pump systems to ensure system integrity (Similarity Score: 0.4791)

ID 621: Maintenance of power generation equipment used in combined-cycle systems with hydrogen blending (Similarity Score: 0.6286)

ID 159: Maintenance of piping systems, fittings, valves, and seals (Similarity Score: 0.5035)

ID 230: Maintenance of electronic systems in electrolyzer plants (Similarity Score: 0.5780)

ID 648: Maintenance of turbine systems to ensure reliability under hydrogen conditions (Similarity Score: 0.7022)

ID 76: Selection of equipment designed to withstand hydrogen temperatures (Similarity Score: 0.5434)

ID 435: Maintenance of electrical systems in carbon capture plants (Similarity Score: 0.5456)

ID 203: Maintenance of electronic systems in hydrogen blending power generation (Similarity Score: 0.6537)

ID 542: Maintenance of compression, pumping, and turbine systems (Similarity Score: 0.5166)

ID 77: Maintenance of materials and equipment used in high-pressure hydrogen systems (Similarity Score: 0.6716)

ID 373: Maintenance of turbines in hydrogen environments (Similarity Score: 0.6456)

ID 351: Maintenance of piping systems and fittings under hydrogen conditions (Similarity Score: 0.6293)

ID 306: Selection and design of pumping systems for hot/cold hydrogen environments (Similarity Score: 0.5953)

ID 423: Selection and design of air separation units for hydrogen pressure and temperature variations (Similarity Score: 0.5354)

ID 223: Selection and design of production equipment for hydrogen systems (Similarity Score: 0.6529)

ID 31: Knowledge of hydrogen refueling systems (Similarity Score: 0.5961)

ID 316: Maintenance of fuel tanks, piping, valves, and seals in hydrogen systems (Similarity Score: 0.6801)

ID 221: Understanding of installation procedures unique to hydrogen (Similarity Score: 0.6146)

ID 419: Maintenance of mechanical systems to withstand temperature variations in hydrogen environments (Similarity Score: 0.6525)

ID 319: Maintenance of instrumentation systems in electrolyzer hydrogen production (Similarity Score: 0.6852)

### 10.4.2: Monitoring System Performance

ID 486: Maintenance of power generation systems for hydrogen blending (Similarity Score: 0.6519)

ID 599: Maintenance of vessels, piping systems, cryogenic systems, valves, and seals (Similarity Score: 0.4860)

ID 541: Selection and design of turbine systems (Similarity Score: 0.3951)

ID 28: Appropriate selection of rotating equipment for hydrogen pipeline transmission (Similarity Score: 0.5339)

ID 121: Management of hydrogen fueling stations (Similarity Score: 0.6694)

ID 409: Selection of turbines that are compatible with hydrogen pressure (Similarity Score: 0.4682)

ID 285: Knowledge of instrumentation systems for hydrogen fueling (Similarity Score: 0.6033)

ID 504: Maintenance of electrical and electronic systems in SMR and/or ATR hydrogen production (Similarity Score: 0.6115)

ID 157: Maintenance of compressors for hydrogen systems (Similarity Score: 0.7047)

ID 350: Maintenance of compressors for hydrogen conditions (Similarity Score: 0.6736)

ID 65: Knowledge of control systems in electrolyzer hydrogen production plants (Similarity Score: 0.6589)

ID 109: Maintenance of flame detection systems for hydrogen blending (Similarity Score: 0.5960)

ID 229: Maintenance of electrical equipment in electrolyzer plants (Similarity Score: 0.4906)

ID 648: Maintenance of turbine systems to ensure reliability under hydrogen conditions (Similarity Score: 0.7062)

ID 223: Selection and design of production equipment for hydrogen systems (Similarity Score: 0.6639)

ID 248: Maintenance of vaporizers in hydrogen fueling systems (Similarity Score: 0.6460)

ID 78: Maintenance of materials and equipment used in high-temperature hydrogen systems (Similarity Score: 0.6831)

ID 56: Maintenance of coatings and insulation in hydrogen fueling systems (Similarity Score: 0.6143)

ID 435: Maintenance of electrical systems in carbon capture plants (Similarity Score: 0.5523)

ID 319: Maintenance of instrumentation systems in electrolyzer hydrogen production (Similarity Score: 0.6864)

ID 123: Continuous improvement of hydrogen fueling station operations (Similarity Score: 0.6032)

ID 352: Maintenance of valves and seals in hydrogen systems (Similarity Score: 0.6620)

ID 76: Selection of equipment designed to withstand hydrogen temperatures (Similarity Score: 0.5467)

ID 306: Selection and design of pumping systems for hot/cold hydrogen environments (Similarity Score: 0.5808)

ID 316: Maintenance of fuel tanks, piping, valves, and seals in hydrogen systems (Similarity Score: 0.6651)

ID 373: Maintenance of turbines in hydrogen environments (Similarity Score: 0.6598)

ID 542: Maintenance of compression, pumping, and turbine systems (Similarity Score: 0.5098)

ID 520: Maintenance of instrumentation systems in SMR and/or ATR hydrogen production plant (Similarity Score: 0.6746)

ID 421: Maintenance of electrical systems in hydrogen production and storage environments (Similarity Score: 0.7151)

ID 149: Knowledge of turbine systems used in hydrogen blending (Similarity Score: 0.5863)

ID 31: Knowledge of hydrogen refueling systems (Similarity Score: 0.6081)

ID 418: Maintenance of mechanical systems under hydrogen pressure (Similarity Score: 0.6243)

ID 203: Maintenance of electronic systems in hydrogen blending power generation (Similarity Score: 0.6517)

ID 120: Maintenance of electrolyzers, vessels, compressors, piping systems, valves, and seals to withstand hydrogen pressure and temperatures (Similarity Score: 0.5989)

ID 397: Knowledge of control systems for hydrogen blending in power generation (Similarity Score: 0.6022)

ID 608: Maintenance of valves and seals to withstand hydrogen pressure and temperatures (Similarity Score: 0.5982)

ID 411: Maintenance of turbines to ensure reliability under hydrogen pressure (Similarity Score: 0.6807)

ID 510: Selection and design of turbine systems to withstand hydrogen pressure and temperatures (Similarity Score: 0.5744)

ID 415: Staying informed about updates in hydrogen technology (Similarity Score: 0.5329)

ID 107: Maintenance of ventilation systems for hydrogen blending (Similarity Score: 0.6422)

ID 594: Maintenance of turbine systems for carbon dioxide (CO2) environments (Similarity Score: 0.5395)

ID 250: Maintenance of dispensers in hydrogen fueling systems (Similarity Score: 0.5855)

ID 300: Knowledge of key instrumentation for ventilation systems in hydrogen blending (Similarity Score: 0.5782)

ID 646: Selection of turbine systems suitable for hydrogen applications (Similarity Score: 0.5977)

ID 589: Understanding of control systems used in SMR/ATR hydrogen production plants (Similarity Score: 0.6013)

ID 458: Maintenance of key instrumentation systems in carbon capture plants (Similarity Score: 0.5870)

ID 228: Selection of electronic systems for electrolyzer hydrogen production (Similarity Score: 0.5955)

ID 550: Maintenance of carbon capture systems and materials (Similarity Score: 0.4515)

ID 606: Maintenance of compressors to withstand hydrogen pressure and temperatures (Similarity Score: 0.6204)

ID 419: Maintenance of mechanical systems to withstand temperature variations in hydrogen environments (Similarity Score: 0.6370)

ID 423: Selection and design of air separation units for hydrogen pressure and temperature variations (Similarity Score: 0.5109)

ID 67: Knowledge of monitoring systems for electrolyzer hydrogen production plants (Similarity Score: 0.7360)

ID 307: Selection and design of turbines to withstand hydrogen conditions (Similarity Score: 0.5454)

ID 439: Selection of seals for carbon dioxide (CO2) pump systems to ensure system integrity (Similarity Score: 0.4918)

ID 621: Maintenance of power generation equipment used in combined-cycle systems with hydrogen blending (Similarity Score: 0.6234)

ID 446: Maintenance of equipment in Autothermal Reforming (ATR) hydrogen production (Similarity Score: 0.5735)

ID 511: Maintenance of combustion, compression, pumping, and turbine systems to ensure reliability under hydrogen conditions (Similarity Score: 0.6622)

ID 308: Maintenance of key systems to withstand hydrogen pressure and temperatures (Similarity Score: 0.6565)

ID 366: Maintenance of fuel tanks, piping, valves, and seals in hydrogen systems (Similarity Score: 0.6651)

ID 13: Knowledge of systems associated with hydrogen pipeline transmission (Similarity Score: 0.5765)

ID 570: Monitoring and inspection of carbon capture systems for maintenance (Similarity Score: 0.6020)

ID 335: Maintenance of key hydrogen systems to ensure reliability under varying conditions (Similarity Score: 0.6718)

ID 158: Maintenance of turbines in hydrogen systems (Similarity Score: 0.7163)

ID 4: Experience with hydrogen cooling systems (Similarity Score: 0.6958)

ID 230: Maintenance of electronic systems in electrolyzer plants (Similarity Score: 0.5636)

### 10.4.3: Troubleshooting and Repairs

ID 123: Continuous improvement of hydrogen fueling station operations (Similarity Score: 0.5770)

ID 251: Maintenance of pumps in hydrogen fueling systems (Similarity Score: 0.7023)

ID 78: Maintenance of materials and equipment used in high-temperature hydrogen systems (Similarity Score: 0.6812)

ID 308: Maintenance of key systems to withstand hydrogen pressure and temperatures (Similarity Score: 0.6744)

ID 439: Selection of seals for carbon dioxide (CO2) pump systems to ensure system integrity (Similarity Score: 0.4491)

ID 158: Maintenance of turbines in hydrogen systems (Similarity Score: 0.7283)

ID 599: Maintenance of vessels, piping systems, cryogenic systems, valves, and seals (Similarity Score: 0.4947)

ID 350: Maintenance of compressors for hydrogen conditions (Similarity Score: 0.6816)

ID 229: Maintenance of electrical equipment in electrolyzer plants (Similarity Score: 0.4881)

ID 284: Knowledge of electrical equipment used in hydrogen fueling systems (Similarity Score: 0.5988)

ID 607: Maintenance of piping systems and fittings under hydrogen conditions (Similarity Score: 0.6258)

ID 486: Maintenance of power generation systems for hydrogen blending (Similarity Score: 0.6691)

ID 411: Maintenance of turbines to ensure reliability under hydrogen pressure (Similarity Score: 0.6802)

ID 67: Knowledge of monitoring systems for electrolyzer hydrogen production plants (Similarity Score: 0.6857)

ID 419: Maintenance of mechanical systems to withstand temperature variations in hydrogen environments (Similarity Score: 0.6525)

ID 621: Maintenance of power generation equipment used in combined-cycle systems with hydrogen blending (Similarity Score: 0.6469)

ID 366: Maintenance of fuel tanks, piping, valves, and seals in hydrogen systems (Similarity Score: 0.6913)

ID 608: Maintenance of valves and seals to withstand hydrogen pressure and temperatures (Similarity Score: 0.5959)

ID 550: Maintenance of carbon capture systems and materials (Similarity Score: 0.4231)

ID 230: Maintenance of electronic systems in electrolyzer plants (Similarity Score: 0.5630)

ID 606: Maintenance of compressors to withstand hydrogen pressure and temperatures (Similarity Score: 0.6075)

ID 446: Maintenance of equipment in Autothermal Reforming (ATR) hydrogen production (Similarity Score: 0.5728)

ID 351: Maintenance of piping systems and fittings under hydrogen conditions (Similarity Score: 0.6258)

ID 65: Knowledge of control systems in electrolyzer hydrogen production plants (Similarity Score: 0.6413)

ID 120: Maintenance of electrolyzers, vessels, compressors, piping systems, valves, and seals to withstand hydrogen pressure and temperatures (Similarity Score: 0.5901)

ID 149: Knowledge of turbine systems used in hydrogen blending (Similarity Score: 0.5635)

ID 157: Maintenance of compressors for hydrogen systems (Similarity Score: 0.7169)

ID 504: Maintenance of electrical and electronic systems in SMR and/or ATR hydrogen production (Similarity Score: 0.6122)

ID 648: Maintenance of turbine systems to ensure reliability under hydrogen conditions (Similarity Score: 0.7064)

ID 520: Maintenance of instrumentation systems in SMR and/or ATR hydrogen production plant (Similarity Score: 0.6583)

ID 415: Staying informed about updates in hydrogen technology (Similarity Score: 0.5502)

ID 373: Maintenance of turbines in hydrogen environments (Similarity Score: 0.6519)

ID 121: Management of hydrogen fueling stations (Similarity Score: 0.6513)

ID 328: Troubleshooting hydrogen fuel dispensing equipment (Similarity Score: 0.6471)

ID 352: Maintenance of valves and seals in hydrogen systems (Similarity Score: 0.6881)

ID 56: Maintenance of coatings and insulation in hydrogen fueling systems (Similarity Score: 0.6214)

ID 622: Maintenance of systems for hydrogen blending in combined-cycle power generation (Similarity Score: 0.6332)

ID 159: Maintenance of piping systems, fittings, valves, and seals (Similarity Score: 0.4940)

ID 511: Maintenance of combustion, compression, pumping, and turbine systems to ensure reliability under hydrogen conditions (Similarity Score: 0.6505)

ID 316: Maintenance of fuel tanks, piping, valves, and seals in hydrogen systems (Similarity Score: 0.6913)

ID 248: Maintenance of vaporizers in hydrogen fueling systems (Similarity Score: 0.6467)

ID 646: Selection of turbine systems suitable for hydrogen applications (Similarity Score: 0.5628)

ID 458: Maintenance of key instrumentation systems in carbon capture plants (Similarity Score: 0.5491)

ID 418: Maintenance of mechanical systems under hydrogen pressure (Similarity Score: 0.6709)

ID 4: Experience with hydrogen cooling systems (Similarity Score: 0.6637)

ID 335: Maintenance of key hydrogen systems to ensure reliability under varying conditions (Similarity Score: 0.6916)

ID 31: Knowledge of hydrogen refueling systems (Similarity Score: 0.6092)

ID 107: Maintenance of ventilation systems for hydrogen blending (Similarity Score: 0.6355)

ID 609: Maintenance of coatings and insulation to protect against hydrogen conditions (Similarity Score: 0.5389)

ID 327: Troubleshooting hydrogen fuel compression equipment (Similarity Score: 0.5900)

ID 203: Maintenance of electronic systems in hydrogen blending power generation (Similarity Score: 0.6702)

ID 589: Understanding of control systems used in SMR/ATR hydrogen production plants (Similarity Score: 0.5789)

ID 421: Maintenance of electrical systems in hydrogen production and storage environments (Similarity Score: 0.7256)

ID 250: Maintenance of dispensers in hydrogen fueling systems (Similarity Score: 0.6110)

ID 30: Maintenance of rotating equipment in hydrogen pipeline systems (Similarity Score: 0.6536)

ID 435: Maintenance of electrical systems in carbon capture plants (Similarity Score: 0.5367)

ID 397: Knowledge of control systems for hydrogen blending in power generation (Similarity Score: 0.5969)

# 11: Hydrogen Production via Steam Methane Reforming (SMR)

ID 445: Maintenance of equipment in Steam Methane Reforming (SMR) hydrogen production (Similarity Score: 0.8247)

ID 447: Understanding of Steam Methane Reforming (SMR) process for hydrogen production (Similarity Score: 0.9092)

ID 409: Selection of turbines that are compatible with hydrogen pressure (Similarity Score: 0.4670)

ID 264: Selection and design of steam and combustion turbines for hydrogen systems (Similarity Score: 0.6496)

ID 581: Understanding of hydrogen production process using Steam Methane Reforming (SMR) (Similarity Score: 0.9196)

ID 125: Understanding the principles of hydrogen blending for heating (Similarity Score: 0.5253)

ID 344: Techniques for repairing hydrogen leaks (Similarity Score: 0.5017)

ID 448: Understanding of Autothermal Reforming (ATR) process for hydrogen production (Similarity Score: 0.5830)

ID 358: Selection and design of turbines for hydrogen blending (Similarity Score: 0.5374)

ID 640: Knowledge of systems used in SMR and ATR hydrogen production processes (Similarity Score: 0.6198)

ID 582: Understanding of hydrogen production process using Autothermal Reforming (ATR) (Similarity Score: 0.6288)

ID 126: Understanding the impact of hydrogen blending on heating systems (Similarity Score: 0.5644)

ID 149: Knowledge of turbine systems used in hydrogen blending (Similarity Score: 0.5714)

## 11.1: Overview of Steam Methane Reforming

ID 447: Understanding of Steam Methane Reforming (SMR) process for hydrogen production (Similarity Score: 0.9239)

ID 448: Understanding of Autothermal Reforming (ATR) process for hydrogen production (Similarity Score: 0.5637)

ID 581: Understanding of hydrogen production process using Steam Methane Reforming (SMR) (Similarity Score: 0.9233)

ID 575: Understanding of steam generation processes (Similarity Score: 0.5318)

ID 264: Selection and design of steam and combustion turbines for hydrogen systems (Similarity Score: 0.6027)

ID 268: Selection and design of steam generators and boilers (Similarity Score: 0.3325)

ID 582: Understanding of hydrogen production process using Autothermal Reforming (ATR) (Similarity Score: 0.6045)

ID 445: Maintenance of equipment in Steam Methane Reforming (SMR) hydrogen production (Similarity Score: 0.8154)

### 11.1.1: Fundamentals of SMR Technology

ID 575: Understanding of steam generation processes (Similarity Score: 0.5466)

ID 581: Understanding of hydrogen production process using Steam Methane Reforming (SMR) (Similarity Score: 0.8812)

ID 445: Maintenance of equipment in Steam Methane Reforming (SMR) hydrogen production (Similarity Score: 0.7596)

ID 447: Understanding of Steam Methane Reforming (SMR) process for hydrogen production (Similarity Score: 0.8745)

ID 268: Selection and design of steam generators and boilers (Similarity Score: 0.3257)

### 11.1.2: Role of Natural Gas in Hydrogen Production

ID 582: Understanding of hydrogen production process using Autothermal Reforming (ATR) (Similarity Score: 0.5723)

ID 581: Understanding of hydrogen production process using Steam Methane Reforming (SMR) (Similarity Score: 0.8809)

ID 447: Understanding of Steam Methane Reforming (SMR) process for hydrogen production (Similarity Score: 0.8812)

ID 448: Understanding of Autothermal Reforming (ATR) process for hydrogen production (Similarity Score: 0.5344)

ID 445: Maintenance of equipment in Steam Methane Reforming (SMR) hydrogen production (Similarity Score: 0.7716)

ID 575: Understanding of steam generation processes (Similarity Score: 0.5300)

## 11.2: Key Stages in the SMR Process

ID 575: Understanding of steam generation processes (Similarity Score: 0.5605)

ID 447: Understanding of Steam Methane Reforming (SMR) process for hydrogen production (Similarity Score: 0.8802)

ID 448: Understanding of Autothermal Reforming (ATR) process for hydrogen production (Similarity Score: 0.5524)

ID 126: Understanding the impact of hydrogen blending on heating systems (Similarity Score: 0.5485)

ID 445: Maintenance of equipment in Steam Methane Reforming (SMR) hydrogen production (Similarity Score: 0.7638)

ID 582: Understanding of hydrogen production process using Autothermal Reforming (ATR) (Similarity Score: 0.6027)

ID 125: Understanding the principles of hydrogen blending for heating (Similarity Score: 0.5304)

ID 264: Selection and design of steam and combustion turbines for hydrogen systems (Similarity Score: 0.6362)

ID 581: Understanding of hydrogen production process using Steam Methane Reforming (SMR) (Similarity Score: 0.8876)

ID 640: Knowledge of systems used in SMR and ATR hydrogen production processes (Similarity Score: 0.6322)

### 11.2.1: Natural Gas Pre-Treatment

ID 448: Understanding of Autothermal Reforming (ATR) process for hydrogen production (Similarity Score: 0.5463)

ID 264: Selection and design of steam and combustion turbines for hydrogen systems (Similarity Score: 0.6020)

ID 640: Knowledge of systems used in SMR and ATR hydrogen production processes (Similarity Score: 0.6158)

ID 582: Understanding of hydrogen production process using Autothermal Reforming (ATR) (Similarity Score: 0.5918)

ID 575: Understanding of steam generation processes (Similarity Score: 0.5336)

ID 581: Understanding of hydrogen production process using Steam Methane Reforming (SMR) (Similarity Score: 0.8397)

### 11.2.2: Reforming Reaction

ID 447: Understanding of Steam Methane Reforming (SMR) process for hydrogen production (Similarity Score: 0.8763)

ID 448: Understanding of Autothermal Reforming (ATR) process for hydrogen production (Similarity Score: 0.5369)

ID 640: Knowledge of systems used in SMR and ATR hydrogen production processes (Similarity Score: 0.6198)

ID 575: Understanding of steam generation processes (Similarity Score: 0.5502)

ID 581: Understanding of hydrogen production process using Steam Methane Reforming (SMR) (Similarity Score: 0.8828)

ID 582: Understanding of hydrogen production process using Autothermal Reforming (ATR) (Similarity Score: 0.5861)

ID 264: Selection and design of steam and combustion turbines for hydrogen systems (Similarity Score: 0.6055)

#### 11.2.2.1: Primary Reforming

ID 447: Understanding of Steam Methane Reforming (SMR) process for hydrogen production (Similarity Score: 0.8430)

ID 581: Understanding of hydrogen production process using Steam Methane Reforming (SMR) (Similarity Score: 0.8517)

ID 640: Knowledge of systems used in SMR and ATR hydrogen production processes (Similarity Score: 0.6067)

#### 11.2.2.2: Secondary Reforming

ID 447: Understanding of Steam Methane Reforming (SMR) process for hydrogen production (Similarity Score: 0.8470)

ID 581: Understanding of hydrogen production process using Steam Methane Reforming (SMR) (Similarity Score: 0.8533)

ID 640: Knowledge of systems used in SMR and ATR hydrogen production processes (Similarity Score: 0.6090)

### 11.2.3: Water-Gas Shift Reaction

ID 575: Understanding of steam generation processes (Similarity Score: 0.5328)

### 11.2.4: Hydrogen Purification

ID 575: Understanding of steam generation processes (Similarity Score: 0.5360)

ID 447: Understanding of Steam Methane Reforming (SMR) process for hydrogen production (Similarity Score: 0.8486)

ID 464: Understanding separation and purification techniques in carbon capture (Similarity Score: 0.4226)

ID 640: Knowledge of systems used in SMR and ATR hydrogen production processes (Similarity Score: 0.6066)

ID 581: Understanding of hydrogen production process using Steam Methane Reforming (SMR) (Similarity Score: 0.8497)

#### 11.2.4.2: Membrane Separation

ID 640: Knowledge of systems used in SMR and ATR hydrogen production processes (Similarity Score: 0.6064)

ID 464: Understanding separation and purification techniques in carbon capture (Similarity Score: 0.4498)

ID 581: Understanding of hydrogen production process using Steam Methane Reforming (SMR) (Similarity Score: 0.8321)

## 11.3: Technological Requirements

ID 646: Selection of turbine systems suitable for hydrogen applications (Similarity Score: 0.5694)

ID 447: Understanding of Steam Methane Reforming (SMR) process for hydrogen production (Similarity Score: 0.8563)

ID 149: Knowledge of turbine systems used in hydrogen blending (Similarity Score: 0.5942)

ID 445: Maintenance of equipment in Steam Methane Reforming (SMR) hydrogen production (Similarity Score: 0.8124)

ID 304: Selection and design of combustion systems for hydrogen environments (Similarity Score: 0.5943)

ID 150: Knowledge of combustion systems in hydrogen blending (Similarity Score: 0.5749)

ID 358: Selection and design of turbines for hydrogen blending (Similarity Score: 0.5227)

ID 139: Knowledge of hydrogen production technology (Similarity Score: 0.6445)

ID 264: Selection and design of steam and combustion turbines for hydrogen systems (Similarity Score: 0.6406)

ID 125: Understanding the principles of hydrogen blending for heating (Similarity Score: 0.5298)

ID 126: Understanding the impact of hydrogen blending on heating systems (Similarity Score: 0.5547)

ID 640: Knowledge of systems used in SMR and ATR hydrogen production processes (Similarity Score: 0.6451)

ID 371: Selection and design of turbines for hydrogen environments (Similarity Score: 0.5682)

ID 581: Understanding of hydrogen production process using Steam Methane Reforming (SMR) (Similarity Score: 0.8675)

ID 582: Understanding of hydrogen production process using Autothermal Reforming (ATR) (Similarity Score: 0.5711)

### 11.3.1: Catalysts Used in SMR

ID 149: Knowledge of turbine systems used in hydrogen blending (Similarity Score: 0.6020)

ID 126: Understanding the impact of hydrogen blending on heating systems (Similarity Score: 0.5536)

ID 358: Selection and design of turbines for hydrogen blending (Similarity Score: 0.5380)

ID 519: Selection of key instrumentation for SMR and/or ATR hydrogen production plant (Similarity Score: 0.5663)

ID 264: Selection and design of steam and combustion turbines for hydrogen systems (Similarity Score: 0.6440)

ID 371: Selection and design of turbines for hydrogen environments (Similarity Score: 0.5692)

ID 646: Selection of turbine systems suitable for hydrogen applications (Similarity Score: 0.5897)

ID 640: Knowledge of systems used in SMR and ATR hydrogen production processes (Similarity Score: 0.6472)

### 11.3.2: Temperature and Pressure Conditions

ID 26: Consideration of temperature requirements in hydrogen fueling systems (Similarity Score: 0.6001)

ID 640: Knowledge of systems used in SMR and ATR hydrogen production processes (Similarity Score: 0.6258)

### 11.3.3: Equipment and Reactor Design

ID 640: Knowledge of systems used in SMR and ATR hydrogen production processes (Similarity Score: 0.6720)

ID 358: Selection and design of turbines for hydrogen blending (Similarity Score: 0.5273)

ID 589: Understanding of control systems used in SMR/ATR hydrogen production plants (Similarity Score: 0.5885)

ID 371: Selection and design of turbines for hydrogen environments (Similarity Score: 0.5841)

ID 638: Knowledge of key instrumentation associated with SMR and ATR production plants (Similarity Score: 0.4300)

ID 264: Selection and design of steam and combustion turbines for hydrogen systems (Similarity Score: 0.6423)

ID 504: Maintenance of electrical and electronic systems in SMR and/or ATR hydrogen production (Similarity Score: 0.6023)

ID 639: Knowledge of electrical equipment associated with SMR and ATR production plants (Similarity Score: 0.4073)

ID 519: Selection of key instrumentation for SMR and/or ATR hydrogen production plant (Similarity Score: 0.6287)

ID 268: Selection and design of steam generators and boilers (Similarity Score: 0.3267)

ID 541: Selection and design of turbine systems (Similarity Score: 0.4231)

ID 445: Maintenance of equipment in Steam Methane Reforming (SMR) hydrogen production (Similarity Score: 0.8391)

ID 585: Understanding of automated process systems for SMR/ATR (Similarity Score: 0.3018)

ID 520: Maintenance of instrumentation systems in SMR and/or ATR hydrogen production plant (Similarity Score: 0.6455)

ID 63: Understanding personal protective equipment (PPE) requirements for hydrogen work (Similarity Score: 0.4721)

ID 503: Selection of electrical and electronic equipment for SMR and/or ATR hydrogen production (Similarity Score: 0.6060)

ID 149: Knowledge of turbine systems used in hydrogen blending (Similarity Score: 0.5846)

ID 646: Selection of turbine systems suitable for hydrogen applications (Similarity Score: 0.5697)

## 11.4: Environmental and Efficiency Considerations

ID 447: Understanding of Steam Methane Reforming (SMR) process for hydrogen production (Similarity Score: 0.8775)

ID 268: Selection and design of steam generators and boilers (Similarity Score: 0.3554)

ID 590: Optimization of control systems in SMR/ATR hydrogen production processes (Similarity Score: 0.6099)

ID 445: Maintenance of equipment in Steam Methane Reforming (SMR) hydrogen production (Similarity Score: 0.8189)

ID 264: Selection and design of steam and combustion turbines for hydrogen systems (Similarity Score: 0.6633)

ID 582: Understanding of hydrogen production process using Autothermal Reforming (ATR) (Similarity Score: 0.5961)

ID 304: Selection and design of combustion systems for hydrogen environments (Similarity Score: 0.6206)

ID 589: Understanding of control systems used in SMR/ATR hydrogen production plants (Similarity Score: 0.5753)

ID 125: Understanding the principles of hydrogen blending for heating (Similarity Score: 0.5352)

ID 359: Selection and design of combustion systems for hydrogen blending (Similarity Score: 0.5733)

ID 581: Understanding of hydrogen production process using Steam Methane Reforming (SMR) (Similarity Score: 0.8825)

ID 126: Understanding the impact of hydrogen blending on heating systems (Similarity Score: 0.5833)

ID 149: Knowledge of turbine systems used in hydrogen blending (Similarity Score: 0.5722)

ID 640: Knowledge of systems used in SMR and ATR hydrogen production processes (Similarity Score: 0.6463)

ID 358: Selection and design of turbines for hydrogen blending (Similarity Score: 0.5475)

ID 448: Understanding of Autothermal Reforming (ATR) process for hydrogen production (Similarity Score: 0.5530)

ID 371: Selection and design of turbines for hydrogen environments (Similarity Score: 0.5941)

### 11.4.1: CO2 Emissions and Capture

ID 581: Understanding of hydrogen production process using Steam Methane Reforming (SMR) (Similarity Score: 0.8392)

ID 304: Selection and design of combustion systems for hydrogen environments (Similarity Score: 0.5950)

ID 640: Knowledge of systems used in SMR and ATR hydrogen production processes (Similarity Score: 0.6238)

ID 371: Selection and design of turbines for hydrogen environments (Similarity Score: 0.5663)

ID 358: Selection and design of turbines for hydrogen blending (Similarity Score: 0.5267)

ID 268: Selection and design of steam generators and boilers (Similarity Score: 0.3292)

ID 264: Selection and design of steam and combustion turbines for hydrogen systems (Similarity Score: 0.6468)

ID 126: Understanding the impact of hydrogen blending on heating systems (Similarity Score: 0.5653)

ID 445: Maintenance of equipment in Steam Methane Reforming (SMR) hydrogen production (Similarity Score: 0.7741)

### 11.4.2: Energy Efficiency of the SMR Process

ID 445: Maintenance of equipment in Steam Methane Reforming (SMR) hydrogen production (Similarity Score: 0.7596)

ID 126: Understanding the impact of hydrogen blending on heating systems (Similarity Score: 0.5677)

ID 264: Selection and design of steam and combustion turbines for hydrogen systems (Similarity Score: 0.6362)

ID 447: Understanding of Steam Methane Reforming (SMR) process for hydrogen production (Similarity Score: 0.8411)

ID 640: Knowledge of systems used in SMR and ATR hydrogen production processes (Similarity Score: 0.6288)

ID 268: Selection and design of steam generators and boilers (Similarity Score: 0.3299)

ID 581: Understanding of hydrogen production process using Steam Methane Reforming (SMR) (Similarity Score: 0.8488)

### 11.4.3: Impact on Feedstock Consumption

ID 640: Knowledge of systems used in SMR and ATR hydrogen production processes (Similarity Score: 0.6261)

ID 590: Optimization of control systems in SMR/ATR hydrogen production processes (Similarity Score: 0.5825)

ID 264: Selection and design of steam and combustion turbines for hydrogen systems (Similarity Score: 0.6067)

ID 126: Understanding the impact of hydrogen blending on heating systems (Similarity Score: 0.5532)

# 12: Hydrogen Production via Coal Gasification

ID 358: Selection and design of turbines for hydrogen blending (Similarity Score: 0.5341)

ID 126: Understanding the impact of hydrogen blending on heating systems (Similarity Score: 0.5470)

ID 506: Application of well completion techniques to ensure safe hydrogen extraction (Similarity Score: 0.5362)

ID 390: Understanding of the combined-cycle power generation process using hydrogen blending (Similarity Score: 0.5749)

ID 44: Understanding of hydrogen blending in power generation (Similarity Score: 0.6191)

ID 264: Selection and design of steam and combustion turbines for hydrogen systems (Similarity Score: 0.6010)

ID 344: Techniques for repairing hydrogen leaks (Similarity Score: 0.5054)

## 12.1: Overview of Coal Gasification

ID 390: Understanding of the combined-cycle power generation process using hydrogen blending (Similarity Score: 0.5718)

ID 139: Knowledge of hydrogen production technology (Similarity Score: 0.6434)

ID 44: Understanding of hydrogen blending in power generation (Similarity Score: 0.6273)

ID 264: Selection and design of steam and combustion turbines for hydrogen systems (Similarity Score: 0.6192)

ID 358: Selection and design of turbines for hydrogen blending (Similarity Score: 0.5394)

ID 88: Understanding the principles of hydrogen-blending in power generation (Similarity Score: 0.5826)

ID 149: Knowledge of turbine systems used in hydrogen blending (Similarity Score: 0.5570)

ID 150: Knowledge of combustion systems in hydrogen blending (Similarity Score: 0.5652)

### 12.2.3: Syngas Cleanup

ID 506: Application of well completion techniques to ensure safe hydrogen extraction (Similarity Score: 0.5333)

#### 12.2.5.2: Membrane Separation

ID 464: Understanding separation and purification techniques in carbon capture (Similarity Score: 0.4177)

## 12.3: Technological Requirements

ID 150: Knowledge of combustion systems in hydrogen blending (Similarity Score: 0.5791)

ID 139: Knowledge of hydrogen production technology (Similarity Score: 0.6640)

ID 2: Experience with on-site hydrogen generation (Similarity Score: 0.5269)

ID 183: Advanced knowledge of evolving standards in hydrogen industry (Similarity Score: 0.5810)

ID 505: Knowledge of well completion solutions tailored for hydrogen environments (Similarity Score: 0.5423)

ID 506: Application of well completion techniques to ensure safe hydrogen extraction (Similarity Score: 0.5425)

ID 149: Knowledge of turbine systems used in hydrogen blending (Similarity Score: 0.5673)

### 12.3.1: Gasifiers Used in Coal Gasification

ID 149: Knowledge of turbine systems used in hydrogen blending (Similarity Score: 0.5595)

### 12.3.2: Temperature and Pressure Conditions

ID 26: Consideration of temperature requirements in hydrogen fueling systems (Similarity Score: 0.6566)

ID 507: Selection and design of combustion systems to withstand hydrogen pressure and temperatures (Similarity Score: 0.5635)

### 12.3.3: Catalysts and Reagents

ID 150: Knowledge of combustion systems in hydrogen blending (Similarity Score: 0.5626)

ID 358: Selection and design of turbines for hydrogen blending (Similarity Score: 0.5253)

ID 149: Knowledge of turbine systems used in hydrogen blending (Similarity Score: 0.5671)

## 12.4: Environmental and Efficiency Considerations

ID 393: Knowledge of environmental laws related to hydrogen (Similarity Score: 0.6319)

ID 44: Understanding of hydrogen blending in power generation (Similarity Score: 0.6405)

ID 125: Understanding the principles of hydrogen blending for heating (Similarity Score: 0.5314)

ID 392: Knowledge of operational adjustments for hydrogen blending (Similarity Score: 0.5660)

ID 126: Understanding the impact of hydrogen blending on heating systems (Similarity Score: 0.5974)

ID 150: Knowledge of combustion systems in hydrogen blending (Similarity Score: 0.5870)

ID 395: Understanding best environmental practices in hydrogen operations (Similarity Score: 0.7081)

ID 46: Understanding the environmental impacts of hydrogen blending in power generation (Similarity Score: 0.7041)

ID 371: Selection and design of turbines for hydrogen environments (Similarity Score: 0.6266)

ID 390: Understanding of the combined-cycle power generation process using hydrogen blending (Similarity Score: 0.5701)

ID 391: Knowledge of hydrogen's role in combined-cycle power generation (Similarity Score: 0.6605)

ID 135: Understanding the carbon impact of hydrogen technologies (Similarity Score: 0.5723)

ID 236: Staying current with advances in hydrogen technology (Similarity Score: 0.5490)

ID 264: Selection and design of steam and combustion turbines for hydrogen systems (Similarity Score: 0.6385)

ID 630: Understanding of hydrogen technologies in relation to ESG factors (Similarity Score: 0.6042)

ID 175: Understanding the value proposition of hydrogen technologies related to ESG factors (Similarity Score: 0.5552)

ID 629: Knowledge of climate targets and their implications for hydrogen (Similarity Score: 0.5861)

ID 149: Knowledge of turbine systems used in hydrogen blending (Similarity Score: 0.5814)

ID 176: Measuring environmental impacts of hydrogen technologies (Similarity Score: 0.6623)

ID 592: Selection and design of turbine systems for carbon dioxide (CO2) environments (Similarity Score: 0.4924)

ID 359: Selection and design of combustion systems for hydrogen blending (Similarity Score: 0.6063)

ID 358: Selection and design of turbines for hydrogen blending (Similarity Score: 0.5763)

ID 45: Understanding the operational implications of hydrogen blending in combined-cycle power generation (Similarity Score: 0.6429)

ID 88: Understanding the principles of hydrogen-blending in power generation (Similarity Score: 0.6265)

ID 304: Selection and design of combustion systems for hydrogen environments (Similarity Score: 0.6603)

ID 9: Understanding the environmental benefits of hydrogen (Similarity Score: 0.7000)

ID 255: Value proposition of hydrogen fuel cells for emissions targets (Similarity Score: 0.5741)

ID 505: Knowledge of well completion solutions tailored for hydrogen environments (Similarity Score: 0.5461)

ID 2: Experience with on-site hydrogen generation (Similarity Score: 0.5389)

ID 127: Understanding safety considerations for hydrogen blending in heating systems (Similarity Score: 0.6261)

ID 643: Understanding the climate change implications of hydrogen technologies (Similarity Score: 0.6397)

ID 506: Application of well completion techniques to ensure safe hydrogen extraction (Similarity Score: 0.5802)

ID 307: Selection and design of turbines to withstand hydrogen conditions (Similarity Score: 0.5543)

ID 646: Selection of turbine systems suitable for hydrogen applications (Similarity Score: 0.5801)

ID 128: Understanding efficiency and performance factors when using hydrogen blending for heating (Similarity Score: 0.6370)

ID 642: Understanding the environmental benefits of hydrogen technologies (Similarity Score: 0.7221)

### 12.4.1: CO2 Emissions and Capture

ID 502: Application of carbon dioxide (CO2) value-chain knowledge in the industry (Similarity Score: 0.3858)

ID 46: Understanding the environmental impacts of hydrogen blending in power generation (Similarity Score: 0.6824)

ID 596: Selection and design of piping systems and fittings for carbon dioxide (CO2) environments (Similarity Score: 0.4467)

ID 88: Understanding the principles of hydrogen-blending in power generation (Similarity Score: 0.5827)

ID 433: Knowledge of carbon dioxide (CO2) behavior in different states (Similarity Score: 0.3493)

ID 624: Stay up to date on carbon dioxide (CO2) monitoring options (Similarity Score: 0.3472)

ID 598: Selection and design of valves and seals for carbon dioxide (CO2) environments (Similarity Score: 0.4204)

ID 135: Understanding the carbon impact of hydrogen technologies (Similarity Score: 0.5805)

ID 629: Knowledge of climate targets and their implications for hydrogen (Similarity Score: 0.5592)

ID 45: Understanding the operational implications of hydrogen blending in combined-cycle power generation (Similarity Score: 0.6183)

ID 580: Understanding of long-term well integrity in carbon dioxide (CO2) environments (Similarity Score: 0.4219)

ID 592: Selection and design of turbine systems for carbon dioxide (CO2) environments (Similarity Score: 0.5099)

ID 390: Understanding of the combined-cycle power generation process using hydrogen blending (Similarity Score: 0.5496)

ID 358: Selection and design of turbines for hydrogen blending (Similarity Score: 0.5297)

ID 579: Understanding of well completion solutions for carbon dioxide (CO2) based on subsurface conditions (Similarity Score: 0.3474)

ID 565: Understanding of the carbon dioxide (CO2) value chain, including production, transportation, and storage (Similarity Score: 0.3658)

ID 595: Selection and design of vessels for carbon dioxide (CO2) environments (Similarity Score: 0.4372)

ID 255: Value proposition of hydrogen fuel cells for emissions targets (Similarity Score: 0.5753)

ID 517: Zone selection for carbon dioxide (CO2) storage (Similarity Score: 0.4371)

### 12.4.3: Energy Efficiency of the Gasification Process

ID 128: Understanding efficiency and performance factors when using hydrogen blending for heating (Similarity Score: 0.6045)

# 13: Hydrogen Compression and Storage

ID 148: Knowledge of compression equipment for hydrogen blending (Similarity Score: 0.7052)

ID 511: Maintenance of combustion, compression, pumping, and turbine systems to ensure reliability under hydrogen conditions (Similarity Score: 0.6264)

ID 383: Understanding of dispensing technology for hydrogen (Similarity Score: 0.6089)

ID 6: Experience with hydrogen dispensing (Similarity Score: 0.5191)

ID 337: Selection of compression systems for hydrogen fueling (Similarity Score: 0.7486)

ID 647: Maintenance of compression systems in hydrogen environments (Similarity Score: 0.7779)

ID 508: Selection and design of compression systems for hydrogen pressure and temperature variations (Similarity Score: 0.6597)

ID 583: Understanding of reservoir data interpretation for hydrogen injection (Similarity Score: 0.5289)

ID 305: Selection and design of compression systems for high/low hydrogen pressure (Similarity Score: 0.7015)

ID 23: Design of compression systems for hydrogen pressure (Similarity Score: 0.7174)

ID 372: Maintenance of hydrogen compression systems (Similarity Score: 0.7888)

ID 423: Selection and design of air separation units for hydrogen pressure and temperature variations (Similarity Score: 0.5334)

ID 96: Knowledge of various hydrogen compression technologies (Similarity Score: 0.7385)

ID 539: Selection and design of compression systems (Similarity Score: 0.4479)

ID 370: Selection and design of hydrogen compression systems (Similarity Score: 0.6737)

ID 600: Selection of appropriate materials for carbon dioxide (CO2) compression facility maintenance (Similarity Score: 0.4497)

ID 97: Understanding the role of compression in hydrogen storage (Similarity Score: 0.8512)

ID 410: Maintenance of compression systems under hydrogen pressure (Similarity Score: 0.7512)

ID 107: Maintenance of ventilation systems for hydrogen blending (Similarity Score: 0.6157)

ID 576: Understanding of cavern engineering fundamentals for hydrogen injection (Similarity Score: 0.5139)

ID 384: Understanding of cryogenic hydrogen storage systems (Similarity Score: 0.7247)

ID 140: Knowledge of distribution systems for hydrogen (Similarity Score: 0.6068)

ID 644: Selection of compression systems to withstand hydrogen conditions (Similarity Score: 0.7140)

ID 95: Understanding the principles of hydrogen compression (Similarity Score: 0.7153)

ID 5: Experience with hydrogen storage (Similarity Score: 0.6819)

ID 645: Design of compression systems to operate under hydrogen pressure and temperature (Similarity Score: 0.6588)

ID 344: Techniques for repairing hydrogen leaks (Similarity Score: 0.5542)

ID 382: Understanding of distribution technology for hydrogen (Similarity Score: 0.6386)

ID 385: Knowledge of gaseous hydrogen storage systems (Similarity Score: 0.6582)

ID 379: Understanding the role of storage in the hydrogen value chain (Similarity Score: 0.6421)

ID 593: Maintenance of carbon dioxide (CO2) compression systems (Similarity Score: 0.5036)

ID 206: Understanding the hydrogen storage value chain (Similarity Score: 0.6082)

ID 536: Knowledge of components that can endure hydrogen pressure and temperatures (Similarity Score: 0.5149)

ID 584: Understanding of reservoir data for hydrogen storage efficiency (Similarity Score: 0.6106)

ID 278: Knowledge of the storage aspect of the hydrogen value chain (Similarity Score: 0.6246)

ID 98: Knowledge of safety considerations in hydrogen compression processes (Similarity Score: 0.7058)

ID 362: Maintenance of compression, turbines, combustion, and related systems for hydrogen blending (Similarity Score: 0.6769)

ID 327: Troubleshooting hydrogen fuel compression equipment (Similarity Score: 0.6273)

ID 340: Maintenance of compression systems in hydrogen fueling (Similarity Score: 0.7766)

ID 430: Knowledge of systems for carbon dioxide (CO2) compression and liquefaction (Similarity Score: 0.4380)

ID 602: Selection of seals for carbon dioxide (CO2) compression facility maintenance (Similarity Score: 0.4397)

ID 357: Selection and design of compression systems for hydrogen blending (Similarity Score: 0.7038)

ID 14: Knowledge of compression systems in hydrogen pipelines (Similarity Score: 0.7141)

ID 3: Experience with hydrogen compression (Similarity Score: 0.7064)

ID 24: Selection of compression systems for hydrogen fueling (Similarity Score: 0.7486)

ID 408: Selection of compression systems to withstand hydrogen pressure (Similarity Score: 0.6982)

ID 141: Knowledge of hydrogen dispensing systems (Similarity Score: 0.5768)

## 13.1: Conversion of Hydrogen to Compressed Gas

ID 515: Understanding carbon dioxide (CO2) compression processes (Similarity Score: 0.4636)

ID 460: Application of carbon dioxide (CO2) compression techniques in industrial settings (Similarity Score: 0.4858)

ID 305: Selection and design of compression systems for high/low hydrogen pressure (Similarity Score: 0.6530)

ID 23: Design of compression systems for hydrogen pressure (Similarity Score: 0.7024)

ID 593: Maintenance of carbon dioxide (CO2) compression systems (Similarity Score: 0.4920)

ID 97: Understanding the role of compression in hydrogen storage (Similarity Score: 0.7767)

ID 408: Selection of compression systems to withstand hydrogen pressure (Similarity Score: 0.6299)

ID 340: Maintenance of compression systems in hydrogen fueling (Similarity Score: 0.7143)

ID 6: Experience with hydrogen dispensing (Similarity Score: 0.4693)

ID 337: Selection of compression systems for hydrogen fueling (Similarity Score: 0.7327)

ID 344: Techniques for repairing hydrogen leaks (Similarity Score: 0.5235)

ID 327: Troubleshooting hydrogen fuel compression equipment (Similarity Score: 0.5844)

ID 645: Design of compression systems to operate under hydrogen pressure and temperature (Similarity Score: 0.6164)

ID 430: Knowledge of systems for carbon dioxide (CO2) compression and liquefaction (Similarity Score: 0.4388)

ID 24: Selection of compression systems for hydrogen fueling (Similarity Score: 0.7327)

ID 3: Experience with hydrogen compression (Similarity Score: 0.6514)

ID 357: Selection and design of compression systems for hydrogen blending (Similarity Score: 0.6642)

ID 96: Knowledge of various hydrogen compression technologies (Similarity Score: 0.6799)

ID 508: Selection and design of compression systems for hydrogen pressure and temperature variations (Similarity Score: 0.6383)

ID 497: Understanding of carbon dioxide (CO2) compression processes (Similarity Score: 0.4905)

ID 423: Selection and design of air separation units for hydrogen pressure and temperature variations (Similarity Score: 0.5377)

ID 370: Selection and design of hydrogen compression systems (Similarity Score: 0.6310)

ID 362: Maintenance of compression, turbines, combustion, and related systems for hydrogen blending (Similarity Score: 0.6291)

ID 591: Selection and design of carbon dioxide (CO2) compression systems (Similarity Score: 0.4693)

ID 14: Knowledge of compression systems in hydrogen pipelines (Similarity Score: 0.6860)

ID 410: Maintenance of compression systems under hydrogen pressure (Similarity Score: 0.6826)

ID 148: Knowledge of compression equipment for hydrogen blending (Similarity Score: 0.6424)

### 13.1.1: Principles of Hydrogen Compression

ID 539: Selection and design of compression systems (Similarity Score: 0.4581)

ID 430: Knowledge of systems for carbon dioxide (CO2) compression and liquefaction (Similarity Score: 0.4590)

ID 24: Selection of compression systems for hydrogen fueling (Similarity Score: 0.6749)

ID 410: Maintenance of compression systems under hydrogen pressure (Similarity Score: 0.6838)

ID 508: Selection and design of compression systems for hydrogen pressure and temperature variations (Similarity Score: 0.6229)

ID 515: Understanding carbon dioxide (CO2) compression processes (Similarity Score: 0.4495)

ID 95: Understanding the principles of hydrogen compression (Similarity Score: 0.7720)

ID 459: Understanding the principles of carbon dioxide (CO2) compression (Similarity Score: 0.5577)

ID 337: Selection of compression systems for hydrogen fueling (Similarity Score: 0.6749)

ID 591: Selection and design of carbon dioxide (CO2) compression systems (Similarity Score: 0.4668)

ID 362: Maintenance of compression, turbines, combustion, and related systems for hydrogen blending (Similarity Score: 0.6436)

ID 370: Selection and design of hydrogen compression systems (Similarity Score: 0.6160)

ID 125: Understanding the principles of hydrogen blending for heating (Similarity Score: 0.5834)

ID 23: Design of compression systems for hydrogen pressure (Similarity Score: 0.6924)

ID 593: Maintenance of carbon dioxide (CO2) compression systems (Similarity Score: 0.5015)

ID 357: Selection and design of compression systems for hydrogen blending (Similarity Score: 0.6432)

ID 645: Design of compression systems to operate under hydrogen pressure and temperature (Similarity Score: 0.6261)

ID 340: Maintenance of compression systems in hydrogen fueling (Similarity Score: 0.7022)

ID 497: Understanding of carbon dioxide (CO2) compression processes (Similarity Score: 0.4765)

ID 14: Knowledge of compression systems in hydrogen pipelines (Similarity Score: 0.6670)

### 13.1.2: Compression Technologies

ID 539: Selection and design of compression systems (Similarity Score: 0.4887)

ID 6: Experience with hydrogen dispensing (Similarity Score: 0.4738)

ID 327: Troubleshooting hydrogen fuel compression equipment (Similarity Score: 0.6124)

ID 591: Selection and design of carbon dioxide (CO2) compression systems (Similarity Score: 0.4997)

ID 3: Experience with hydrogen compression (Similarity Score: 0.6616)

ID 344: Techniques for repairing hydrogen leaks (Similarity Score: 0.5424)

ID 515: Understanding carbon dioxide (CO2) compression processes (Similarity Score: 0.4716)

ID 593: Maintenance of carbon dioxide (CO2) compression systems (Similarity Score: 0.5144)

ID 97: Understanding the role of compression in hydrogen storage (Similarity Score: 0.7702)

ID 340: Maintenance of compression systems in hydrogen fueling (Similarity Score: 0.7165)

ID 362: Maintenance of compression, turbines, combustion, and related systems for hydrogen blending (Similarity Score: 0.6500)

ID 14: Knowledge of compression systems in hydrogen pipelines (Similarity Score: 0.7292)

ID 460: Application of carbon dioxide (CO2) compression techniques in industrial settings (Similarity Score: 0.5269)

ID 508: Selection and design of compression systems for hydrogen pressure and temperature variations (Similarity Score: 0.6536)

ID 645: Design of compression systems to operate under hydrogen pressure and temperature (Similarity Score: 0.6357)

ID 305: Selection and design of compression systems for high/low hydrogen pressure (Similarity Score: 0.6827)

ID 337: Selection of compression systems for hydrogen fueling (Similarity Score: 0.7474)

ID 96: Knowledge of various hydrogen compression technologies (Similarity Score: 0.7398)

ID 24: Selection of compression systems for hydrogen fueling (Similarity Score: 0.7474)

ID 370: Selection and design of hydrogen compression systems (Similarity Score: 0.6634)

ID 423: Selection and design of air separation units for hydrogen pressure and temperature variations (Similarity Score: 0.5152)

ID 644: Selection of compression systems to withstand hydrogen conditions (Similarity Score: 0.6490)

ID 647: Maintenance of compression systems in hydrogen environments (Similarity Score: 0.7077)

ID 497: Understanding of carbon dioxide (CO2) compression processes (Similarity Score: 0.4935)

ID 148: Knowledge of compression equipment for hydrogen blending (Similarity Score: 0.6809)

ID 23: Design of compression systems for hydrogen pressure (Similarity Score: 0.7292)

ID 357: Selection and design of compression systems for hydrogen blending (Similarity Score: 0.6919)

ID 430: Knowledge of systems for carbon dioxide (CO2) compression and liquefaction (Similarity Score: 0.4700)

ID 408: Selection of compression systems to withstand hydrogen pressure (Similarity Score: 0.6442)

ID 410: Maintenance of compression systems under hydrogen pressure (Similarity Score: 0.6876)

ID 383: Understanding of dispensing technology for hydrogen (Similarity Score: 0.5841)

#### 13.1.2.1: Mechanical Compressors

ID 14: Knowledge of compression systems in hydrogen pipelines (Similarity Score: 0.6719)

ID 24: Selection of compression systems for hydrogen fueling (Similarity Score: 0.6931)

ID 441: Selection and design of compressors to handle hydrogen pressure and temperature extremes (Similarity Score: 0.5224)

ID 370: Selection and design of hydrogen compression systems (Similarity Score: 0.6098)

ID 508: Selection and design of compression systems for hydrogen pressure and temperature variations (Similarity Score: 0.6093)

ID 23: Design of compression systems for hydrogen pressure (Similarity Score: 0.6884)

ID 593: Maintenance of carbon dioxide (CO2) compression systems (Similarity Score: 0.4747)

ID 337: Selection of compression systems for hydrogen fueling (Similarity Score: 0.6931)

ID 539: Selection and design of compression systems (Similarity Score: 0.4596)

ID 305: Selection and design of compression systems for high/low hydrogen pressure (Similarity Score: 0.6433)

ID 645: Design of compression systems to operate under hydrogen pressure and temperature (Similarity Score: 0.6058)

ID 542: Maintenance of compression, pumping, and turbine systems (Similarity Score: 0.5497)

ID 327: Troubleshooting hydrogen fuel compression equipment (Similarity Score: 0.6044)

#### 13.1.2.2: Electrochemical Compressors

ID 645: Design of compression systems to operate under hydrogen pressure and temperature (Similarity Score: 0.6148)

ID 327: Troubleshooting hydrogen fuel compression equipment (Similarity Score: 0.5868)

ID 14: Knowledge of compression systems in hydrogen pipelines (Similarity Score: 0.6964)

ID 430: Knowledge of systems for carbon dioxide (CO2) compression and liquefaction (Similarity Score: 0.4595)

ID 370: Selection and design of hydrogen compression systems (Similarity Score: 0.6227)

ID 362: Maintenance of compression, turbines, combustion, and related systems for hydrogen blending (Similarity Score: 0.6293)

ID 148: Knowledge of compression equipment for hydrogen blending (Similarity Score: 0.6596)

ID 357: Selection and design of compression systems for hydrogen blending (Similarity Score: 0.6543)

ID 305: Selection and design of compression systems for high/low hydrogen pressure (Similarity Score: 0.6544)

ID 96: Knowledge of various hydrogen compression technologies (Similarity Score: 0.6908)

ID 337: Selection of compression systems for hydrogen fueling (Similarity Score: 0.7143)

ID 497: Understanding of carbon dioxide (CO2) compression processes (Similarity Score: 0.4689)

ID 593: Maintenance of carbon dioxide (CO2) compression systems (Similarity Score: 0.4847)

ID 408: Selection of compression systems to withstand hydrogen pressure (Similarity Score: 0.6369)

ID 23: Design of compression systems for hydrogen pressure (Similarity Score: 0.7029)

ID 539: Selection and design of compression systems (Similarity Score: 0.4830)

ID 508: Selection and design of compression systems for hydrogen pressure and temperature variations (Similarity Score: 0.6264)

ID 591: Selection and design of carbon dioxide (CO2) compression systems (Similarity Score: 0.4852)

ID 515: Understanding carbon dioxide (CO2) compression processes (Similarity Score: 0.4395)

ID 542: Maintenance of compression, pumping, and turbine systems (Similarity Score: 0.5110)

ID 460: Application of carbon dioxide (CO2) compression techniques in industrial settings (Similarity Score: 0.5101)

ID 24: Selection of compression systems for hydrogen fueling (Similarity Score: 0.7143)

## 13.2: Material Properties of Compressed Hydrogen

ID 515: Understanding carbon dioxide (CO2) compression processes (Similarity Score: 0.4603)

ID 430: Knowledge of systems for carbon dioxide (CO2) compression and liquefaction (Similarity Score: 0.4302)

ID 536: Knowledge of components that can endure hydrogen pressure and temperatures (Similarity Score: 0.5388)

ID 508: Selection and design of compression systems for hydrogen pressure and temperature variations (Similarity Score: 0.6548)

ID 600: Selection of appropriate materials for carbon dioxide (CO2) compression facility maintenance (Similarity Score: 0.4490)

ID 497: Understanding of carbon dioxide (CO2) compression processes (Similarity Score: 0.4868)

ID 539: Selection and design of compression systems (Similarity Score: 0.4522)

ID 534: Knowledge of materials suitable for withstanding hydrogen pressure and temperatures (Similarity Score: 0.6051)

ID 148: Knowledge of compression equipment for hydrogen blending (Similarity Score: 0.6468)

ID 23: Design of compression systems for hydrogen pressure (Similarity Score: 0.6734)

ID 645: Design of compression systems to operate under hydrogen pressure and temperature (Similarity Score: 0.6523)

ID 601: Selection of appropriate coatings for carbon dioxide (CO2) compression facility maintenance (Similarity Score: 0.3786)

ID 219: Assess integrity of welds under hydrogen pressure (Similarity Score: 0.5872)

ID 370: Selection and design of hydrogen compression systems (Similarity Score: 0.6137)

ID 591: Selection and design of carbon dioxide (CO2) compression systems (Similarity Score: 0.4605)

ID 593: Maintenance of carbon dioxide (CO2) compression systems (Similarity Score: 0.4777)

ID 98: Knowledge of safety considerations in hydrogen compression processes (Similarity Score: 0.7251)

ID 410: Maintenance of compression systems under hydrogen pressure (Similarity Score: 0.6953)

ID 408: Selection of compression systems to withstand hydrogen pressure (Similarity Score: 0.6604)

ID 644: Selection of compression systems to withstand hydrogen conditions (Similarity Score: 0.6832)

ID 602: Selection of seals for carbon dioxide (CO2) compression facility maintenance (Similarity Score: 0.4342)

ID 514: Understanding carbon dioxide (CO2) compression properties (Similarity Score: 0.5251)

ID 305: Selection and design of compression systems for high/low hydrogen pressure (Similarity Score: 0.6705)

ID 14: Knowledge of compression systems in hydrogen pipelines (Similarity Score: 0.7151)

ID 97: Understanding the role of compression in hydrogen storage (Similarity Score: 0.8054)

ID 423: Selection and design of air separation units for hydrogen pressure and temperature variations (Similarity Score: 0.5101)

ID 647: Maintenance of compression systems in hydrogen environments (Similarity Score: 0.7241)

ID 3: Experience with hydrogen compression (Similarity Score: 0.6464)

ID 357: Selection and design of compression systems for hydrogen blending (Similarity Score: 0.6504)

ID 263: Knowledge of selecting materials that can withstand hydrogen pressure and temperatures (Similarity Score: 0.5775)

ID 95: Understanding the principles of hydrogen compression (Similarity Score: 0.7042)

ID 96: Knowledge of various hydrogen compression technologies (Similarity Score: 0.7062)

### 13.2.1: Physical and Chemical Properties under Compression

ID 645: Design of compression systems to operate under hydrogen pressure and temperature (Similarity Score: 0.6577)

ID 536: Knowledge of components that can endure hydrogen pressure and temperatures (Similarity Score: 0.5299)

ID 514: Understanding carbon dioxide (CO2) compression properties (Similarity Score: 0.5377)

ID 515: Understanding carbon dioxide (CO2) compression processes (Similarity Score: 0.4827)

ID 593: Maintenance of carbon dioxide (CO2) compression systems (Similarity Score: 0.4872)

ID 539: Selection and design of compression systems (Similarity Score: 0.4775)

ID 508: Selection and design of compression systems for hydrogen pressure and temperature variations (Similarity Score: 0.6358)

ID 600: Selection of appropriate materials for carbon dioxide (CO2) compression facility maintenance (Similarity Score: 0.4489)

ID 591: Selection and design of carbon dioxide (CO2) compression systems (Similarity Score: 0.4650)

ID 644: Selection of compression systems to withstand hydrogen conditions (Similarity Score: 0.6473)

ID 497: Understanding of carbon dioxide (CO2) compression processes (Similarity Score: 0.5018)

ID 601: Selection of appropriate coatings for carbon dioxide (CO2) compression facility maintenance (Similarity Score: 0.3936)

ID 410: Maintenance of compression systems under hydrogen pressure (Similarity Score: 0.6955)

ID 602: Selection of seals for carbon dioxide (CO2) compression facility maintenance (Similarity Score: 0.4385)

ID 98: Knowledge of safety considerations in hydrogen compression processes (Similarity Score: 0.7068)

ID 408: Selection of compression systems to withstand hydrogen pressure (Similarity Score: 0.6304)

ID 430: Knowledge of systems for carbon dioxide (CO2) compression and liquefaction (Similarity Score: 0.4771)

ID 96: Knowledge of various hydrogen compression technologies (Similarity Score: 0.6805)

ID 14: Knowledge of compression systems in hydrogen pipelines (Similarity Score: 0.7009)

### 13.2.2: Behavior of Hydrogen under High Pressure

ID 475: Knowledge of how carbon dioxide (CO2) interacts with different materials under high pressure (Similarity Score: 0.4491)

ID 263: Knowledge of selecting materials that can withstand hydrogen pressure and temperatures (Similarity Score: 0.5971)

ID 86: Understanding the behavior of hydrogen under different temperature and pressure conditions (Similarity Score: 0.6441)

ID 104: Understanding the impact of high pressure on material integrity (Similarity Score: 0.4439)

ID 534: Knowledge of materials suitable for withstanding hydrogen pressure and temperatures (Similarity Score: 0.6195)

ID 98: Knowledge of safety considerations in hydrogen compression processes (Similarity Score: 0.6705)

ID 408: Selection of compression systems to withstand hydrogen pressure (Similarity Score: 0.6340)

ID 305: Selection and design of compression systems for high/low hydrogen pressure (Similarity Score: 0.6631)

ID 508: Selection and design of compression systems for hydrogen pressure and temperature variations (Similarity Score: 0.6353)

ID 103: Understanding how materials behave under high pressure hydrogen conditions (Similarity Score: 0.7245)

ID 536: Knowledge of components that can endure hydrogen pressure and temperatures (Similarity Score: 0.5542)

ID 219: Assess integrity of welds under hydrogen pressure (Similarity Score: 0.5974)

ID 645: Design of compression systems to operate under hydrogen pressure and temperature (Similarity Score: 0.6391)

### 13.2.3: Interaction with Storage Materials

ID 593: Maintenance of carbon dioxide (CO2) compression systems (Similarity Score: 0.4695)

ID 305: Selection and design of compression systems for high/low hydrogen pressure (Similarity Score: 0.6411)

ID 645: Design of compression systems to operate under hydrogen pressure and temperature (Similarity Score: 0.6240)

ID 514: Understanding carbon dioxide (CO2) compression properties (Similarity Score: 0.5262)

ID 408: Selection of compression systems to withstand hydrogen pressure (Similarity Score: 0.6288)

ID 600: Selection of appropriate materials for carbon dioxide (CO2) compression facility maintenance (Similarity Score: 0.4518)

ID 508: Selection and design of compression systems for hydrogen pressure and temperature variations (Similarity Score: 0.6310)

ID 98: Knowledge of safety considerations in hydrogen compression processes (Similarity Score: 0.7039)

ID 515: Understanding carbon dioxide (CO2) compression processes (Similarity Score: 0.4713)

ID 14: Knowledge of compression systems in hydrogen pipelines (Similarity Score: 0.6813)

ID 644: Selection of compression systems to withstand hydrogen conditions (Similarity Score: 0.6567)

ID 126: Understanding the impact of hydrogen blending on heating systems (Similarity Score: 0.5526)

ID 430: Knowledge of systems for carbon dioxide (CO2) compression and liquefaction (Similarity Score: 0.4394)

ID 3: Experience with hydrogen compression (Similarity Score: 0.6388)

ID 534: Knowledge of materials suitable for withstanding hydrogen pressure and temperatures (Similarity Score: 0.5848)

ID 497: Understanding of carbon dioxide (CO2) compression processes (Similarity Score: 0.4908)

ID 263: Knowledge of selecting materials that can withstand hydrogen pressure and temperatures (Similarity Score: 0.5603)

ID 601: Selection of appropriate coatings for carbon dioxide (CO2) compression facility maintenance (Similarity Score: 0.3870)

ID 97: Understanding the role of compression in hydrogen storage (Similarity Score: 0.8039)

ID 96: Knowledge of various hydrogen compression technologies (Similarity Score: 0.6712)

ID 536: Knowledge of components that can endure hydrogen pressure and temperatures (Similarity Score: 0.5376)

ID 602: Selection of seals for carbon dioxide (CO2) compression facility maintenance (Similarity Score: 0.4423)

ID 591: Selection and design of carbon dioxide (CO2) compression systems (Similarity Score: 0.4532)

#### 13.2.3.1: Material Compatibility

ID 263: Knowledge of selecting materials that can withstand hydrogen pressure and temperatures (Similarity Score: 0.5599)

ID 536: Knowledge of components that can endure hydrogen pressure and temperatures (Similarity Score: 0.5484)

ID 645: Design of compression systems to operate under hydrogen pressure and temperature (Similarity Score: 0.6242)

ID 219: Assess integrity of welds under hydrogen pressure (Similarity Score: 0.6095)

ID 169: Knowledge of seals compatible with hydrogen blending (Similarity Score: 0.5700)

ID 601: Selection of appropriate coatings for carbon dioxide (CO2) compression facility maintenance (Similarity Score: 0.3974)

ID 514: Understanding carbon dioxide (CO2) compression properties (Similarity Score: 0.4893)

ID 406: Understanding welding processes that are compatible with hydrogen (Similarity Score: 0.5866)

ID 534: Knowledge of materials suitable for withstanding hydrogen pressure and temperatures (Similarity Score: 0.5991)

ID 508: Selection and design of compression systems for hydrogen pressure and temperature variations (Similarity Score: 0.6175)

ID 602: Selection of seals for carbon dioxide (CO2) compression facility maintenance (Similarity Score: 0.4458)

ID 126: Understanding the impact of hydrogen blending on heating systems (Similarity Score: 0.5550)

ID 220: Assess integrity of welds under hydrogen temperature conditions (Similarity Score: 0.6181)

ID 600: Selection of appropriate materials for carbon dioxide (CO2) compression facility maintenance (Similarity Score: 0.4346)

ID 98: Knowledge of safety considerations in hydrogen compression processes (Similarity Score: 0.6960)

ID 125: Understanding the principles of hydrogen blending for heating (Similarity Score: 0.5483)

#### 13.2.3.2: Hydrogen Embrittlement

ID 125: Understanding the principles of hydrogen blending for heating (Similarity Score: 0.5265)

ID 126: Understanding the impact of hydrogen blending on heating systems (Similarity Score: 0.5554)

ID 514: Understanding carbon dioxide (CO2) compression properties (Similarity Score: 0.4996)

ID 497: Understanding of carbon dioxide (CO2) compression processes (Similarity Score: 0.4550)

ID 515: Understanding carbon dioxide (CO2) compression processes (Similarity Score: 0.4379)

ID 601: Selection of appropriate coatings for carbon dioxide (CO2) compression facility maintenance (Similarity Score: 0.4121)

## 13.3: Storage of Compressed Hydrogen

ID 408: Selection of compression systems to withstand hydrogen pressure (Similarity Score: 0.6663)

ID 337: Selection of compression systems for hydrogen fueling (Similarity Score: 0.7153)

ID 340: Maintenance of compression systems in hydrogen fueling (Similarity Score: 0.7259)

ID 97: Understanding the role of compression in hydrogen storage (Similarity Score: 0.8009)

ID 148: Knowledge of compression equipment for hydrogen blending (Similarity Score: 0.6720)

ID 14: Knowledge of compression systems in hydrogen pipelines (Similarity Score: 0.7037)

ID 6: Experience with hydrogen dispensing (Similarity Score: 0.4762)

ID 385: Knowledge of gaseous hydrogen storage systems (Similarity Score: 0.6560)

ID 583: Understanding of reservoir data interpretation for hydrogen injection (Similarity Score: 0.4968)

ID 647: Maintenance of compression systems in hydrogen environments (Similarity Score: 0.7412)

ID 372: Maintenance of hydrogen compression systems (Similarity Score: 0.7436)

ID 584: Understanding of reservoir data for hydrogen storage efficiency (Similarity Score: 0.5908)

ID 645: Design of compression systems to operate under hydrogen pressure and temperature (Similarity Score: 0.6191)

ID 508: Selection and design of compression systems for hydrogen pressure and temperature variations (Similarity Score: 0.6219)

ID 24: Selection of compression systems for hydrogen fueling (Similarity Score: 0.7153)

ID 305: Selection and design of compression systems for high/low hydrogen pressure (Similarity Score: 0.6799)

ID 5: Experience with hydrogen storage (Similarity Score: 0.6499)

ID 370: Selection and design of hydrogen compression systems (Similarity Score: 0.6353)

ID 357: Selection and design of compression systems for hydrogen blending (Similarity Score: 0.6589)

ID 96: Knowledge of various hydrogen compression technologies (Similarity Score: 0.7192)

ID 23: Design of compression systems for hydrogen pressure (Similarity Score: 0.6920)

ID 362: Maintenance of compression, turbines, combustion, and related systems for hydrogen blending (Similarity Score: 0.6280)

ID 410: Maintenance of compression systems under hydrogen pressure (Similarity Score: 0.7055)

ID 644: Selection of compression systems to withstand hydrogen conditions (Similarity Score: 0.6740)

ID 3: Experience with hydrogen compression (Similarity Score: 0.6553)

ID 327: Troubleshooting hydrogen fuel compression equipment (Similarity Score: 0.6055)

ID 593: Maintenance of carbon dioxide (CO2) compression systems (Similarity Score: 0.4737)

ID 344: Techniques for repairing hydrogen leaks (Similarity Score: 0.5153)

### 13.3.1: Types of Storage Vessels

ID 424: Selection and design of vessels for hydrogen pressure and temperature variations (Similarity Score: 0.5108)

ID 487: Selection and design of vessels for hydrogen pressure and temperature variations (Similarity Score: 0.5108)

ID 14: Knowledge of compression systems in hydrogen pipelines (Similarity Score: 0.6619)

ID 213: Design and selection of pressure vessels for hydrogen systems (Similarity Score: 0.6245)

ID 349: Maintenance of vessels to withstand hydrogen pressure and temperatures (Similarity Score: 0.5665)

ID 148: Knowledge of compression equipment for hydrogen blending (Similarity Score: 0.6368)

ID 305: Selection and design of compression systems for high/low hydrogen pressure (Similarity Score: 0.6472)

ID 6: Experience with hydrogen dispensing (Similarity Score: 0.4771)

ID 408: Selection of compression systems to withstand hydrogen pressure (Similarity Score: 0.6311)

ID 332: Selection and design of vessels for high/low hydrogen pressure and hot/cold temperatures (Similarity Score: 0.5424)

ID 370: Selection and design of hydrogen compression systems (Similarity Score: 0.6138)

ID 96: Knowledge of various hydrogen compression technologies (Similarity Score: 0.6747)

ID 467: Selection and design of vessels for hydrogen pressure and temperature variations (Similarity Score: 0.5108)

ID 440: Selection and design of vessels to withstand hydrogen pressure and temperature variations (Similarity Score: 0.5203)

ID 337: Selection of compression systems for hydrogen fueling (Similarity Score: 0.6823)

ID 336: Selection of pressure vessels for hydrogen fueling systems (Similarity Score: 0.6364)

ID 327: Troubleshooting hydrogen fuel compression equipment (Similarity Score: 0.5780)

ID 605: Maintenance of vessels to withstand hydrogen pressure and temperatures (Similarity Score: 0.5665)

ID 50: Appropriate selection of pressure vessels for hydrogen fueling (Similarity Score: 0.6160)

ID 296: Selection and design of vessels to withstand high hydrogen pressure (Similarity Score: 0.5984)

ID 141: Knowledge of hydrogen dispensing systems (Similarity Score: 0.5550)

ID 24: Selection of compression systems for hydrogen fueling (Similarity Score: 0.6823)

#### 13.3.1.1: High-Pressure Cylinders

ID 296: Selection and design of vessels to withstand high hydrogen pressure (Similarity Score: 0.5907)

ID 336: Selection of pressure vessels for hydrogen fueling systems (Similarity Score: 0.5952)

ID 332: Selection and design of vessels for high/low hydrogen pressure and hot/cold temperatures (Similarity Score: 0.5516)

ID 50: Appropriate selection of pressure vessels for hydrogen fueling (Similarity Score: 0.5844)

ID 305: Selection and design of compression systems for high/low hydrogen pressure (Similarity Score: 0.6809)

#### 13.3.1.2: Composite Tanks

ID 600: Selection of appropriate materials for carbon dioxide (CO2) compression facility maintenance (Similarity Score: 0.4325)

ID 602: Selection of seals for carbon dioxide (CO2) compression facility maintenance (Similarity Score: 0.4545)

ID 601: Selection of appropriate coatings for carbon dioxide (CO2) compression facility maintenance (Similarity Score: 0.3771)

### 13.3.2: Safety and Regulatory Requirements

ID 536: Knowledge of components that can endure hydrogen pressure and temperatures (Similarity Score: 0.5323)

ID 601: Selection of appropriate coatings for carbon dioxide (CO2) compression facility maintenance (Similarity Score: 0.3872)

ID 165: Understanding of hydrogen-related regulations (Similarity Score: 0.6726)

ID 629: Knowledge of climate targets and their implications for hydrogen (Similarity Score: 0.5570)

ID 645: Design of compression systems to operate under hydrogen pressure and temperature (Similarity Score: 0.6031)

ID 14: Knowledge of compression systems in hydrogen pipelines (Similarity Score: 0.6799)

ID 370: Selection and design of hydrogen compression systems (Similarity Score: 0.6214)

ID 96: Knowledge of various hydrogen compression technologies (Similarity Score: 0.6886)

ID 237: Keeping up-to-date with changes in hydrogen regulations (Similarity Score: 0.5568)

ID 137: Knowledge of relevant codes for hydrogen fueling station equipment (Similarity Score: 0.6193)

ID 394: Understanding regulations for hydrogen infrastructure and operations (Similarity Score: 0.6541)

ID 365: Selection and design of valves and seals to withstand hydrogen conditions (Similarity Score: 0.5653)

ID 209: Knowledge of certification requirements for hydrogen products (Similarity Score: 0.6825)

ID 583: Understanding of reservoir data interpretation for hydrogen injection (Similarity Score: 0.4944)

ID 232: Knowledge of standards for EMC/EMI in hydrogen systems (Similarity Score: 0.5751)

ID 231: Understanding of EMC/EMI compliance requirements (Similarity Score: 0.3981)

ID 140: Knowledge of distribution systems for hydrogen (Similarity Score: 0.6064)

ID 584: Understanding of reservoir data for hydrogen storage efficiency (Similarity Score: 0.5717)

ID 362: Maintenance of compression, turbines, combustion, and related systems for hydrogen blending (Similarity Score: 0.6522)

ID 13: Knowledge of systems associated with hydrogen pipeline transmission (Similarity Score: 0.5712)

ID 441: Selection and design of compressors to handle hydrogen pressure and temperature extremes (Similarity Score: 0.5225)

ID 357: Selection and design of compression systems for hydrogen blending (Similarity Score: 0.6384)

ID 505: Knowledge of well completion solutions tailored for hydrogen environments (Similarity Score: 0.5453)

ID 183: Advanced knowledge of evolving standards in hydrogen industry (Similarity Score: 0.5888)

ID 305: Selection and design of compression systems for high/low hydrogen pressure (Similarity Score: 0.6512)

ID 182: Advanced knowledge of current hydrogen regulatory systems (Similarity Score: 0.6228)

ID 98: Knowledge of safety considerations in hydrogen compression processes (Similarity Score: 0.7417)

ID 606: Maintenance of compressors to withstand hydrogen pressure and temperatures (Similarity Score: 0.5775)

ID 644: Selection of compression systems to withstand hydrogen conditions (Similarity Score: 0.6482)

ID 561: In-depth understanding of hydrogen safety legislation (Similarity Score: 0.6207)

ID 416: Keeping current with regulatory, standard, and code changes in the hydrogen sector (Similarity Score: 0.5982)

ID 167: Understanding of codes related to hydrogen systems (Similarity Score: 0.6123)

ID 189: Understanding of relevant hydrogen regulations (Similarity Score: 0.6937)

ID 151: Understanding of other relevant equipment for hydrogen blending (Similarity Score: 0.5967)

ID 246: Ensuring quality and safety of welds in hydrogen systems (Similarity Score: 0.6109)

ID 334: Selection and design of valves and seals for hydrogen conditions (Similarity Score: 0.5539)

ID 647: Maintenance of compression systems in hydrogen environments (Similarity Score: 0.7017)

ID 207: Knowledge of end-use applications within the hydrogen value chain (Similarity Score: 0.5368)

ID 511: Maintenance of combustion, compression, pumping, and turbine systems to ensure reliability under hydrogen conditions (Similarity Score: 0.6755)

ID 423: Selection and design of air separation units for hydrogen pressure and temperature variations (Similarity Score: 0.5218)

ID 508: Selection and design of compression systems for hydrogen pressure and temperature variations (Similarity Score: 0.6006)

ID 600: Selection of appropriate materials for carbon dioxide (CO2) compression facility maintenance (Similarity Score: 0.4322)

ID 539: Selection and design of compression systems (Similarity Score: 0.4400)

ID 402: Advanced knowledge of regulatory systems governing hydrogen (Similarity Score: 0.6362)

ID 403: In-depth knowledge of standards for hydrogen infrastructure and operations (Similarity Score: 0.5810)

ID 191: Knowledge of relevant codes applicable to hydrogen (Similarity Score: 0.6906)

ID 609: Maintenance of coatings and insulation to protect against hydrogen conditions (Similarity Score: 0.5427)

ID 190: Understanding of industry standards for hydrogen (Similarity Score: 0.6540)

ID 239: Keeping up-to-date with changes in hydrogen codes (Similarity Score: 0.5054)

ID 48: Knowledge of appropriate seals for hydrogen systems (Similarity Score: 0.6106)

ID 148: Knowledge of compression equipment for hydrogen blending (Similarity Score: 0.6892)

ID 490: Selection and design of valves and seals for hydrogen conditions (Similarity Score: 0.5539)

ID 169: Knowledge of seals compatible with hydrogen blending (Similarity Score: 0.5197)

ID 327: Troubleshooting hydrogen fuel compression equipment (Similarity Score: 0.5832)

ID 392: Knowledge of operational adjustments for hydrogen blending (Similarity Score: 0.5809)

ID 562: Application of hydrogen safety codes and standards in operations (Similarity Score: 0.6700)

ID 279: Knowledge of end-use applications in the hydrogen value chain (Similarity Score: 0.5408)

ID 602: Selection of seals for carbon dioxide (CO2) compression facility maintenance (Similarity Score: 0.4534)

#### 13.3.2.1: Pressure Relief Devices

ID 470: Selection and design of valves and seals to withstand hydrogen pressure and temperatures (Similarity Score: 0.5628)

ID 602: Selection of seals for carbon dioxide (CO2) compression facility maintenance (Similarity Score: 0.4816)

ID 327: Troubleshooting hydrogen fuel compression equipment (Similarity Score: 0.6086)

ID 600: Selection of appropriate materials for carbon dioxide (CO2) compression facility maintenance (Similarity Score: 0.4321)

ID 606: Maintenance of compressors to withstand hydrogen pressure and temperatures (Similarity Score: 0.5873)

ID 23: Design of compression systems for hydrogen pressure (Similarity Score: 0.6611)

ID 98: Knowledge of safety considerations in hydrogen compression processes (Similarity Score: 0.6936)

ID 148: Knowledge of compression equipment for hydrogen blending (Similarity Score: 0.6891)

ID 265: Selection and design of compressors to withstand hydrogen pressure and temperatures (Similarity Score: 0.5522)

ID 644: Selection of compression systems to withstand hydrogen conditions (Similarity Score: 0.6431)

ID 645: Design of compression systems to operate under hydrogen pressure and temperature (Similarity Score: 0.6176)

ID 508: Selection and design of compression systems for hydrogen pressure and temperature variations (Similarity Score: 0.6179)

ID 601: Selection of appropriate coatings for carbon dioxide (CO2) compression facility maintenance (Similarity Score: 0.4122)

ID 75: Selection of equipment designed to withstand hydrogen pressure (Similarity Score: 0.6018)

ID 119: Appropriate selection and design of valves and seals to withstand hydrogen pressure and temperatures (Similarity Score: 0.5613)

ID 408: Selection of compression systems to withstand hydrogen pressure (Similarity Score: 0.6620)

ID 410: Maintenance of compression systems under hydrogen pressure (Similarity Score: 0.6817)

ID 488: Selection and design of compressors to withstand hydrogen pressure and temperatures (Similarity Score: 0.5522)

ID 608: Maintenance of valves and seals to withstand hydrogen pressure and temperatures (Similarity Score: 0.6006)

ID 365: Selection and design of valves and seals to withstand hydrogen conditions (Similarity Score: 0.5716)

ID 423: Selection and design of air separation units for hydrogen pressure and temperature variations (Similarity Score: 0.5239)

ID 536: Knowledge of components that can endure hydrogen pressure and temperatures (Similarity Score: 0.5244)

ID 426: Selection and design of valves and seals to withstand hydrogen pressure and temperatures (Similarity Score: 0.5628)

ID 116: Appropriate selection and design of pressure vessels to withstand hydrogen pressure and temperatures (Similarity Score: 0.5360)

ID 511: Maintenance of combustion, compression, pumping, and turbine systems to ensure reliability under hydrogen conditions (Similarity Score: 0.6311)

ID 441: Selection and design of compressors to handle hydrogen pressure and temperature extremes (Similarity Score: 0.5425)

ID 542: Maintenance of compression, pumping, and turbine systems (Similarity Score: 0.5111)

ID 305: Selection and design of compression systems for high/low hydrogen pressure (Similarity Score: 0.6599)

ID 117: Appropriate selection and design of compressors to withstand hydrogen pressure and temperatures (Similarity Score: 0.5540)

#### 13.3.2.2: Safety Protocols for Storage

ID 191: Knowledge of relevant codes applicable to hydrogen (Similarity Score: 0.6567)

ID 584: Understanding of reservoir data for hydrogen storage efficiency (Similarity Score: 0.5640)

ID 189: Understanding of relevant hydrogen regulations (Similarity Score: 0.6689)

ID 600: Selection of appropriate materials for carbon dioxide (CO2) compression facility maintenance (Similarity Score: 0.4384)

ID 167: Understanding of codes related to hydrogen systems (Similarity Score: 0.5896)

ID 98: Knowledge of safety considerations in hydrogen compression processes (Similarity Score: 0.7187)

ID 232: Knowledge of standards for EMC/EMI in hydrogen systems (Similarity Score: 0.5752)

ID 511: Maintenance of combustion, compression, pumping, and turbine systems to ensure reliability under hydrogen conditions (Similarity Score: 0.6277)

ID 137: Knowledge of relevant codes for hydrogen fueling station equipment (Similarity Score: 0.6046)

ID 562: Application of hydrogen safety codes and standards in operations (Similarity Score: 0.6435)

ID 602: Selection of seals for carbon dioxide (CO2) compression facility maintenance (Similarity Score: 0.4632)

ID 561: In-depth understanding of hydrogen safety legislation (Similarity Score: 0.6038)

ID 231: Understanding of EMC/EMI compliance requirements (Similarity Score: 0.4030)

ID 91: Advanced understanding of general safety protocols for hydrogen (Similarity Score: 0.7131)

ID 601: Selection of appropriate coatings for carbon dioxide (CO2) compression facility maintenance (Similarity Score: 0.3848)

ID 394: Understanding regulations for hydrogen infrastructure and operations (Similarity Score: 0.6360)

ID 148: Knowledge of compression equipment for hydrogen blending (Similarity Score: 0.6637)

### 13.3.3: Maintenance and Monitoring of Storage Systems

ID 107: Maintenance of ventilation systems for hydrogen blending (Similarity Score: 0.6338)

ID 542: Maintenance of compression, pumping, and turbine systems (Similarity Score: 0.5604)

ID 148: Knowledge of compression equipment for hydrogen blending (Similarity Score: 0.6607)

ID 344: Techniques for repairing hydrogen leaks (Similarity Score: 0.5341)

ID 350: Maintenance of compressors for hydrogen conditions (Similarity Score: 0.6690)

ID 362: Maintenance of compression, turbines, combustion, and related systems for hydrogen blending (Similarity Score: 0.6882)

ID 511: Maintenance of combustion, compression, pumping, and turbine systems to ensure reliability under hydrogen conditions (Similarity Score: 0.6929)

ID 584: Understanding of reservoir data for hydrogen storage efficiency (Similarity Score: 0.5752)

ID 606: Maintenance of compressors to withstand hydrogen pressure and temperatures (Similarity Score: 0.5828)

ID 14: Knowledge of compression systems in hydrogen pipelines (Similarity Score: 0.6832)

ID 593: Maintenance of carbon dioxide (CO2) compression systems (Similarity Score: 0.5138)

ID 410: Maintenance of compression systems under hydrogen pressure (Similarity Score: 0.7267)

ID 370: Selection and design of hydrogen compression systems (Similarity Score: 0.6189)

ID 583: Understanding of reservoir data interpretation for hydrogen injection (Similarity Score: 0.5003)

ID 157: Maintenance of compressors for hydrogen systems (Similarity Score: 0.6843)

ID 602: Selection of seals for carbon dioxide (CO2) compression facility maintenance (Similarity Score: 0.4607)

ID 423: Selection and design of air separation units for hydrogen pressure and temperature variations (Similarity Score: 0.5134)

ID 372: Maintenance of hydrogen compression systems (Similarity Score: 0.7887)

ID 647: Maintenance of compression systems in hydrogen environments (Similarity Score: 0.7601)

ID 385: Knowledge of gaseous hydrogen storage systems (Similarity Score: 0.6514)

ID 430: Knowledge of systems for carbon dioxide (CO2) compression and liquefaction (Similarity Score: 0.4314)

ID 5: Experience with hydrogen storage (Similarity Score: 0.6310)

ID 601: Selection of appropriate coatings for carbon dioxide (CO2) compression facility maintenance (Similarity Score: 0.3768)

ID 327: Troubleshooting hydrogen fuel compression equipment (Similarity Score: 0.6413)

ID 508: Selection and design of compression systems for hydrogen pressure and temperature variations (Similarity Score: 0.6023)

ID 96: Knowledge of various hydrogen compression technologies (Similarity Score: 0.6875)

ID 340: Maintenance of compression systems in hydrogen fueling (Similarity Score: 0.7631)

ID 418: Maintenance of mechanical systems under hydrogen pressure (Similarity Score: 0.6045)

ID 140: Knowledge of distribution systems for hydrogen (Similarity Score: 0.6113)

#### 13.3.3.1: Regular Inspection and Testing

ID 372: Maintenance of hydrogen compression systems (Similarity Score: 0.7426)

ID 327: Troubleshooting hydrogen fuel compression equipment (Similarity Score: 0.6012)

ID 511: Maintenance of combustion, compression, pumping, and turbine systems to ensure reliability under hydrogen conditions (Similarity Score: 0.6840)

ID 410: Maintenance of compression systems under hydrogen pressure (Similarity Score: 0.6885)

ID 362: Maintenance of compression, turbines, combustion, and related systems for hydrogen blending (Similarity Score: 0.6523)

ID 542: Maintenance of compression, pumping, and turbine systems (Similarity Score: 0.5229)

ID 647: Maintenance of compression systems in hydrogen environments (Similarity Score: 0.7052)

ID 340: Maintenance of compression systems in hydrogen fueling (Similarity Score: 0.7204)

ID 593: Maintenance of carbon dioxide (CO2) compression systems (Similarity Score: 0.4741)

#### 13.3.3.2: Leak Detection and Prevention

ID 362: Maintenance of compression, turbines, combustion, and related systems for hydrogen blending (Similarity Score: 0.6440)

ID 342: Procedures for tracing hydrogen leaks (Similarity Score: 0.5014)

ID 343: Methods for locating hydrogen leaks (Similarity Score: 0.5290)

ID 542: Maintenance of compression, pumping, and turbine systems (Similarity Score: 0.5182)

ID 593: Maintenance of carbon dioxide (CO2) compression systems (Similarity Score: 0.5015)

ID 372: Maintenance of hydrogen compression systems (Similarity Score: 0.7219)

ID 430: Knowledge of systems for carbon dioxide (CO2) compression and liquefaction (Similarity Score: 0.4501)

ID 327: Troubleshooting hydrogen fuel compression equipment (Similarity Score: 0.5839)

ID 511: Maintenance of combustion, compression, pumping, and turbine systems to ensure reliability under hydrogen conditions (Similarity Score: 0.6673)

ID 344: Techniques for repairing hydrogen leaks (Similarity Score: 0.5395)

ID 602: Selection of seals for carbon dioxide (CO2) compression facility maintenance (Similarity Score: 0.4540)

# 14: Hydrogen Liquefaction and Storage

ID 383: Understanding of dispensing technology for hydrogen (Similarity Score: 0.6120)

ID 430: Knowledge of systems for carbon dioxide (CO2) compression and liquefaction (Similarity Score: 0.4534)

ID 529: Understanding of reservoir data for carbon dioxide (CO2) storage (Similarity Score: 0.4003)

ID 239: Keeping up-to-date with changes in hydrogen codes (Similarity Score: 0.5128)

ID 236: Staying current with advances in hydrogen technology (Similarity Score: 0.5497)

ID 499: Stay up to date on hydrogen storage technologies (Similarity Score: 0.6572)

ID 278: Knowledge of the storage aspect of the hydrogen value chain (Similarity Score: 0.6585)

ID 637: Knowledge of systems used in carbon separation, purification, and liquefaction processes (Similarity Score: 0.4400)

ID 279: Knowledge of end-use applications in the hydrogen value chain (Similarity Score: 0.5613)

ID 385: Knowledge of gaseous hydrogen storage systems (Similarity Score: 0.6665)

ID 141: Knowledge of hydrogen dispensing systems (Similarity Score: 0.5851)

ID 206: Understanding the hydrogen storage value chain (Similarity Score: 0.6257)

ID 379: Understanding the role of storage in the hydrogen value chain (Similarity Score: 0.6618)

ID 6: Experience with hydrogen dispensing (Similarity Score: 0.5090)

ID 207: Knowledge of end-use applications within the hydrogen value chain (Similarity Score: 0.5436)

ID 518: Storage design for carbon dioxide (CO2) (Similarity Score: 0.4996)

ID 5: Experience with hydrogen storage (Similarity Score: 0.6468)

ID 517: Zone selection for carbon dioxide (CO2) storage (Similarity Score: 0.4368)

ID 584: Understanding of reservoir data for hydrogen storage efficiency (Similarity Score: 0.5704)

## 14.1: Conversion of Hydrogen to Liquid Form

ID 637: Knowledge of systems used in carbon separation, purification, and liquefaction processes (Similarity Score: 0.4527)

ID 383: Understanding of dispensing technology for hydrogen (Similarity Score: 0.6128)

ID 6: Experience with hydrogen dispensing (Similarity Score: 0.4746)

ID 533: Understanding of fluid characterization for carbon dioxide (CO2) injection (Similarity Score: 0.3781)

ID 574: Understanding of purification and liquefaction processes (Similarity Score: 0.4985)

ID 465: Understanding liquefaction processes in carbon capture (Similarity Score: 0.4914)

### 14.1.1: Principles of Hydrogen Liquefaction

ID 125: Understanding the principles of hydrogen blending for heating (Similarity Score: 0.5774)

ID 637: Knowledge of systems used in carbon separation, purification, and liquefaction processes (Similarity Score: 0.4490)

ID 6: Experience with hydrogen dispensing (Similarity Score: 0.4706)

### 14.1.2: Liquefaction Technologies

ID 383: Understanding of dispensing technology for hydrogen (Similarity Score: 0.6024)

ID 637: Knowledge of systems used in carbon separation, purification, and liquefaction processes (Similarity Score: 0.4450)

#### 14.1.2.1: Cryogenic Cooling Systems

ID 597: Selection and design of cryogenic systems for carbon dioxide (CO2) storage (Similarity Score: 0.5107)

ID 637: Knowledge of systems used in carbon separation, purification, and liquefaction processes (Similarity Score: 0.4423)

## 14.2: Material Properties of Liquid Hydrogen

ID 533: Understanding of fluid characterization for carbon dioxide (CO2) injection (Similarity Score: 0.3801)

ID 637: Knowledge of systems used in carbon separation, purification, and liquefaction processes (Similarity Score: 0.4610)

ID 84: Understanding the properties and characteristics of hydrogen in a liquid state (Similarity Score: 0.7767)

ID 141: Knowledge of hydrogen dispensing systems (Similarity Score: 0.5576)

ID 560: Thermal/flow modeling for sequestered gas and liquid compositions (Similarity Score: 0.4007)

ID 616: Understanding the properties and characteristics of carbon dioxide (CO2) in a liquid state (Similarity Score: 0.5258)

ID 449: Understanding of the properties of carbon dioxide (CO2) in a gaseous state (Similarity Score: 0.4494)

ID 557: Understanding of the physical properties of carbon dioxide (CO2) in a liquid state (Similarity Score: 0.5195)

ID 559: PVT characterization specific to sequestered gas and liquid composition (Similarity Score: 0.4756)

ID 603: Understanding properties and characteristics of carbon dioxide (CO2) in a liquid state (Similarity Score: 0.5364)

ID 558: Understanding of the behavior of carbon dioxide (CO2) in a liquid state (Similarity Score: 0.4960)

ID 604: Understanding properties and characteristics of carbon dioxide (CO2) in a gaseous state (Similarity Score: 0.4559)

ID 385: Knowledge of gaseous hydrogen storage systems (Similarity Score: 0.6313)

ID 536: Knowledge of components that can endure hydrogen pressure and temperatures (Similarity Score: 0.5240)

ID 578: Understanding of fluid characterization in cavern environments (Similarity Score: 0.3545)

ID 379: Understanding the role of storage in the hydrogen value chain (Similarity Score: 0.6022)

ID 432: Understanding the physical properties of carbon dioxide (CO2) in its liquid state (Similarity Score: 0.5036)

ID 47: Knowledge of appropriate materials for hydrogen systems (Similarity Score: 0.6142)

ID 383: Understanding of dispensing technology for hydrogen (Similarity Score: 0.5898)

ID 534: Knowledge of materials suitable for withstanding hydrogen pressure and temperatures (Similarity Score: 0.5835)

ID 278: Knowledge of the storage aspect of the hydrogen value chain (Similarity Score: 0.6083)

### 14.2.1: Physical and Chemical Properties at Cryogenic Temperatures

ID 449: Understanding of the properties of carbon dioxide (CO2) in a gaseous state (Similarity Score: 0.4528)

ID 597: Selection and design of cryogenic systems for carbon dioxide (CO2) storage (Similarity Score: 0.4837)

ID 557: Understanding of the physical properties of carbon dioxide (CO2) in a liquid state (Similarity Score: 0.5444)

ID 558: Understanding of the behavior of carbon dioxide (CO2) in a liquid state (Similarity Score: 0.4953)

ID 559: PVT characterization specific to sequestered gas and liquid composition (Similarity Score: 0.4713)

ID 637: Knowledge of systems used in carbon separation, purification, and liquefaction processes (Similarity Score: 0.4673)

ID 604: Understanding properties and characteristics of carbon dioxide (CO2) in a gaseous state (Similarity Score: 0.4614)

ID 432: Understanding the physical properties of carbon dioxide (CO2) in its liquid state (Similarity Score: 0.5282)

ID 536: Knowledge of components that can endure hydrogen pressure and temperatures (Similarity Score: 0.5143)

ID 431: Understanding the physical properties of carbon dioxide (CO2) in its gaseous state (Similarity Score: 0.4526)

ID 616: Understanding the properties and characteristics of carbon dioxide (CO2) in a liquid state (Similarity Score: 0.5367)

ID 603: Understanding properties and characteristics of carbon dioxide (CO2) in a liquid state (Similarity Score: 0.5431)

ID 84: Understanding the properties and characteristics of hydrogen in a liquid state (Similarity Score: 0.7341)

### 14.2.2: Behavior of Hydrogen as a Liquid

ID 449: Understanding of the properties of carbon dioxide (CO2) in a gaseous state (Similarity Score: 0.4644)

ID 615: Understanding the properties and characteristics of carbon dioxide (CO2) in a gaseous state (Similarity Score: 0.4648)

ID 557: Understanding of the physical properties of carbon dioxide (CO2) in a liquid state (Similarity Score: 0.5415)

ID 578: Understanding of fluid characterization in cavern environments (Similarity Score: 0.3659)

ID 558: Understanding of the behavior of carbon dioxide (CO2) in a liquid state (Similarity Score: 0.5453)

ID 450: Understanding the behavior of carbon dioxide (CO2) under different conditions in a gaseous state (Similarity Score: 0.4272)

ID 616: Understanding the properties and characteristics of carbon dioxide (CO2) in a liquid state (Similarity Score: 0.5561)

ID 84: Understanding the properties and characteristics of hydrogen in a liquid state (Similarity Score: 0.7620)

ID 455: Understanding of carbon dioxide (CO2) properties and behavior in various states (Similarity Score: 0.4148)

ID 432: Understanding the physical properties of carbon dioxide (CO2) in its liquid state (Similarity Score: 0.5287)

ID 431: Understanding the physical properties of carbon dioxide (CO2) in its gaseous state (Similarity Score: 0.4520)

ID 604: Understanding properties and characteristics of carbon dioxide (CO2) in a gaseous state (Similarity Score: 0.4798)

ID 559: PVT characterization specific to sequestered gas and liquid composition (Similarity Score: 0.4446)

ID 603: Understanding properties and characteristics of carbon dioxide (CO2) in a liquid state (Similarity Score: 0.5626)

### 14.2.3: Interaction with Storage Materials

ID 559: PVT characterization specific to sequestered gas and liquid composition (Similarity Score: 0.4404)

ID 432: Understanding the physical properties of carbon dioxide (CO2) in its liquid state (Similarity Score: 0.4810)

ID 475: Knowledge of how carbon dioxide (CO2) interacts with different materials under high pressure (Similarity Score: 0.4214)

ID 533: Understanding of fluid characterization for carbon dioxide (CO2) injection (Similarity Score: 0.3799)

ID 385: Knowledge of gaseous hydrogen storage systems (Similarity Score: 0.6281)

ID 557: Understanding of the physical properties of carbon dioxide (CO2) in a liquid state (Similarity Score: 0.4914)

ID 84: Understanding the properties and characteristics of hydrogen in a liquid state (Similarity Score: 0.7228)

ID 536: Knowledge of components that can endure hydrogen pressure and temperatures (Similarity Score: 0.5211)

ID 637: Knowledge of systems used in carbon separation, purification, and liquefaction processes (Similarity Score: 0.4384)

ID 578: Understanding of fluid characterization in cavern environments (Similarity Score: 0.3801)

ID 206: Understanding the hydrogen storage value chain (Similarity Score: 0.6081)

ID 603: Understanding properties and characteristics of carbon dioxide (CO2) in a liquid state (Similarity Score: 0.5091)

ID 604: Understanding properties and characteristics of carbon dioxide (CO2) in a gaseous state (Similarity Score: 0.4492)

ID 278: Knowledge of the storage aspect of the hydrogen value chain (Similarity Score: 0.6406)

ID 379: Understanding the role of storage in the hydrogen value chain (Similarity Score: 0.6547)

#### 14.2.3.1: Material Compatibility at Low Temperatures

ID 578: Understanding of fluid characterization in cavern environments (Similarity Score: 0.3460)

ID 534: Knowledge of materials suitable for withstanding hydrogen pressure and temperatures (Similarity Score: 0.5831)

ID 559: PVT characterization specific to sequestered gas and liquid composition (Similarity Score: 0.4303)

ID 220: Assess integrity of welds under hydrogen temperature conditions (Similarity Score: 0.6144)

ID 169: Knowledge of seals compatible with hydrogen blending (Similarity Score: 0.5345)

ID 536: Knowledge of components that can endure hydrogen pressure and temperatures (Similarity Score: 0.5504)

#### 14.2.3.2: Thermal Conductivity and Insulation Needs

ID 132: Knowledge of maintaining coatings to ensure long-term protection (Similarity Score: 0.3384)

ID 609: Maintenance of coatings and insulation to protect against hydrogen conditions (Similarity Score: 0.5375)

ID 637: Knowledge of systems used in carbon separation, purification, and liquefaction processes (Similarity Score: 0.4237)

## 14.3: Storage of Liquid Hydrogen

ID 499: Stay up to date on hydrogen storage technologies (Similarity Score: 0.6599)

ID 383: Understanding of dispensing technology for hydrogen (Similarity Score: 0.6232)

ID 206: Understanding the hydrogen storage value chain (Similarity Score: 0.6126)

ID 518: Storage design for carbon dioxide (CO2) (Similarity Score: 0.4822)

ID 5: Experience with hydrogen storage (Similarity Score: 0.6478)

ID 278: Knowledge of the storage aspect of the hydrogen value chain (Similarity Score: 0.6463)

ID 141: Knowledge of hydrogen dispensing systems (Similarity Score: 0.5938)

ID 6: Experience with hydrogen dispensing (Similarity Score: 0.4879)

ID 637: Knowledge of systems used in carbon separation, purification, and liquefaction processes (Similarity Score: 0.4236)

ID 584: Understanding of reservoir data for hydrogen storage efficiency (Similarity Score: 0.5750)

ID 385: Knowledge of gaseous hydrogen storage systems (Similarity Score: 0.6898)

ID 379: Understanding the role of storage in the hydrogen value chain (Similarity Score: 0.6483)

### 14.3.1: Types of Storage Containers

ID 6: Experience with hydrogen dispensing (Similarity Score: 0.4833)

ID 385: Knowledge of gaseous hydrogen storage systems (Similarity Score: 0.6624)

ID 383: Understanding of dispensing technology for hydrogen (Similarity Score: 0.6028)

ID 141: Knowledge of hydrogen dispensing systems (Similarity Score: 0.5828)

ID 499: Stay up to date on hydrogen storage technologies (Similarity Score: 0.6364)

#### 14.3.1.1: Cryogenic Tanks

ID 384: Understanding of cryogenic hydrogen storage systems (Similarity Score: 0.7307)

ID 385: Knowledge of gaseous hydrogen storage systems (Similarity Score: 0.6530)

ID 141: Knowledge of hydrogen dispensing systems (Similarity Score: 0.5652)

ID 383: Understanding of dispensing technology for hydrogen (Similarity Score: 0.5882)

ID 597: Selection and design of cryogenic systems for carbon dioxide (CO2) storage (Similarity Score: 0.4867)

#### 14.3.1.2: Insulated Storage Vessels

ID 141: Knowledge of hydrogen dispensing systems (Similarity Score: 0.5655)

### 14.3.2: Safety and Regulatory Requirements

ID 334: Selection and design of valves and seals for hydrogen conditions (Similarity Score: 0.5647)

ID 238: Keeping up-to-date with changes in hydrogen standards (Similarity Score: 0.5643)

ID 393: Knowledge of environmental laws related to hydrogen (Similarity Score: 0.6235)

ID 562: Application of hydrogen safety codes and standards in operations (Similarity Score: 0.6455)

ID 183: Advanced knowledge of evolving standards in hydrogen industry (Similarity Score: 0.6233)

ID 394: Understanding regulations for hydrogen infrastructure and operations (Similarity Score: 0.6582)

ID 169: Knowledge of seals compatible with hydrogen blending (Similarity Score: 0.5141)

ID 141: Knowledge of hydrogen dispensing systems (Similarity Score: 0.5629)

ID 94: Advanced understanding of safety in handling and storage of hydrogen (Similarity Score: 0.7075)

ID 6: Experience with hydrogen dispensing (Similarity Score: 0.4681)

ID 637: Knowledge of systems used in carbon separation, purification, and liquefaction processes (Similarity Score: 0.4419)

ID 48: Knowledge of appropriate seals for hydrogen systems (Similarity Score: 0.6605)

ID 64: Understanding safety in handling and storage of hydrogen (Similarity Score: 0.7073)

ID 52: Appropriate selection of valves and seals for hydrogen fueling systems (Similarity Score: 0.5778)

ID 91: Advanced understanding of general safety protocols for hydrogen (Similarity Score: 0.7085)

ID 182: Advanced knowledge of current hydrogen regulatory systems (Similarity Score: 0.6445)

ID 190: Understanding of industry standards for hydrogen (Similarity Score: 0.6685)

ID 499: Stay up to date on hydrogen storage technologies (Similarity Score: 0.6497)

ID 536: Knowledge of components that can endure hydrogen pressure and temperatures (Similarity Score: 0.5064)

ID 385: Knowledge of gaseous hydrogen storage systems (Similarity Score: 0.6420)

ID 237: Keeping up-to-date with changes in hydrogen regulations (Similarity Score: 0.6044)

ID 207: Knowledge of end-use applications within the hydrogen value chain (Similarity Score: 0.5763)

ID 208: Understanding fueling standards for hydrogen products (Similarity Score: 0.6156)

ID 137: Knowledge of relevant codes for hydrogen fueling station equipment (Similarity Score: 0.5996)

ID 402: Advanced knowledge of regulatory systems governing hydrogen (Similarity Score: 0.6362)

ID 209: Knowledge of certification requirements for hydrogen products (Similarity Score: 0.7064)

ID 559: PVT characterization specific to sequestered gas and liquid composition (Similarity Score: 0.4363)

ID 483: Stay informed about changes to carbon capture and storage regulations, standards, and codes (Similarity Score: 0.4139)

ID 232: Knowledge of standards for EMC/EMI in hydrogen systems (Similarity Score: 0.5278)

ID 403: In-depth knowledge of standards for hydrogen infrastructure and operations (Similarity Score: 0.6020)

ID 152: Assess integrity of vessels and tanks for hydrogen pressure and temperatures (Similarity Score: 0.5961)

ID 239: Keeping up-to-date with changes in hydrogen codes (Similarity Score: 0.5180)

ID 365: Selection and design of valves and seals to withstand hydrogen conditions (Similarity Score: 0.5541)

ID 443: Selection and design of valves and seals to maintain integrity under hydrogen conditions (Similarity Score: 0.5832)

ID 561: In-depth understanding of hydrogen safety legislation (Similarity Score: 0.6616)

ID 278: Knowledge of the storage aspect of the hydrogen value chain (Similarity Score: 0.6046)

ID 189: Understanding of relevant hydrogen regulations (Similarity Score: 0.7418)

ID 416: Keeping current with regulatory, standard, and code changes in the hydrogen sector (Similarity Score: 0.6417)

ID 584: Understanding of reservoir data for hydrogen storage efficiency (Similarity Score: 0.5565)

ID 490: Selection and design of valves and seals for hydrogen conditions (Similarity Score: 0.5647)

ID 165: Understanding of hydrogen-related regulations (Similarity Score: 0.7155)

ID 279: Knowledge of end-use applications in the hydrogen value chain (Similarity Score: 0.5806)

ID 191: Knowledge of relevant codes applicable to hydrogen (Similarity Score: 0.6392)

ID 505: Knowledge of well completion solutions tailored for hydrogen environments (Similarity Score: 0.5643)

#### 14.3.2.1: Boil-Off Management

ID 554: Understanding fluid characterization in carbon dioxide (CO2) injection contexts (Similarity Score: 0.3793)

ID 182: Advanced knowledge of current hydrogen regulatory systems (Similarity Score: 0.6407)

ID 48: Knowledge of appropriate seals for hydrogen systems (Similarity Score: 0.6033)

ID 189: Understanding of relevant hydrogen regulations (Similarity Score: 0.7017)

ID 279: Knowledge of end-use applications in the hydrogen value chain (Similarity Score: 0.5404)

ID 183: Advanced knowledge of evolving standards in hydrogen industry (Similarity Score: 0.5899)

ID 483: Stay informed about changes to carbon capture and storage regulations, standards, and codes (Similarity Score: 0.4203)

ID 394: Understanding regulations for hydrogen infrastructure and operations (Similarity Score: 0.6208)

ID 165: Understanding of hydrogen-related regulations (Similarity Score: 0.6717)

ID 237: Keeping up-to-date with changes in hydrogen regulations (Similarity Score: 0.5859)

ID 561: In-depth understanding of hydrogen safety legislation (Similarity Score: 0.6118)

ID 416: Keeping current with regulatory, standard, and code changes in the hydrogen sector (Similarity Score: 0.6259)

ID 402: Advanced knowledge of regulatory systems governing hydrogen (Similarity Score: 0.6327)

ID 637: Knowledge of systems used in carbon separation, purification, and liquefaction processes (Similarity Score: 0.4464)

ID 207: Knowledge of end-use applications within the hydrogen value chain (Similarity Score: 0.5411)

#### 14.3.2.2: Safety Protocols for Cryogenic Storage

ID 483: Stay informed about changes to carbon capture and storage regulations, standards, and codes (Similarity Score: 0.4240)

ID 165: Understanding of hydrogen-related regulations (Similarity Score: 0.6527)

ID 183: Advanced knowledge of evolving standards in hydrogen industry (Similarity Score: 0.5783)

ID 207: Knowledge of end-use applications within the hydrogen value chain (Similarity Score: 0.5393)

ID 237: Keeping up-to-date with changes in hydrogen regulations (Similarity Score: 0.5492)

ID 416: Keeping current with regulatory, standard, and code changes in the hydrogen sector (Similarity Score: 0.5841)

ID 64: Understanding safety in handling and storage of hydrogen (Similarity Score: 0.6828)

ID 561: In-depth understanding of hydrogen safety legislation (Similarity Score: 0.6101)

ID 91: Advanced understanding of general safety protocols for hydrogen (Similarity Score: 0.7086)

ID 94: Advanced understanding of safety in handling and storage of hydrogen (Similarity Score: 0.6776)

ID 48: Knowledge of appropriate seals for hydrogen systems (Similarity Score: 0.6269)

ID 189: Understanding of relevant hydrogen regulations (Similarity Score: 0.6880)

ID 279: Knowledge of end-use applications in the hydrogen value chain (Similarity Score: 0.5425)

### 14.3.3: Maintenance and Monitoring of Storage Systems

ID 248: Maintenance of vaporizers in hydrogen fueling systems (Similarity Score: 0.6277)

ID 6: Experience with hydrogen dispensing (Similarity Score: 0.4690)

ID 120: Maintenance of electrolyzers, vessels, compressors, piping systems, valves, and seals to withstand hydrogen pressure and temperatures (Similarity Score: 0.5549)

ID 385: Knowledge of gaseous hydrogen storage systems (Similarity Score: 0.6633)

ID 599: Maintenance of vessels, piping systems, cryogenic systems, valves, and seals (Similarity Score: 0.4951)

ID 316: Maintenance of fuel tanks, piping, valves, and seals in hydrogen systems (Similarity Score: 0.6559)

ID 500: Stay up to date on monitoring options for hydrogen storage (Similarity Score: 0.6805)

ID 5: Experience with hydrogen storage (Similarity Score: 0.6295)

ID 366: Maintenance of fuel tanks, piping, valves, and seals in hydrogen systems (Similarity Score: 0.6559)

ID 141: Knowledge of hydrogen dispensing systems (Similarity Score: 0.5579)

ID 238: Keeping up-to-date with changes in hydrogen standards (Similarity Score: 0.5605)

ID 250: Maintenance of dispensers in hydrogen fueling systems (Similarity Score: 0.6073)

ID 239: Keeping up-to-date with changes in hydrogen codes (Similarity Score: 0.5175)

ID 626: Understanding instrumentation techniques for permanent carbon dioxide (CO2) storage (Similarity Score: 0.4306)

ID 499: Stay up to date on hydrogen storage technologies (Similarity Score: 0.6657)

ID 278: Knowledge of the storage aspect of the hydrogen value chain (Similarity Score: 0.6129)

#### 14.3.3.1: Regular Inspection and Testing

ID 499: Stay up to date on hydrogen storage technologies (Similarity Score: 0.6339)

ID 239: Keeping up-to-date with changes in hydrogen codes (Similarity Score: 0.5116)

ID 238: Keeping up-to-date with changes in hydrogen standards (Similarity Score: 0.5549)

ID 500: Stay up to date on monitoring options for hydrogen storage (Similarity Score: 0.6518)

ID 444: Maintenance of vessels, compressors, piping systems, valves, and seals to ensure reliability under hydrogen conditions (Similarity Score: 0.6347)

ID 599: Maintenance of vessels, piping systems, cryogenic systems, valves, and seals (Similarity Score: 0.4859)

#### 14.3.3.2: Leak Detection and Cryogenic Safety Measures

ID 599: Maintenance of vessels, piping systems, cryogenic systems, valves, and seals (Similarity Score: 0.5132)

# 15: Hydrogen Conversion to Chemical Carriers

ID 101: Selection of odorants for hydrogen blending (Similarity Score: 0.4999)

ID 102: Selection of inhibitors for hydrogen blending (Similarity Score: 0.4841)

## 15.2: Material Properties of Hydrogen Carriers

ID 571: PVT characterization specific to sequestered gas (Similarity Score: 0.3866)

#### 15.3.1.1: Pressure and Temperature Considerations

ID 423: Selection and design of air separation units for hydrogen pressure and temperature variations (Similarity Score: 0.5353)

### 15.3.2: Storage Requirements for Methane

ID 516: Migration modeling for carbon dioxide (CO2) storage (Similarity Score: 0.4392)

#### 15.3.3.3: Regulatory Compliance for Hazardous Materials

ID 483: Stay informed about changes to carbon capture and storage regulations, standards, and codes (Similarity Score: 0.3951)

# 16: Hydrogen Production Processes

ID 139: Knowledge of hydrogen production technology (Similarity Score: 0.6600)

ID 390: Understanding of the combined-cycle power generation process using hydrogen blending (Similarity Score: 0.5896)

ID 582: Understanding of hydrogen production process using Autothermal Reforming (ATR) (Similarity Score: 0.5865)

ID 261: Experience with hydrogen production and handling processes (Similarity Score: 0.6617)

ID 448: Understanding of Autothermal Reforming (ATR) process for hydrogen production (Similarity Score: 0.5370)

ID 80: Understanding the process of hydrogen production using PEM electrolyzers (Similarity Score: 0.6009)

ID 396: Understanding of automated process systems in power generation using hydrogen blending (Similarity Score: 0.6218)

ID 192: Understanding the hydrogen production process using PEM electrolyzers (Similarity Score: 0.5969)

ID 344: Techniques for repairing hydrogen leaks (Similarity Score: 0.5281)

ID 244: Understanding welding procedures for hydrogen systems (Similarity Score: 0.6204)

ID 245: Techniques for welding in hydrogen environments (Similarity Score: 0.6082)

ID 6: Experience with hydrogen dispensing (Similarity Score: 0.5060)

ID 381: Understanding of hydrogen production technology (Similarity Score: 0.7497)

ID 573: Understanding of carbon capture and separation processes (Similarity Score: 0.4303)

## 16.1: Overview of Hydrogen Production Methods

ID 80: Understanding the process of hydrogen production using PEM electrolyzers (Similarity Score: 0.5900)

ID 344: Techniques for repairing hydrogen leaks (Similarity Score: 0.5407)

ID 244: Understanding welding procedures for hydrogen systems (Similarity Score: 0.6362)

ID 139: Knowledge of hydrogen production technology (Similarity Score: 0.6587)

ID 245: Techniques for welding in hydrogen environments (Similarity Score: 0.6514)

ID 192: Understanding the hydrogen production process using PEM electrolyzers (Similarity Score: 0.5920)

ID 390: Understanding of the combined-cycle power generation process using hydrogen blending (Similarity Score: 0.5666)

ID 261: Experience with hydrogen production and handling processes (Similarity Score: 0.6658)

ID 407: Understanding the procedures necessary for welding in hydrogen environments (Similarity Score: 0.6145)

ID 6: Experience with hydrogen dispensing (Similarity Score: 0.4742)

ID 464: Understanding separation and purification techniques in carbon capture (Similarity Score: 0.4155)

ID 381: Understanding of hydrogen production technology (Similarity Score: 0.7248)

ID 582: Understanding of hydrogen production process using Autothermal Reforming (ATR) (Similarity Score: 0.5850)

### 16.1.1: Electrolysis

ID 448: Understanding of Autothermal Reforming (ATR) process for hydrogen production (Similarity Score: 0.5556)

ID 396: Understanding of automated process systems in power generation using hydrogen blending (Similarity Score: 0.6191)

ID 192: Understanding the hydrogen production process using PEM electrolyzers (Similarity Score: 0.6439)

ID 80: Understanding the process of hydrogen production using PEM electrolyzers (Similarity Score: 0.6470)

ID 390: Understanding of the combined-cycle power generation process using hydrogen blending (Similarity Score: 0.5635)

ID 582: Understanding of hydrogen production process using Autothermal Reforming (ATR) (Similarity Score: 0.5998)

ID 464: Understanding separation and purification techniques in carbon capture (Similarity Score: 0.4411)

ID 82: Understanding process optimization for hydrogen production in PEM electrolyzers (Similarity Score: 0.6030)

ID 244: Understanding welding procedures for hydrogen systems (Similarity Score: 0.6177)

ID 65: Knowledge of control systems in electrolyzer hydrogen production plants (Similarity Score: 0.6447)

ID 228: Selection of electronic systems for electrolyzer hydrogen production (Similarity Score: 0.5813)

ID 245: Techniques for welding in hydrogen environments (Similarity Score: 0.6095)

### 16.1.2: Steam Methane Reforming (SMR)

ID 264: Selection and design of steam and combustion turbines for hydrogen systems (Similarity Score: 0.6045)

ID 268: Selection and design of steam generators and boilers (Similarity Score: 0.3272)

ID 575: Understanding of steam generation processes (Similarity Score: 0.5861)

ID 640: Knowledge of systems used in SMR and ATR hydrogen production processes (Similarity Score: 0.6231)

ID 448: Understanding of Autothermal Reforming (ATR) process for hydrogen production (Similarity Score: 0.5579)

ID 581: Understanding of hydrogen production process using Steam Methane Reforming (SMR) (Similarity Score: 0.9089)

ID 447: Understanding of Steam Methane Reforming (SMR) process for hydrogen production (Similarity Score: 0.9019)

ID 582: Understanding of hydrogen production process using Autothermal Reforming (ATR) (Similarity Score: 0.6084)

### 16.1.3: Coal Gasification

ID 390: Understanding of the combined-cycle power generation process using hydrogen blending (Similarity Score: 0.5661)

ID 575: Understanding of steam generation processes (Similarity Score: 0.5632)

ID 245: Techniques for welding in hydrogen environments (Similarity Score: 0.6023)

ID 244: Understanding welding procedures for hydrogen systems (Similarity Score: 0.6080)

### 16.1.4: Biomass Gasification

ID 150: Knowledge of combustion systems in hydrogen blending (Similarity Score: 0.5671)

ID 390: Understanding of the combined-cycle power generation process using hydrogen blending (Similarity Score: 0.5784)

ID 573: Understanding of carbon capture and separation processes (Similarity Score: 0.4721)

ID 245: Techniques for welding in hydrogen environments (Similarity Score: 0.6168)

ID 359: Selection and design of combustion systems for hydrogen blending (Similarity Score: 0.5769)

ID 464: Understanding separation and purification techniques in carbon capture (Similarity Score: 0.4532)

### 16.1.5: Hydrogen Production from Renewables

ID 390: Understanding of the combined-cycle power generation process using hydrogen blending (Similarity Score: 0.5707)

ID 245: Techniques for welding in hydrogen environments (Similarity Score: 0.5971)

## 16.2: Process Requirements for Hydrogen Production

ID 139: Knowledge of hydrogen production technology (Similarity Score: 0.6599)

ID 143: Process engineering skills specific to hydrogen (Similarity Score: 0.6677)

ID 47: Knowledge of appropriate materials for hydrogen systems (Similarity Score: 0.6213)

ID 168: Knowledge of appropriate materials for hydrogen blending (Similarity Score: 0.6204)

ID 224: Selection of materials for hydrogen production systems (Similarity Score: 0.6477)

ID 26: Consideration of temperature requirements in hydrogen fueling systems (Similarity Score: 0.6102)

ID 261: Experience with hydrogen production and handling processes (Similarity Score: 0.6797)

ID 138: Knowledge of industry standard processes for hydrogen fueling stations (Similarity Score: 0.7089)

ID 244: Understanding welding procedures for hydrogen systems (Similarity Score: 0.6317)

ID 304: Selection and design of combustion systems for hydrogen environments (Similarity Score: 0.5974)

ID 6: Experience with hydrogen dispensing (Similarity Score: 0.4937)

ID 209: Knowledge of certification requirements for hydrogen products (Similarity Score: 0.6960)

ID 407: Understanding the procedures necessary for welding in hydrogen environments (Similarity Score: 0.6788)

### 16.2.1: Water Quality for Electrolysis

ID 209: Knowledge of certification requirements for hydrogen products (Similarity Score: 0.6550)

ID 637: Knowledge of systems used in carbon separation, purification, and liquefaction processes (Similarity Score: 0.4348)

ID 65: Knowledge of control systems in electrolyzer hydrogen production plants (Similarity Score: 0.6325)

ID 115: Appropriate selection and design of electrolyzers for hydrogen pressure and temperatures (Similarity Score: 0.5600)

ID 228: Selection of electronic systems for electrolyzer hydrogen production (Similarity Score: 0.5789)

### 16.2.2: H2 Purity Requirements

ID 209: Knowledge of certification requirements for hydrogen products (Similarity Score: 0.7176)

ID 219: Assess integrity of welds under hydrogen pressure (Similarity Score: 0.5866)

ID 26: Consideration of temperature requirements in hydrogen fueling systems (Similarity Score: 0.6272)

ID 220: Assess integrity of welds under hydrogen temperature conditions (Similarity Score: 0.6128)

ID 407: Understanding the procedures necessary for welding in hydrogen environments (Similarity Score: 0.6230)

#### 16.2.2.2: Monitoring and Testing of H2 Purity

ID 209: Knowledge of certification requirements for hydrogen products (Similarity Score: 0.6773)

### 16.2.3: Feedstock Quality for SMR and Gasification

ID 585: Understanding of automated process systems for SMR/ATR (Similarity Score: 0.3308)

ID 586: Knowledge of control systems for optimizing SMR/ATR processes (Similarity Score: 0.3315)

ID 640: Knowledge of systems used in SMR and ATR hydrogen production processes (Similarity Score: 0.6680)

## 16.3: Technological Requirements for Hydrogen Production

ID 47: Knowledge of appropriate materials for hydrogen systems (Similarity Score: 0.6193)

ID 261: Experience with hydrogen production and handling processes (Similarity Score: 0.6597)

ID 244: Understanding welding procedures for hydrogen systems (Similarity Score: 0.6107)

ID 139: Knowledge of hydrogen production technology (Similarity Score: 0.7096)

ID 209: Knowledge of certification requirements for hydrogen products (Similarity Score: 0.6692)

ID 143: Process engineering skills specific to hydrogen (Similarity Score: 0.6643)

ID 183: Advanced knowledge of evolving standards in hydrogen industry (Similarity Score: 0.6139)

ID 407: Understanding the procedures necessary for welding in hydrogen environments (Similarity Score: 0.6537)

ID 138: Knowledge of industry standard processes for hydrogen fueling stations (Similarity Score: 0.6852)

ID 381: Understanding of hydrogen production technology (Similarity Score: 0.7089)

### 16.3.1: Equipment and Infrastructure

ID 221: Understanding of installation procedures unique to hydrogen (Similarity Score: 0.6426)

ID 524: Knowledge of stationary equipment required for pipeline transmission of liquid carbon dioxide (CO2) (Similarity Score: 0.4459)

ID 63: Understanding personal protective equipment (PPE) requirements for hydrogen work (Similarity Score: 0.5104)

ID 407: Understanding the procedures necessary for welding in hydrogen environments (Similarity Score: 0.6221)

ID 13: Knowledge of systems associated with hydrogen pipeline transmission (Similarity Score: 0.5887)

ID 183: Advanced knowledge of evolving standards in hydrogen industry (Similarity Score: 0.6405)

ID 290: Selection of equipment resistant to hydrogen-induced degradation (Similarity Score: 0.5272)

ID 143: Process engineering skills specific to hydrogen (Similarity Score: 0.6595)

ID 587: Understanding of electrical equipment required for pipeline transmission of carbon dioxide (CO2) (Similarity Score: 0.4395)

ID 223: Selection and design of production equipment for hydrogen systems (Similarity Score: 0.7004)

ID 12: Knowledge of electrical equipment for hydrogen pipelines (Similarity Score: 0.5832)

ID 403: In-depth knowledge of standards for hydrogen infrastructure and operations (Similarity Score: 0.6433)

ID 260: Strong industry knowledge of hydrogen technologies (Similarity Score: 0.6537)

ID 209: Knowledge of certification requirements for hydrogen products (Similarity Score: 0.6627)

ID 429: Knowledge of electrical systems required for carbon dioxide (CO2) pipeline transmission (Similarity Score: 0.4496)

ID 139: Knowledge of hydrogen production technology (Similarity Score: 0.6899)

ID 138: Knowledge of industry standard processes for hydrogen fueling stations (Similarity Score: 0.7317)

ID 525: Knowledge of stationary equipment required for pipeline transmission of gaseous carbon dioxide (CO2) (Similarity Score: 0.4593)

ID 394: Understanding regulations for hydrogen infrastructure and operations (Similarity Score: 0.6438)

ID 399: Understanding acceptance criteria for hydrogen infrastructure (Similarity Score: 0.6015)

ID 151: Understanding of other relevant equipment for hydrogen blending (Similarity Score: 0.6052)

#### 16.3.1.1: Electrolyzers and Associated Systems

ID 389: Maintenance of high-power electrical equipment in electrolyzer systems (Similarity Score: 0.4580)

ID 183: Advanced knowledge of evolving standards in hydrogen industry (Similarity Score: 0.5836)

ID 429: Knowledge of electrical systems required for carbon dioxide (CO2) pipeline transmission (Similarity Score: 0.4627)

ID 12: Knowledge of electrical equipment for hydrogen pipelines (Similarity Score: 0.6172)

ID 67: Knowledge of monitoring systems for electrolyzer hydrogen production plants (Similarity Score: 0.6949)

ID 355: Knowledge of high-power electrical equipment in renewable electricity powered electrolyzers (Similarity Score: 0.4796)

ID 82: Understanding process optimization for hydrogen production in PEM electrolyzers (Similarity Score: 0.6000)

ID 228: Selection of electronic systems for electrolyzer hydrogen production (Similarity Score: 0.6109)

ID 227: Selection of key electrical equipment for an electrolyzer hydrogen production plant (Similarity Score: 0.6651)

ID 636: Knowledge of electrical equipment associated with carbon capture (Similarity Score: 0.4229)

ID 63: Understanding personal protective equipment (PPE) requirements for hydrogen work (Similarity Score: 0.4918)

ID 284: Knowledge of electrical equipment used in hydrogen fueling systems (Similarity Score: 0.6209)

ID 639: Knowledge of electrical equipment associated with SMR and ATR production plants (Similarity Score: 0.3868)

ID 143: Process engineering skills specific to hydrogen (Similarity Score: 0.6425)

ID 223: Selection and design of production equipment for hydrogen systems (Similarity Score: 0.6756)

ID 139: Knowledge of hydrogen production technology (Similarity Score: 0.6400)

ID 587: Understanding of electrical equipment required for pipeline transmission of carbon dioxide (CO2) (Similarity Score: 0.4468)

ID 138: Knowledge of industry standard processes for hydrogen fueling stations (Similarity Score: 0.6960)

ID 229: Maintenance of electrical equipment in electrolyzer plants (Similarity Score: 0.4834)

ID 13: Knowledge of systems associated with hydrogen pipeline transmission (Similarity Score: 0.5890)

ID 293: Knowledge of key electrical equipment in electrolyzer hydrogen production (Similarity Score: 0.6841)

ID 65: Knowledge of control systems in electrolyzer hydrogen production plants (Similarity Score: 0.6439)

ID 403: In-depth knowledge of standards for hydrogen infrastructure and operations (Similarity Score: 0.6235)

ID 221: Understanding of installation procedures unique to hydrogen (Similarity Score: 0.6122)

ID 434: Selection of key electrical equipment for carbon capture technology (Similarity Score: 0.3885)

ID 399: Understanding acceptance criteria for hydrogen infrastructure (Similarity Score: 0.5613)

ID 233: Experience with codes related to electrical systems in road vehicles (Similarity Score: 0.3174)

#### 16.3.1.2: Reformers and Gasifiers

ID 183: Advanced knowledge of evolving standards in hydrogen industry (Similarity Score: 0.5907)

ID 223: Selection and design of production equipment for hydrogen systems (Similarity Score: 0.6400)

ID 143: Process engineering skills specific to hydrogen (Similarity Score: 0.6381)

ID 138: Knowledge of industry standard processes for hydrogen fueling stations (Similarity Score: 0.6858)

ID 13: Knowledge of systems associated with hydrogen pipeline transmission (Similarity Score: 0.5694)

### 16.3.2: Control Systems and Automation

ID 354: Knowledge of advanced control systems for combined-cycle power generation using hydrogen (Similarity Score: 0.6072)

ID 13: Knowledge of systems associated with hydrogen pipeline transmission (Similarity Score: 0.5975)

ID 451: Understanding of automated process systems used in carbon capture (Similarity Score: 0.4709)

ID 65: Knowledge of control systems in electrolyzer hydrogen production plants (Similarity Score: 0.6530)

ID 183: Advanced knowledge of evolving standards in hydrogen industry (Similarity Score: 0.5940)

ID 209: Knowledge of certification requirements for hydrogen products (Similarity Score: 0.6756)

ID 585: Understanding of automated process systems for SMR/ATR (Similarity Score: 0.3046)

ID 141: Knowledge of hydrogen dispensing systems (Similarity Score: 0.5646)

ID 138: Knowledge of industry standard processes for hydrogen fueling stations (Similarity Score: 0.7051)

ID 150: Knowledge of combustion systems in hydrogen blending (Similarity Score: 0.5734)

ID 223: Selection and design of production equipment for hydrogen systems (Similarity Score: 0.6828)

ID 221: Understanding of installation procedures unique to hydrogen (Similarity Score: 0.6061)

ID 589: Understanding of control systems used in SMR/ATR hydrogen production plants (Similarity Score: 0.5747)

ID 261: Experience with hydrogen production and handling processes (Similarity Score: 0.6692)

ID 139: Knowledge of hydrogen production technology (Similarity Score: 0.6796)

ID 396: Understanding of automated process systems in power generation using hydrogen blending (Similarity Score: 0.6371)

ID 143: Process engineering skills specific to hydrogen (Similarity Score: 0.6613)

ID 228: Selection of electronic systems for electrolyzer hydrogen production (Similarity Score: 0.5763)

ID 397: Knowledge of control systems for hydrogen blending in power generation (Similarity Score: 0.6223)

ID 304: Selection and design of combustion systems for hydrogen environments (Similarity Score: 0.5944)

#### 16.3.2.1: Monitoring Systems for Process Control

ID 209: Knowledge of certification requirements for hydrogen products (Similarity Score: 0.6808)

ID 13: Knowledge of systems associated with hydrogen pipeline transmission (Similarity Score: 0.5919)

ID 223: Selection and design of production equipment for hydrogen systems (Similarity Score: 0.6419)

ID 138: Knowledge of industry standard processes for hydrogen fueling stations (Similarity Score: 0.6826)

ID 65: Knowledge of control systems in electrolyzer hydrogen production plants (Similarity Score: 0.6362)

ID 143: Process engineering skills specific to hydrogen (Similarity Score: 0.6507)

ID 141: Knowledge of hydrogen dispensing systems (Similarity Score: 0.5575)

ID 139: Knowledge of hydrogen production technology (Similarity Score: 0.6423)

ID 397: Knowledge of control systems for hydrogen blending in power generation (Similarity Score: 0.6089)

## 16.4: Ensuring Process Compliance and Optimization

ID 138: Knowledge of industry standard processes for hydrogen fueling stations (Similarity Score: 0.7434)

ID 176: Measuring environmental impacts of hydrogen technologies (Similarity Score: 0.6608)

ID 590: Optimization of control systems in SMR/ATR hydrogen production processes (Similarity Score: 0.6180)

ID 359: Selection and design of combustion systems for hydrogen blending (Similarity Score: 0.6069)

ID 486: Maintenance of power generation systems for hydrogen blending (Similarity Score: 0.6211)

ID 237: Keeping up-to-date with changes in hydrogen regulations (Similarity Score: 0.5511)

ID 288: Understanding practices to mitigate hydrogen corrosion (Similarity Score: 0.6015)

ID 261: Experience with hydrogen production and handling processes (Similarity Score: 0.7118)

ID 304: Selection and design of combustion systems for hydrogen environments (Similarity Score: 0.6559)

ID 573: Understanding of carbon capture and separation processes (Similarity Score: 0.4467)

ID 505: Knowledge of well completion solutions tailored for hydrogen environments (Similarity Score: 0.5602)

ID 490: Selection and design of valves and seals for hydrogen conditions (Similarity Score: 0.5546)

ID 219: Assess integrity of welds under hydrogen pressure (Similarity Score: 0.5993)

ID 307: Selection and design of turbines to withstand hydrogen conditions (Similarity Score: 0.5703)

ID 221: Understanding of installation procedures unique to hydrogen (Similarity Score: 0.6561)

ID 183: Advanced knowledge of evolving standards in hydrogen industry (Similarity Score: 0.5992)

ID 89: Understanding operational adjustments needed for hydrogen-blending (Similarity Score: 0.5605)

ID 82: Understanding process optimization for hydrogen production in PEM electrolyzers (Similarity Score: 0.6478)

ID 464: Understanding separation and purification techniques in carbon capture (Similarity Score: 0.4483)

ID 334: Selection and design of valves and seals for hydrogen conditions (Similarity Score: 0.5546)

ID 255: Value proposition of hydrogen fuel cells for emissions targets (Similarity Score: 0.5691)

ID 90: Understanding the environmental and regulatory aspects of hydrogen-blending (Similarity Score: 0.6733)

ID 150: Knowledge of combustion systems in hydrogen blending (Similarity Score: 0.5832)

ID 223: Selection and design of production equipment for hydrogen systems (Similarity Score: 0.6737)

ID 509: Selection and design of pumping systems for hydrogen environments (Similarity Score: 0.5879)

ID 451: Understanding of automated process systems used in carbon capture (Similarity Score: 0.4671)

ID 139: Knowledge of hydrogen production technology (Similarity Score: 0.6716)

ID 6: Experience with hydrogen dispensing (Similarity Score: 0.4764)

ID 220: Assess integrity of welds under hydrogen temperature conditions (Similarity Score: 0.6018)

ID 358: Selection and design of turbines for hydrogen blending (Similarity Score: 0.5582)

ID 245: Techniques for welding in hydrogen environments (Similarity Score: 0.6006)

ID 244: Understanding welding procedures for hydrogen systems (Similarity Score: 0.6434)

ID 550: Maintenance of carbon capture systems and materials (Similarity Score: 0.4400)

ID 549: Application of coatings to protect carbon capture systems (Similarity Score: 0.3621)

ID 143: Process engineering skills specific to hydrogen (Similarity Score: 0.6995)

ID 390: Understanding of the combined-cycle power generation process using hydrogen blending (Similarity Score: 0.5634)

ID 637: Knowledge of systems used in carbon separation, purification, and liquefaction processes (Similarity Score: 0.4524)

ID 396: Understanding of automated process systems in power generation using hydrogen blending (Similarity Score: 0.6761)

ID 598: Selection and design of valves and seals for carbon dioxide (CO2) environments (Similarity Score: 0.4191)

ID 149: Knowledge of turbine systems used in hydrogen blending (Similarity Score: 0.5556)

ID 46: Understanding the environmental impacts of hydrogen blending in power generation (Similarity Score: 0.6408)

ID 506: Application of well completion techniques to ensure safe hydrogen extraction (Similarity Score: 0.5725)

ID 371: Selection and design of turbines for hydrogen environments (Similarity Score: 0.6070)

ID 407: Understanding the procedures necessary for welding in hydrogen environments (Similarity Score: 0.6616)

ID 443: Selection and design of valves and seals to maintain integrity under hydrogen conditions (Similarity Score: 0.5711)

ID 2: Experience with on-site hydrogen generation (Similarity Score: 0.5533)

ID 392: Knowledge of operational adjustments for hydrogen blending (Similarity Score: 0.5929)

ID 397: Knowledge of control systems for hydrogen blending in power generation (Similarity Score: 0.6025)

ID 395: Understanding best environmental practices in hydrogen operations (Similarity Score: 0.7246)

ID 128: Understanding efficiency and performance factors when using hydrogen blending for heating (Similarity Score: 0.6019)

ID 507: Selection and design of combustion systems to withstand hydrogen pressure and temperatures (Similarity Score: 0.5547)

ID 246: Ensuring quality and safety of welds in hydrogen systems (Similarity Score: 0.6699)

### 16.4.1: Process Optimization Techniques

ID 143: Process engineering skills specific to hydrogen (Similarity Score: 0.6904)

ID 390: Understanding of the combined-cycle power generation process using hydrogen blending (Similarity Score: 0.5584)

ID 304: Selection and design of combustion systems for hydrogen environments (Similarity Score: 0.6500)

ID 150: Knowledge of combustion systems in hydrogen blending (Similarity Score: 0.5639)

ID 568: Optimization of control systems for process efficiency in carbon capture (Similarity Score: 0.5592)

ID 307: Selection and design of turbines to withstand hydrogen conditions (Similarity Score: 0.5705)

ID 358: Selection and design of turbines for hydrogen blending (Similarity Score: 0.5554)

ID 392: Knowledge of operational adjustments for hydrogen blending (Similarity Score: 0.5782)

ID 549: Application of coatings to protect carbon capture systems (Similarity Score: 0.3565)

ID 396: Understanding of automated process systems in power generation using hydrogen blending (Similarity Score: 0.6771)

ID 346: Techniques to reduce environmental impact through eco-driving (Similarity Score: 0.3793)

ID 451: Understanding of automated process systems used in carbon capture (Similarity Score: 0.4840)

ID 194: Knowledge of process optimization techniques in PEM electrolyzers (Similarity Score: 0.5090)

ID 395: Understanding best environmental practices in hydrogen operations (Similarity Score: 0.7083)

ID 245: Techniques for welding in hydrogen environments (Similarity Score: 0.6280)

ID 138: Knowledge of industry standard processes for hydrogen fueling stations (Similarity Score: 0.7219)

ID 359: Selection and design of combustion systems for hydrogen blending (Similarity Score: 0.6006)

ID 324: Techniques to reduce environmental impact through eco-driving (Similarity Score: 0.3793)

ID 573: Understanding of carbon capture and separation processes (Similarity Score: 0.4339)

ID 407: Understanding the procedures necessary for welding in hydrogen environments (Similarity Score: 0.6405)

ID 128: Understanding efficiency and performance factors when using hydrogen blending for heating (Similarity Score: 0.5930)

ID 221: Understanding of installation procedures unique to hydrogen (Similarity Score: 0.6359)

ID 371: Selection and design of turbines for hydrogen environments (Similarity Score: 0.6093)

ID 505: Knowledge of well completion solutions tailored for hydrogen environments (Similarity Score: 0.5594)

ID 506: Application of well completion techniques to ensure safe hydrogen extraction (Similarity Score: 0.5855)

ID 550: Maintenance of carbon capture systems and materials (Similarity Score: 0.4122)

ID 590: Optimization of control systems in SMR/ATR hydrogen production processes (Similarity Score: 0.6450)

ID 223: Selection and design of production equipment for hydrogen systems (Similarity Score: 0.6647)

ID 412: Optimization of rectification systems for electrolyzer plants (Similarity Score: 0.4146)

ID 246: Ensuring quality and safety of welds in hydrogen systems (Similarity Score: 0.6083)

ID 464: Understanding separation and purification techniques in carbon capture (Similarity Score: 0.4499)

ID 244: Understanding welding procedures for hydrogen systems (Similarity Score: 0.6288)

ID 509: Selection and design of pumping systems for hydrogen environments (Similarity Score: 0.6062)

ID 637: Knowledge of systems used in carbon separation, purification, and liquefaction processes (Similarity Score: 0.4323)

ID 139: Knowledge of hydrogen production technology (Similarity Score: 0.6425)

ID 255: Value proposition of hydrogen fuel cells for emissions targets (Similarity Score: 0.5518)

ID 82: Understanding process optimization for hydrogen production in PEM electrolyzers (Similarity Score: 0.6614)

ID 274: Techniques to optimize fuel consumption (Similarity Score: 0.3975)

ID 261: Experience with hydrogen production and handling processes (Similarity Score: 0.6850)

#### 16.4.1.1: Energy Efficiency Improvements

ID 326: Achieving cost savings through eco-driving practices (Similarity Score: 0.3057)

ID 150: Knowledge of combustion systems in hydrogen blending (Similarity Score: 0.5644)

ID 348: Achieving cost savings through eco-driving practices (Similarity Score: 0.3057)

ID 395: Understanding best environmental practices in hydrogen operations (Similarity Score: 0.6794)

ID 255: Value proposition of hydrogen fuel cells for emissions targets (Similarity Score: 0.5629)

ID 126: Understanding the impact of hydrogen blending on heating systems (Similarity Score: 0.5450)

ID 138: Knowledge of industry standard processes for hydrogen fueling stations (Similarity Score: 0.7027)

ID 82: Understanding process optimization for hydrogen production in PEM electrolyzers (Similarity Score: 0.6420)

ID 390: Understanding of the combined-cycle power generation process using hydrogen blending (Similarity Score: 0.5690)

ID 396: Understanding of automated process systems in power generation using hydrogen blending (Similarity Score: 0.6712)

ID 244: Understanding welding procedures for hydrogen systems (Similarity Score: 0.6139)

ID 371: Selection and design of turbines for hydrogen environments (Similarity Score: 0.5703)

ID 143: Process engineering skills specific to hydrogen (Similarity Score: 0.6834)

ID 261: Experience with hydrogen production and handling processes (Similarity Score: 0.6501)

ID 128: Understanding efficiency and performance factors when using hydrogen blending for heating (Similarity Score: 0.6500)

ID 304: Selection and design of combustion systems for hydrogen environments (Similarity Score: 0.6151)

ID 194: Knowledge of process optimization techniques in PEM electrolyzers (Similarity Score: 0.4678)

#### 16.4.1.2: Minimization of By-Products

ID 304: Selection and design of combustion systems for hydrogen environments (Similarity Score: 0.5997)

ID 396: Understanding of automated process systems in power generation using hydrogen blending (Similarity Score: 0.6190)

ID 590: Optimization of control systems in SMR/ATR hydrogen production processes (Similarity Score: 0.5909)

ID 143: Process engineering skills specific to hydrogen (Similarity Score: 0.6524)

ID 82: Understanding process optimization for hydrogen production in PEM electrolyzers (Similarity Score: 0.6079)

### 16.4.2: Regulatory Compliance in Hydrogen Production

ID 139: Knowledge of hydrogen production technology (Similarity Score: 0.6480)

ID 143: Process engineering skills specific to hydrogen (Similarity Score: 0.6832)

ID 223: Selection and design of production equipment for hydrogen systems (Similarity Score: 0.6575)

ID 183: Advanced knowledge of evolving standards in hydrogen industry (Similarity Score: 0.6006)

ID 82: Understanding process optimization for hydrogen production in PEM electrolyzers (Similarity Score: 0.6078)

ID 182: Advanced knowledge of current hydrogen regulatory systems (Similarity Score: 0.6509)

ID 90: Understanding the environmental and regulatory aspects of hydrogen-blending (Similarity Score: 0.7063)

ID 334: Selection and design of valves and seals for hydrogen conditions (Similarity Score: 0.5534)

ID 221: Understanding of installation procedures unique to hydrogen (Similarity Score: 0.6240)

ID 371: Selection and design of turbines for hydrogen environments (Similarity Score: 0.5857)

ID 395: Understanding best environmental practices in hydrogen operations (Similarity Score: 0.6956)

ID 261: Experience with hydrogen production and handling processes (Similarity Score: 0.6940)

ID 407: Understanding the procedures necessary for welding in hydrogen environments (Similarity Score: 0.6454)

ID 6: Experience with hydrogen dispensing (Similarity Score: 0.4861)

ID 490: Selection and design of valves and seals for hydrogen conditions (Similarity Score: 0.5534)

ID 237: Keeping up-to-date with changes in hydrogen regulations (Similarity Score: 0.5783)

ID 402: Advanced knowledge of regulatory systems governing hydrogen (Similarity Score: 0.6630)

ID 244: Understanding welding procedures for hydrogen systems (Similarity Score: 0.6238)

ID 443: Selection and design of valves and seals to maintain integrity under hydrogen conditions (Similarity Score: 0.5775)

ID 637: Knowledge of systems used in carbon separation, purification, and liquefaction processes (Similarity Score: 0.4254)

ID 138: Knowledge of industry standard processes for hydrogen fueling stations (Similarity Score: 0.7389)

ID 392: Knowledge of operational adjustments for hydrogen blending (Similarity Score: 0.5665)

ID 304: Selection and design of combustion systems for hydrogen environments (Similarity Score: 0.6117)

ID 358: Selection and design of turbines for hydrogen blending (Similarity Score: 0.5339)

ID 2: Experience with on-site hydrogen generation (Similarity Score: 0.5337)

ID 396: Understanding of automated process systems in power generation using hydrogen blending (Similarity Score: 0.6382)

ID 393: Knowledge of environmental laws related to hydrogen (Similarity Score: 0.6259)

ID 246: Ensuring quality and safety of welds in hydrogen systems (Similarity Score: 0.6440)

ID 416: Keeping current with regulatory, standard, and code changes in the hydrogen sector (Similarity Score: 0.6202)

#### 16.4.2.1: Compliance with Environmental Standards

ID 223: Selection and design of production equipment for hydrogen systems (Similarity Score: 0.6394)

ID 221: Understanding of installation procedures unique to hydrogen (Similarity Score: 0.6164)

ID 90: Understanding the environmental and regulatory aspects of hydrogen-blending (Similarity Score: 0.7056)

ID 182: Advanced knowledge of current hydrogen regulatory systems (Similarity Score: 0.6160)

ID 395: Understanding best environmental practices in hydrogen operations (Similarity Score: 0.7094)

ID 443: Selection and design of valves and seals to maintain integrity under hydrogen conditions (Similarity Score: 0.5757)

ID 402: Advanced knowledge of regulatory systems governing hydrogen (Similarity Score: 0.6181)

ID 237: Keeping up-to-date with changes in hydrogen regulations (Similarity Score: 0.5781)

ID 176: Measuring environmental impacts of hydrogen technologies (Similarity Score: 0.6495)

ID 637: Knowledge of systems used in carbon separation, purification, and liquefaction processes (Similarity Score: 0.4222)

ID 407: Understanding the procedures necessary for welding in hydrogen environments (Similarity Score: 0.6379)

ID 371: Selection and design of turbines for hydrogen environments (Similarity Score: 0.5697)

ID 246: Ensuring quality and safety of welds in hydrogen systems (Similarity Score: 0.6276)

ID 393: Knowledge of environmental laws related to hydrogen (Similarity Score: 0.6375)

ID 183: Advanced knowledge of evolving standards in hydrogen industry (Similarity Score: 0.5957)

ID 128: Understanding efficiency and performance factors when using hydrogen blending for heating (Similarity Score: 0.5894)

ID 143: Process engineering skills specific to hydrogen (Similarity Score: 0.6755)

ID 244: Understanding welding procedures for hydrogen systems (Similarity Score: 0.6093)

ID 304: Selection and design of combustion systems for hydrogen environments (Similarity Score: 0.6162)

ID 416: Keeping current with regulatory, standard, and code changes in the hydrogen sector (Similarity Score: 0.6093)

ID 138: Knowledge of industry standard processes for hydrogen fueling stations (Similarity Score: 0.7300)

ID 261: Experience with hydrogen production and handling processes (Similarity Score: 0.6725)

#### 16.4.2.2: Quality Assurance and Certification

ID 6: Experience with hydrogen dispensing (Similarity Score: 0.4813)

ID 182: Advanced knowledge of current hydrogen regulatory systems (Similarity Score: 0.6094)

ID 232: Knowledge of standards for EMC/EMI in hydrogen systems (Similarity Score: 0.5363)

ID 169: Knowledge of seals compatible with hydrogen blending (Similarity Score: 0.5226)

ID 246: Ensuring quality and safety of welds in hydrogen systems (Similarity Score: 0.6525)

ID 244: Understanding welding procedures for hydrogen systems (Similarity Score: 0.6235)

ID 139: Knowledge of hydrogen production technology (Similarity Score: 0.6455)

ID 183: Advanced knowledge of evolving standards in hydrogen industry (Similarity Score: 0.6316)

ID 395: Understanding best environmental practices in hydrogen operations (Similarity Score: 0.6720)

ID 223: Selection and design of production equipment for hydrogen systems (Similarity Score: 0.6500)

ID 261: Experience with hydrogen production and handling processes (Similarity Score: 0.6913)

ID 90: Understanding the environmental and regulatory aspects of hydrogen-blending (Similarity Score: 0.6646)

ID 138: Knowledge of industry standard processes for hydrogen fueling stations (Similarity Score: 0.7297)

ID 407: Understanding the procedures necessary for welding in hydrogen environments (Similarity Score: 0.6363)

ID 208: Understanding fueling standards for hydrogen products (Similarity Score: 0.6263)

ID 143: Process engineering skills specific to hydrogen (Similarity Score: 0.7038)

ID 219: Assess integrity of welds under hydrogen pressure (Similarity Score: 0.5947)

ID 416: Keeping current with regulatory, standard, and code changes in the hydrogen sector (Similarity Score: 0.5836)

ID 221: Understanding of installation procedures unique to hydrogen (Similarity Score: 0.6188)

ID 209: Knowledge of certification requirements for hydrogen products (Similarity Score: 0.7240)

ID 443: Selection and design of valves and seals to maintain integrity under hydrogen conditions (Similarity Score: 0.5794)

# 17: Gas Conversion and Interchangeability

ID 579: Understanding of well completion solutions for carbon dioxide (CO2) based on subsurface conditions (Similarity Score: 0.3491)

### 17.1.2: Conversion of Biogas to Methane

ID 573: Understanding of carbon capture and separation processes (Similarity Score: 0.4267)

ID 579: Understanding of well completion solutions for carbon dioxide (CO2) based on subsurface conditions (Similarity Score: 0.3590)

### 17.1.3: Synthesis of Syngas

ID 464: Understanding separation and purification techniques in carbon capture (Similarity Score: 0.4240)

ID 579: Understanding of well completion solutions for carbon dioxide (CO2) based on subsurface conditions (Similarity Score: 0.3723)

ID 573: Understanding of carbon capture and separation processes (Similarity Score: 0.4264)

## 17.2: Indicators of Gas Interchangeability

ID 579: Understanding of well completion solutions for carbon dioxide (CO2) based on subsurface conditions (Similarity Score: 0.3459)

ID 552: Understanding well testing and analysis for carbon dioxide (CO2) injection (Similarity Score: 0.4150)

### 17.2.1: Heating Value of Gases

ID 579: Understanding of well completion solutions for carbon dioxide (CO2) based on subsurface conditions (Similarity Score: 0.3493)

## 17.3: Impact of Gas Interchangeability on Systems

ID 579: Understanding of well completion solutions for carbon dioxide (CO2) based on subsurface conditions (Similarity Score: 0.3676)

### 17.3.2: Safety Considerations in Gas Interchangeability

ID 579: Understanding of well completion solutions for carbon dioxide (CO2) based on subsurface conditions (Similarity Score: 0.3632)

### 17.3.3: Environmental Impact of Gas Substitution

ID 579: Understanding of well completion solutions for carbon dioxide (CO2) based on subsurface conditions (Similarity Score: 0.3808)

# 18: Hydrogen Interaction with Materials

ID 168: Knowledge of appropriate materials for hydrogen blending (Similarity Score: 0.6472)

ID 99: Selection of materials for hydrogen blending (Similarity Score: 0.6157)

ID 523: Understanding materials behavior in low-pressure carbon dioxide (CO2) (Similarity Score: 0.5544)

ID 473: Knowledge of hydrogen's interaction with other materials (Similarity Score: 0.8606)

ID 475: Knowledge of how carbon dioxide (CO2) interacts with different materials under high pressure (Similarity Score: 0.4678)

ID 633: Material choices based on understanding of potential corrosive elements (Similarity Score: 0.4331)

ID 522: Understanding materials behavior in high-pressure carbon dioxide (CO2) (Similarity Score: 0.5494)

ID 521: Understanding materials behavior in liquid carbon dioxide (CO2) (Similarity Score: 0.5293)

ID 492: Understanding the interactions between hydrogen, water, and minerals (Similarity Score: 0.5981)

ID 47: Knowledge of appropriate materials for hydrogen systems (Similarity Score: 0.6569)

ID 534: Knowledge of materials suitable for withstanding hydrogen pressure and temperatures (Similarity Score: 0.5891)

ID 103: Understanding how materials behave under high pressure hydrogen conditions (Similarity Score: 0.7541)

## 18.1: Molecular Interaction of Hydrogen with Materials

ID 473: Knowledge of hydrogen's interaction with other materials (Similarity Score: 0.7985)

ID 521: Understanding materials behavior in liquid carbon dioxide (CO2) (Similarity Score: 0.5498)

ID 47: Knowledge of appropriate materials for hydrogen systems (Similarity Score: 0.6244)

ID 103: Understanding how materials behave under high pressure hydrogen conditions (Similarity Score: 0.7102)

ID 475: Knowledge of how carbon dioxide (CO2) interacts with different materials under high pressure (Similarity Score: 0.4370)

ID 633: Material choices based on understanding of potential corrosive elements (Similarity Score: 0.4095)

ID 523: Understanding materials behavior in low-pressure carbon dioxide (CO2) (Similarity Score: 0.5659)

ID 522: Understanding materials behavior in high-pressure carbon dioxide (CO2) (Similarity Score: 0.5567)

## 18.2: Testing and Evaluation of Material Embrittlement

ID 533: Understanding of fluid characterization for carbon dioxide (CO2) injection (Similarity Score: 0.3739)

ID 219: Assess integrity of welds under hydrogen pressure (Similarity Score: 0.6360)

ID 169: Knowledge of seals compatible with hydrogen blending (Similarity Score: 0.5433)

ID 536: Knowledge of components that can endure hydrogen pressure and temperatures (Similarity Score: 0.5166)

ID 549: Application of coatings to protect carbon capture systems (Similarity Score: 0.3563)

ID 21: Knowledge of inhibitors to protect from hydrogen corrosion and embrittlement (Similarity Score: 0.5198)

ID 554: Understanding fluid characterization in carbon dioxide (CO2) injection contexts (Similarity Score: 0.3851)

ID 6: Experience with hydrogen dispensing (Similarity Score: 0.4751)

ID 125: Understanding the principles of hydrogen blending for heating (Similarity Score: 0.5264)

ID 312: Techniques for implementing cathodic protection in hydrogen systems (Similarity Score: 0.5397)

ID 559: PVT characterization specific to sequestered gas and liquid composition (Similarity Score: 0.4456)

ID 632: Well design based on understanding of hydrogen injection stream properties (Similarity Score: 0.5700)

ID 102: Selection of inhibitors for hydrogen blending (Similarity Score: 0.4421)

ID 16: Knowledge of coatings for hydrogen corrosion protection (Similarity Score: 0.5861)

ID 20: Knowledge of coatings to protect from hydrogen corrosion and embrittlement (Similarity Score: 0.6162)

ID 168: Knowledge of appropriate materials for hydrogen blending (Similarity Score: 0.6436)

ID 53: Appropriate selection of coatings and insulation for hydrogen fueling systems (Similarity Score: 0.5869)

ID 129: Understanding of coatings effective against hydrogen corrosion (Similarity Score: 0.5995)

ID 244: Understanding welding procedures for hydrogen systems (Similarity Score: 0.6371)

ID 216: Design and selection of coatings for protection against hydrogen (Similarity Score: 0.5769)

ID 289: Knowledge of technologies used to prevent hydrogen embrittlement (Similarity Score: 0.6454)

ID 609: Maintenance of coatings and insulation to protect against hydrogen conditions (Similarity Score: 0.5635)

ID 407: Understanding the procedures necessary for welding in hydrogen environments (Similarity Score: 0.6120)

ID 406: Understanding welding processes that are compatible with hydrogen (Similarity Score: 0.6041)

ID 360: Selection and design of valves and fittings for hydrogen blending (Similarity Score: 0.5460)

ID 239: Keeping up-to-date with changes in hydrogen codes (Similarity Score: 0.5004)

ID 222: Comprehensive understanding of testing procedures due to hydrogen's nature (Similarity Score: 0.7076)

ID 218: Assess strength of welds in hydrogen systems (Similarity Score: 0.5988)

ID 146: Instrumented system analysis for hydrogen processes (Similarity Score: 0.6471)

ID 142: Understanding how to match hydrogen technology with the needs of different fleets (Similarity Score: 0.4922)

ID 130: Understanding of coatings effective against hydrogen embrittlement (Similarity Score: 0.6498)

ID 552: Understanding well testing and analysis for carbon dioxide (CO2) injection (Similarity Score: 0.4078)

ID 2: Experience with on-site hydrogen generation (Similarity Score: 0.5327)

ID 47: Knowledge of appropriate materials for hydrogen systems (Similarity Score: 0.6399)

ID 571: PVT characterization specific to sequestered gas (Similarity Score: 0.4279)

ID 506: Application of well completion techniques to ensure safe hydrogen extraction (Similarity Score: 0.5288)

ID 126: Understanding the impact of hydrogen blending on heating systems (Similarity Score: 0.5852)

ID 225: Selection of protective coatings for hydrogen production (Similarity Score: 0.5688)

ID 531: Understanding of well testing for carbon dioxide (CO2) injection (Similarity Score: 0.4033)

ID 505: Knowledge of well completion solutions tailored for hydrogen environments (Similarity Score: 0.5401)

ID 101: Selection of odorants for hydrogen blending (Similarity Score: 0.5200)

ID 220: Assess integrity of welds under hydrogen temperature conditions (Similarity Score: 0.6275)

ID 170: Knowledge of coatings effective for hydrogen blending (Similarity Score: 0.6021)

ID 392: Knowledge of operational adjustments for hydrogen blending (Similarity Score: 0.5712)

ID 100: Selection of coatings for hydrogen blending (Similarity Score: 0.5586)

ID 49: Knowledge of appropriate coatings for hydrogen systems (Similarity Score: 0.6222)

### 18.2.1: Fracture Mechanics Testing

ID 576: Understanding of cavern engineering fundamentals for hydrogen injection (Similarity Score: 0.5234)

ID 219: Assess integrity of welds under hydrogen pressure (Similarity Score: 0.6377)

ID 533: Understanding of fluid characterization for carbon dioxide (CO2) injection (Similarity Score: 0.3668)

ID 126: Understanding the impact of hydrogen blending on heating systems (Similarity Score: 0.5590)

ID 218: Assess strength of welds in hydrogen systems (Similarity Score: 0.6336)

ID 493: Application of modeling techniques to predict hydrogen-water-mineral interactions (Similarity Score: 0.5885)

ID 506: Application of well completion techniques to ensure safe hydrogen extraction (Similarity Score: 0.5397)

ID 406: Understanding welding processes that are compatible with hydrogen (Similarity Score: 0.5982)

ID 536: Knowledge of components that can endure hydrogen pressure and temperatures (Similarity Score: 0.5115)

ID 601: Selection of appropriate coatings for carbon dioxide (CO2) compression facility maintenance (Similarity Score: 0.3810)

ID 360: Selection and design of valves and fittings for hydrogen blending (Similarity Score: 0.5492)

ID 583: Understanding of reservoir data interpretation for hydrogen injection (Similarity Score: 0.4948)

ID 552: Understanding well testing and analysis for carbon dioxide (CO2) injection (Similarity Score: 0.4171)

ID 392: Knowledge of operational adjustments for hydrogen blending (Similarity Score: 0.5777)

ID 169: Knowledge of seals compatible with hydrogen blending (Similarity Score: 0.5662)

ID 170: Knowledge of coatings effective for hydrogen blending (Similarity Score: 0.5493)

ID 145: Mechanical integrity analysis for hydrogen systems (Similarity Score: 0.6339)

ID 531: Understanding of well testing for carbon dioxide (CO2) injection (Similarity Score: 0.4091)

ID 505: Knowledge of well completion solutions tailored for hydrogen environments (Similarity Score: 0.5644)

ID 216: Design and selection of coatings for protection against hydrogen (Similarity Score: 0.5268)

ID 100: Selection of coatings for hydrogen blending (Similarity Score: 0.5230)

ID 220: Assess integrity of welds under hydrogen temperature conditions (Similarity Score: 0.6288)

ID 244: Understanding welding procedures for hydrogen systems (Similarity Score: 0.6117)

#### 18.2.1.1: Crack Propagation Analysis

ID 493: Application of modeling techniques to predict hydrogen-water-mineral interactions (Similarity Score: 0.5405)

ID 552: Understanding well testing and analysis for carbon dioxide (CO2) injection (Similarity Score: 0.4083)

ID 169: Knowledge of seals compatible with hydrogen blending (Similarity Score: 0.5165)

ID 218: Assess strength of welds in hydrogen systems (Similarity Score: 0.6020)

ID 579: Understanding of well completion solutions for carbon dioxide (CO2) based on subsurface conditions (Similarity Score: 0.3495)

### 18.2.2: Material Durability Testing

ID 220: Assess integrity of welds under hydrogen temperature conditions (Similarity Score: 0.6166)

ID 142: Understanding how to match hydrogen technology with the needs of different fleets (Similarity Score: 0.4902)

ID 219: Assess integrity of welds under hydrogen pressure (Similarity Score: 0.6309)

ID 554: Understanding fluid characterization in carbon dioxide (CO2) injection contexts (Similarity Score: 0.3751)

ID 101: Selection of odorants for hydrogen blending (Similarity Score: 0.5000)

ID 100: Selection of coatings for hydrogen blending (Similarity Score: 0.5227)

ID 218: Assess strength of welds in hydrogen systems (Similarity Score: 0.6070)

ID 360: Selection and design of valves and fittings for hydrogen blending (Similarity Score: 0.5526)

ID 552: Understanding well testing and analysis for carbon dioxide (CO2) injection (Similarity Score: 0.4219)

ID 216: Design and selection of coatings for protection against hydrogen (Similarity Score: 0.5359)

ID 170: Knowledge of coatings effective for hydrogen blending (Similarity Score: 0.5702)

ID 225: Selection of protective coatings for hydrogen production (Similarity Score: 0.5162)

ID 505: Knowledge of well completion solutions tailored for hydrogen environments (Similarity Score: 0.5439)

ID 2: Experience with on-site hydrogen generation (Similarity Score: 0.5610)

ID 392: Knowledge of operational adjustments for hydrogen blending (Similarity Score: 0.5785)

ID 146: Instrumented system analysis for hydrogen processes (Similarity Score: 0.6330)

ID 126: Understanding the impact of hydrogen blending on heating systems (Similarity Score: 0.5716)

ID 406: Understanding welding processes that are compatible with hydrogen (Similarity Score: 0.5847)

ID 49: Knowledge of appropriate coatings for hydrogen systems (Similarity Score: 0.5755)

ID 169: Knowledge of seals compatible with hydrogen blending (Similarity Score: 0.5378)

ID 244: Understanding welding procedures for hydrogen systems (Similarity Score: 0.6185)

ID 222: Comprehensive understanding of testing procedures due to hydrogen's nature (Similarity Score: 0.7014)

ID 168: Knowledge of appropriate materials for hydrogen blending (Similarity Score: 0.6298)

ID 531: Understanding of well testing for carbon dioxide (CO2) injection (Similarity Score: 0.4069)

ID 632: Well design based on understanding of hydrogen injection stream properties (Similarity Score: 0.5638)

ID 238: Keeping up-to-date with changes in hydrogen standards (Similarity Score: 0.5551)

ID 6: Experience with hydrogen dispensing (Similarity Score: 0.4937)

#### 18.2.2.1: Tensile Testing for Embrittlement

ID 126: Understanding the impact of hydrogen blending on heating systems (Similarity Score: 0.5465)

ID 142: Understanding how to match hydrogen technology with the needs of different fleets (Similarity Score: 0.5309)

ID 2: Experience with on-site hydrogen generation (Similarity Score: 0.5360)

ID 218: Assess strength of welds in hydrogen systems (Similarity Score: 0.5883)

ID 6: Experience with hydrogen dispensing (Similarity Score: 0.4839)

ID 169: Knowledge of seals compatible with hydrogen blending (Similarity Score: 0.5176)

#### 18.2.2.2: Hardness and Toughness Testing

ID 219: Assess integrity of welds under hydrogen pressure (Similarity Score: 0.6001)

ID 142: Understanding how to match hydrogen technology with the needs of different fleets (Similarity Score: 0.4946)

ID 6: Experience with hydrogen dispensing (Similarity Score: 0.4858)

ID 170: Knowledge of coatings effective for hydrogen blending (Similarity Score: 0.5425)

ID 218: Assess strength of welds in hydrogen systems (Similarity Score: 0.5910)

ID 169: Knowledge of seals compatible with hydrogen blending (Similarity Score: 0.5281)

ID 2: Experience with on-site hydrogen generation (Similarity Score: 0.5421)

## 18.3: Mitigation Strategies for Hydrogen Embrittlement

ID 289: Knowledge of technologies used to prevent hydrogen embrittlement (Similarity Score: 0.7018)

ID 344: Techniques for repairing hydrogen leaks (Similarity Score: 0.5361)

ID 609: Maintenance of coatings and insulation to protect against hydrogen conditions (Similarity Score: 0.5533)

ID 131: Knowledge of correct application techniques for protective coatings (Similarity Score: 0.3382)

ID 170: Knowledge of coatings effective for hydrogen blending (Similarity Score: 0.5488)

ID 126: Understanding the impact of hydrogen blending on heating systems (Similarity Score: 0.5719)

ID 20: Knowledge of coatings to protect from hydrogen corrosion and embrittlement (Similarity Score: 0.5867)

ID 216: Design and selection of coatings for protection against hydrogen (Similarity Score: 0.5425)

ID 130: Understanding of coatings effective against hydrogen embrittlement (Similarity Score: 0.6605)

ID 102: Selection of inhibitors for hydrogen blending (Similarity Score: 0.4603)

ID 549: Application of coatings to protect carbon capture systems (Similarity Score: 0.3918)

ID 225: Selection of protective coatings for hydrogen production (Similarity Score: 0.5693)

ID 506: Application of well completion techniques to ensure safe hydrogen extraction (Similarity Score: 0.5311)

ID 105: Understanding the risk of hydrogen embrittlement in high pressure environments (Similarity Score: 0.6700)

ID 22: Knowledge of embrittlement-specific protection strategies (Similarity Score: 0.4887)

ID 312: Techniques for implementing cathodic protection in hydrogen systems (Similarity Score: 0.5800)

ID 100: Selection of coatings for hydrogen blending (Similarity Score: 0.5209)

ID 21: Knowledge of inhibitors to protect from hydrogen corrosion and embrittlement (Similarity Score: 0.5219)

### 18.3.1: Material Selection and Treatment

ID 505: Knowledge of well completion solutions tailored for hydrogen environments (Similarity Score: 0.5428)

ID 289: Knowledge of technologies used to prevent hydrogen embrittlement (Similarity Score: 0.6467)

ID 22: Knowledge of embrittlement-specific protection strategies (Similarity Score: 0.4482)

ID 225: Selection of protective coatings for hydrogen production (Similarity Score: 0.5406)

ID 312: Techniques for implementing cathodic protection in hydrogen systems (Similarity Score: 0.5537)

ID 344: Techniques for repairing hydrogen leaks (Similarity Score: 0.5186)

ID 506: Application of well completion techniques to ensure safe hydrogen extraction (Similarity Score: 0.5610)

ID 102: Selection of inhibitors for hydrogen blending (Similarity Score: 0.4897)

#### 18.3.1.2: Surface Treatments and Coatings

ID 225: Selection of protective coatings for hydrogen production (Similarity Score: 0.5265)

ID 131: Knowledge of correct application techniques for protective coatings (Similarity Score: 0.3436)

ID 216: Design and selection of coatings for protection against hydrogen (Similarity Score: 0.5217)

### 18.3.2: Design Considerations to Minimize Embrittlement

ID 126: Understanding the impact of hydrogen blending on heating systems (Similarity Score: 0.5643)

ID 216: Design and selection of coatings for protection against hydrogen (Similarity Score: 0.5208)

ID 609: Maintenance of coatings and insulation to protect against hydrogen conditions (Similarity Score: 0.5401)

ID 142: Understanding how to match hydrogen technology with the needs of different fleets (Similarity Score: 0.5180)

ID 22: Knowledge of embrittlement-specific protection strategies (Similarity Score: 0.4607)

ID 289: Knowledge of technologies used to prevent hydrogen embrittlement (Similarity Score: 0.6386)

ID 20: Knowledge of coatings to protect from hydrogen corrosion and embrittlement (Similarity Score: 0.5620)

#### 18.3.2.1: Reducing Stress Concentrations

ID 505: Knowledge of well completion solutions tailored for hydrogen environments (Similarity Score: 0.5427)

ID 609: Maintenance of coatings and insulation to protect against hydrogen conditions (Similarity Score: 0.5469)

ID 105: Understanding the risk of hydrogen embrittlement in high pressure environments (Similarity Score: 0.6537)

ID 126: Understanding the impact of hydrogen blending on heating systems (Similarity Score: 0.5783)

ID 142: Understanding how to match hydrogen technology with the needs of different fleets (Similarity Score: 0.5112)

ID 22: Knowledge of embrittlement-specific protection strategies (Similarity Score: 0.4471)

#### 18.3.2.2: Component Geometry Optimization for Hydrogen Service

ID 142: Understanding how to match hydrogen technology with the needs of different fleets (Similarity Score: 0.5187)

## 18.4: Standards and Protocols for Testing

ID 168: Knowledge of appropriate materials for hydrogen blending (Similarity Score: 0.6840)

ID 245: Techniques for welding in hydrogen environments (Similarity Score: 0.5904)

ID 239: Keeping up-to-date with changes in hydrogen codes (Similarity Score: 0.5196)

ID 246: Ensuring quality and safety of welds in hydrogen systems (Similarity Score: 0.6098)

ID 534: Knowledge of materials suitable for withstanding hydrogen pressure and temperatures (Similarity Score: 0.6116)

ID 189: Understanding of relevant hydrogen regulations (Similarity Score: 0.6774)

ID 533: Understanding of fluid characterization for carbon dioxide (CO2) injection (Similarity Score: 0.3876)

ID 531: Understanding of well testing for carbon dioxide (CO2) injection (Similarity Score: 0.4427)

ID 244: Understanding welding procedures for hydrogen systems (Similarity Score: 0.6306)

ID 100: Selection of coatings for hydrogen blending (Similarity Score: 0.5029)

ID 238: Keeping up-to-date with changes in hydrogen standards (Similarity Score: 0.5991)

ID 263: Knowledge of selecting materials that can withstand hydrogen pressure and temperatures (Similarity Score: 0.5679)

ID 632: Well design based on understanding of hydrogen injection stream properties (Similarity Score: 0.5659)

ID 222: Comprehensive understanding of testing procedures due to hydrogen's nature (Similarity Score: 0.7315)

ID 221: Understanding of installation procedures unique to hydrogen (Similarity Score: 0.6033)

ID 583: Understanding of reservoir data interpretation for hydrogen injection (Similarity Score: 0.4855)

ID 183: Advanced knowledge of evolving standards in hydrogen industry (Similarity Score: 0.5998)

ID 61: Understanding general safety protocols for working with hydrogen (Similarity Score: 0.7750)

ID 220: Assess integrity of welds under hydrogen temperature conditions (Similarity Score: 0.6640)

ID 208: Understanding fueling standards for hydrogen products (Similarity Score: 0.6672)

ID 505: Knowledge of well completion solutions tailored for hydrogen environments (Similarity Score: 0.5730)

ID 74: Appropriate selection of materials to withstand hydrogen temperatures (Similarity Score: 0.5808)

ID 219: Assess integrity of welds under hydrogen pressure (Similarity Score: 0.6199)

ID 554: Understanding fluid characterization in carbon dioxide (CO2) injection contexts (Similarity Score: 0.3948)

ID 127: Understanding safety considerations for hydrogen blending in heating systems (Similarity Score: 0.6082)

ID 552: Understanding well testing and analysis for carbon dioxide (CO2) injection (Similarity Score: 0.4297)

ID 217: Design and selection of insulation to withstand hydrogen conditions (Similarity Score: 0.5741)

ID 360: Selection and design of valves and fittings for hydrogen blending (Similarity Score: 0.5499)

ID 635: Knowledge of key instrumentation associated with carbon capture (Similarity Score: 0.3962)

ID 169: Knowledge of seals compatible with hydrogen blending (Similarity Score: 0.5426)

ID 562: Application of hydrogen safety codes and standards in operations (Similarity Score: 0.6869)

ID 99: Selection of materials for hydrogen blending (Similarity Score: 0.6122)

ID 91: Advanced understanding of general safety protocols for hydrogen (Similarity Score: 0.7542)

ID 559: PVT characterization specific to sequestered gas and liquid composition (Similarity Score: 0.4413)

ID 101: Selection of odorants for hydrogen blending (Similarity Score: 0.5052)

ID 536: Knowledge of components that can endure hydrogen pressure and temperatures (Similarity Score: 0.5299)

ID 400: Knowledge of compliance testing in hydrogen infrastructure (Similarity Score: 0.6898)

ID 232: Knowledge of standards for EMC/EMI in hydrogen systems (Similarity Score: 0.5799)

ID 571: PVT characterization specific to sequestered gas (Similarity Score: 0.4285)

ID 401: Understanding materials testing protocols for hydrogen infrastructure (Similarity Score: 0.8328)

ID 399: Understanding acceptance criteria for hydrogen infrastructure (Similarity Score: 0.5526)

ID 507: Selection and design of combustion systems to withstand hydrogen pressure and temperatures (Similarity Score: 0.5564)

ID 406: Understanding welding processes that are compatible with hydrogen (Similarity Score: 0.5796)

ID 407: Understanding the procedures necessary for welding in hydrogen environments (Similarity Score: 0.6530)

ID 106: Understanding safety protocols related to material behavior in high pressure hydrogen environments (Similarity Score: 0.7521)

ID 47: Knowledge of appropriate materials for hydrogen systems (Similarity Score: 0.6801)

ID 609: Maintenance of coatings and insulation to protect against hydrogen conditions (Similarity Score: 0.5514)

ID 151: Understanding of other relevant equipment for hydrogen blending (Similarity Score: 0.6018)

ID 237: Keeping up-to-date with changes in hydrogen regulations (Similarity Score: 0.5628)

ID 613: PVT characterization specific to sequestered carbon dioxide (CO2) composition (Similarity Score: 0.3970)

### 18.4.1: International Standards for Hydrogen Embrittlement Testing

ID 169: Knowledge of seals compatible with hydrogen blending (Similarity Score: 0.5394)

ID 562: Application of hydrogen safety codes and standards in operations (Similarity Score: 0.6425)

ID 232: Knowledge of standards for EMC/EMI in hydrogen systems (Similarity Score: 0.5613)

ID 231: Understanding of EMC/EMI compliance requirements (Similarity Score: 0.4222)

ID 183: Advanced knowledge of evolving standards in hydrogen industry (Similarity Score: 0.6057)

ID 601: Selection of appropriate coatings for carbon dioxide (CO2) compression facility maintenance (Similarity Score: 0.3841)

ID 238: Keeping up-to-date with changes in hydrogen standards (Similarity Score: 0.5668)

ID 168: Knowledge of appropriate materials for hydrogen blending (Similarity Score: 0.6310)

### 18.4.2: Industry-Specific Testing Protocols

ID 169: Knowledge of seals compatible with hydrogen blending (Similarity Score: 0.5358)

ID 127: Understanding safety considerations for hydrogen blending in heating systems (Similarity Score: 0.6051)

ID 168: Knowledge of appropriate materials for hydrogen blending (Similarity Score: 0.6313)

ID 165: Understanding of hydrogen-related regulations (Similarity Score: 0.6514)

ID 166: Understanding industry standards for hydrogen (Similarity Score: 0.7215)

ID 505: Knowledge of well completion solutions tailored for hydrogen environments (Similarity Score: 0.5686)

ID 417: Assessing the impact of changes in technology and regulations on safety requirements (Similarity Score: 0.4550)

ID 151: Understanding of other relevant equipment for hydrogen blending (Similarity Score: 0.6109)

ID 232: Knowledge of standards for EMC/EMI in hydrogen systems (Similarity Score: 0.5619)

ID 401: Understanding materials testing protocols for hydrogen infrastructure (Similarity Score: 0.7765)

ID 106: Understanding safety protocols related to material behavior in high pressure hydrogen environments (Similarity Score: 0.7149)

ID 101: Selection of odorants for hydrogen blending (Similarity Score: 0.4964)

ID 399: Understanding acceptance criteria for hydrogen infrastructure (Similarity Score: 0.5458)

ID 100: Selection of coatings for hydrogen blending (Similarity Score: 0.5051)

ID 536: Knowledge of components that can endure hydrogen pressure and temperatures (Similarity Score: 0.5121)

ID 562: Application of hydrogen safety codes and standards in operations (Similarity Score: 0.6917)

ID 91: Advanced understanding of general safety protocols for hydrogen (Similarity Score: 0.7312)

ID 613: PVT characterization specific to sequestered carbon dioxide (CO2) composition (Similarity Score: 0.3951)

ID 222: Comprehensive understanding of testing procedures due to hydrogen's nature (Similarity Score: 0.6671)

ID 220: Assess integrity of welds under hydrogen temperature conditions (Similarity Score: 0.5984)

ID 394: Understanding regulations for hydrogen infrastructure and operations (Similarity Score: 0.6015)

ID 47: Knowledge of appropriate materials for hydrogen systems (Similarity Score: 0.6144)

ID 559: PVT characterization specific to sequestered gas and liquid composition (Similarity Score: 0.4427)

ID 61: Understanding general safety protocols for working with hydrogen (Similarity Score: 0.7470)

ID 208: Understanding fueling standards for hydrogen products (Similarity Score: 0.6838)

ID 554: Understanding fluid characterization in carbon dioxide (CO2) injection contexts (Similarity Score: 0.4098)

ID 552: Understanding well testing and analysis for carbon dioxide (CO2) injection (Similarity Score: 0.4096)

ID 360: Selection and design of valves and fittings for hydrogen blending (Similarity Score: 0.5619)

ID 183: Advanced knowledge of evolving standards in hydrogen industry (Similarity Score: 0.6395)

ID 403: In-depth knowledge of standards for hydrogen infrastructure and operations (Similarity Score: 0.5819)

ID 142: Understanding how to match hydrogen technology with the needs of different fleets (Similarity Score: 0.4889)

ID 533: Understanding of fluid characterization for carbon dioxide (CO2) injection (Similarity Score: 0.3875)

ID 238: Keeping up-to-date with changes in hydrogen standards (Similarity Score: 0.5860)

ID 237: Keeping up-to-date with changes in hydrogen regulations (Similarity Score: 0.5636)

ID 531: Understanding of well testing for carbon dioxide (CO2) injection (Similarity Score: 0.4194)

ID 416: Keeping current with regulatory, standard, and code changes in the hydrogen sector (Similarity Score: 0.5883)

ID 189: Understanding of relevant hydrogen regulations (Similarity Score: 0.6999)

ID 571: PVT characterization specific to sequestered gas (Similarity Score: 0.4211)

ID 190: Understanding of industry standards for hydrogen (Similarity Score: 0.7207)

ID 239: Keeping up-to-date with changes in hydrogen codes (Similarity Score: 0.5041)

### 18.4.3: Compliance with Safety and Reliability Standards

ID 552: Understanding well testing and analysis for carbon dioxide (CO2) injection (Similarity Score: 0.3987)

ID 632: Well design based on understanding of hydrogen injection stream properties (Similarity Score: 0.5622)

ID 183: Advanced knowledge of evolving standards in hydrogen industry (Similarity Score: 0.6115)

ID 47: Knowledge of appropriate materials for hydrogen systems (Similarity Score: 0.6730)

ID 169: Knowledge of seals compatible with hydrogen blending (Similarity Score: 0.5584)

ID 127: Understanding safety considerations for hydrogen blending in heating systems (Similarity Score: 0.6328)

ID 263: Knowledge of selecting materials that can withstand hydrogen pressure and temperatures (Similarity Score: 0.5594)

ID 531: Understanding of well testing for carbon dioxide (CO2) injection (Similarity Score: 0.4063)

ID 217: Design and selection of insulation to withstand hydrogen conditions (Similarity Score: 0.6036)

ID 505: Knowledge of well completion solutions tailored for hydrogen environments (Similarity Score: 0.5869)

ID 11: Knowledge of key instrumentation for hydrogen pipelines (Similarity Score: 0.5679)

ID 208: Understanding fueling standards for hydrogen products (Similarity Score: 0.6777)

ID 53: Appropriate selection of coatings and insulation for hydrogen fueling systems (Similarity Score: 0.5950)

ID 562: Application of hydrogen safety codes and standards in operations (Similarity Score: 0.7034)

ID 56: Maintenance of coatings and insulation in hydrogen fueling systems (Similarity Score: 0.5958)

ID 61: Understanding general safety protocols for working with hydrogen (Similarity Score: 0.7824)

ID 239: Keeping up-to-date with changes in hydrogen codes (Similarity Score: 0.5319)

ID 219: Assess integrity of welds under hydrogen pressure (Similarity Score: 0.6033)

ID 417: Assessing the impact of changes in technology and regulations on safety requirements (Similarity Score: 0.4574)

ID 220: Assess integrity of welds under hydrogen temperature conditions (Similarity Score: 0.6496)

ID 406: Understanding welding processes that are compatible with hydrogen (Similarity Score: 0.5794)

ID 235: Handling compliance issues in electrical systems for road vehicles (Similarity Score: 0.4082)

ID 222: Comprehensive understanding of testing procedures due to hydrogen's nature (Similarity Score: 0.6944)

ID 168: Knowledge of appropriate materials for hydrogen blending (Similarity Score: 0.6584)

ID 407: Understanding the procedures necessary for welding in hydrogen environments (Similarity Score: 0.6241)

ID 234: Experience with standards for electrical systems in road vehicles (Similarity Score: 0.3798)

ID 534: Knowledge of materials suitable for withstanding hydrogen pressure and temperatures (Similarity Score: 0.6052)

ID 403: In-depth knowledge of standards for hydrogen infrastructure and operations (Similarity Score: 0.5921)

ID 232: Knowledge of standards for EMC/EMI in hydrogen systems (Similarity Score: 0.5860)

ID 533: Understanding of fluid characterization for carbon dioxide (CO2) injection (Similarity Score: 0.3669)

ID 401: Understanding materials testing protocols for hydrogen infrastructure (Similarity Score: 0.7920)

ID 507: Selection and design of combustion systems to withstand hydrogen pressure and temperatures (Similarity Score: 0.5686)

ID 189: Understanding of relevant hydrogen regulations (Similarity Score: 0.6765)

ID 106: Understanding safety protocols related to material behavior in high pressure hydrogen environments (Similarity Score: 0.7466)

ID 221: Understanding of installation procedures unique to hydrogen (Similarity Score: 0.6037)

ID 244: Understanding welding procedures for hydrogen systems (Similarity Score: 0.6153)

ID 400: Knowledge of compliance testing in hydrogen infrastructure (Similarity Score: 0.7068)

ID 399: Understanding acceptance criteria for hydrogen infrastructure (Similarity Score: 0.5685)

ID 142: Understanding how to match hydrogen technology with the needs of different fleets (Similarity Score: 0.4970)

ID 536: Knowledge of components that can endure hydrogen pressure and temperatures (Similarity Score: 0.5510)

ID 609: Maintenance of coatings and insulation to protect against hydrogen conditions (Similarity Score: 0.5823)

ID 571: PVT characterization specific to sequestered gas (Similarity Score: 0.3936)

ID 238: Keeping up-to-date with changes in hydrogen standards (Similarity Score: 0.6134)

ID 91: Advanced understanding of general safety protocols for hydrogen (Similarity Score: 0.7684)

ID 246: Ensuring quality and safety of welds in hydrogen systems (Similarity Score: 0.6429)

ID 237: Keeping up-to-date with changes in hydrogen regulations (Similarity Score: 0.5760)

# 19: Programming and Monitoring Control Systems in Hydrogen Processes

ID 146: Instrumented system analysis for hydrogen processes (Similarity Score: 0.6776)

ID 397: Knowledge of control systems for hydrogen blending in power generation (Similarity Score: 0.6521)

ID 250: Maintenance of dispensers in hydrogen fueling systems (Similarity Score: 0.6062)

ID 396: Understanding of automated process systems in power generation using hydrogen blending (Similarity Score: 0.6155)

ID 65: Knowledge of control systems in electrolyzer hydrogen production plants (Similarity Score: 0.6758)

ID 67: Knowledge of monitoring systems for electrolyzer hydrogen production plants (Similarity Score: 0.6954)

ID 589: Understanding of control systems used in SMR/ATR hydrogen production plants (Similarity Score: 0.6258)

ID 252: Maintenance of PLCs and control software (Similarity Score: 0.3893)

ID 509: Selection and design of pumping systems for hydrogen environments (Similarity Score: 0.5911)

ID 285: Knowledge of instrumentation systems for hydrogen fueling (Similarity Score: 0.6415)

ID 121: Management of hydrogen fueling stations (Similarity Score: 0.6547)

ID 590: Optimization of control systems in SMR/ATR hydrogen production processes (Similarity Score: 0.6264)

ID 310: Knowledge of instrumentation systems in hydrogen transmission (Similarity Score: 0.6274)

ID 228: Selection of electronic systems for electrolyzer hydrogen production (Similarity Score: 0.6166)

ID 223: Selection and design of production equipment for hydrogen systems (Similarity Score: 0.6461)

ID 317: Selection of key instrumentation equipment for electrolyzer hydrogen production (Similarity Score: 0.5934)

ID 32: Operation of hydrogen dispensing systems (Similarity Score: 0.6355)

ID 338: Selection of instrumentation and controls for fueling operations (Similarity Score: 0.5196)

ID 451: Understanding of automated process systems used in carbon capture (Similarity Score: 0.4689)

ID 354: Knowledge of advanced control systems for combined-cycle power generation using hydrogen (Similarity Score: 0.6067)

ID 140: Knowledge of distribution systems for hydrogen (Similarity Score: 0.6021)

ID 13: Knowledge of systems associated with hydrogen pipeline transmission (Similarity Score: 0.5758)

## 19.1: Programming Control Modules

ID 65: Knowledge of control systems in electrolyzer hydrogen production plants (Similarity Score: 0.6531)

ID 397: Knowledge of control systems for hydrogen blending in power generation (Similarity Score: 0.5965)

ID 252: Maintenance of PLCs and control software (Similarity Score: 0.4251)

ID 589: Understanding of control systems used in SMR/ATR hydrogen production plants (Similarity Score: 0.6070)

ID 338: Selection of instrumentation and controls for fueling operations (Similarity Score: 0.5103)

ID 590: Optimization of control systems in SMR/ATR hydrogen production processes (Similarity Score: 0.6104)

ID 586: Knowledge of control systems for optimizing SMR/ATR processes (Similarity Score: 0.3453)

### 19.1.1: Understanding Control Logic for Hydrogen Processes

ID 252: Maintenance of PLCs and control software (Similarity Score: 0.4185)

ID 586: Knowledge of control systems for optimizing SMR/ATR processes (Similarity Score: 0.3381)

#### 19.1.1.2: Integration with Process Sensors and Actuators

ID 586: Knowledge of control systems for optimizing SMR/ATR processes (Similarity Score: 0.3343)

### 19.1.2: Implementation of Safety Protocols

ID 303: Understanding of instrumentation and electrical controls for corrosion prevention (Similarity Score: 0.4657)

ID 252: Maintenance of PLCs and control software (Similarity Score: 0.4074)

ID 68: Understanding of safety protocols in electrolyzer control systems (Similarity Score: 0.5070)

ID 65: Knowledge of control systems in electrolyzer hydrogen production plants (Similarity Score: 0.6348)

ID 338: Selection of instrumentation and controls for fueling operations (Similarity Score: 0.4716)

ID 572: Thermal and flow modeling for sequestered gas composition (Similarity Score: 0.3844)

ID 589: Understanding of control systems used in SMR/ATR hydrogen production plants (Similarity Score: 0.5760)

ID 586: Knowledge of control systems for optimizing SMR/ATR processes (Similarity Score: 0.3596)

#### 19.1.2.1: Emergency Shutdown Procedures

ID 586: Knowledge of control systems for optimizing SMR/ATR processes (Similarity Score: 0.3549)

ID 585: Understanding of automated process systems for SMR/ATR (Similarity Score: 0.3037)

ID 252: Maintenance of PLCs and control software (Similarity Score: 0.4239)

ID 590: Optimization of control systems in SMR/ATR hydrogen production processes (Similarity Score: 0.5871)

#### 19.1.2.2: Fail-Safe Mechanisms

ID 252: Maintenance of PLCs and control software (Similarity Score: 0.3977)

### 19.1.3: Optimization of Process Efficiency

ID 451: Understanding of automated process systems used in carbon capture (Similarity Score: 0.4636)

ID 586: Knowledge of control systems for optimizing SMR/ATR processes (Similarity Score: 0.3529)

ID 66: Knowledge of advanced control systems for process optimization (Similarity Score: 0.5313)

ID 568: Optimization of control systems for process efficiency in carbon capture (Similarity Score: 0.5389)

ID 585: Understanding of automated process systems for SMR/ATR (Similarity Score: 0.3120)

ID 590: Optimization of control systems in SMR/ATR hydrogen production processes (Similarity Score: 0.6413)

#### 19.1.3.1: Real-Time Process Optimization

ID 586: Knowledge of control systems for optimizing SMR/ATR processes (Similarity Score: 0.3336)

ID 590: Optimization of control systems in SMR/ATR hydrogen production processes (Similarity Score: 0.5961)

ID 66: Knowledge of advanced control systems for process optimization (Similarity Score: 0.5012)

#### 19.1.3.2: Energy Efficiency Enhancements

ID 590: Optimization of control systems in SMR/ATR hydrogen production processes (Similarity Score: 0.6084)

ID 585: Understanding of automated process systems for SMR/ATR (Similarity Score: 0.3001)

ID 66: Knowledge of advanced control systems for process optimization (Similarity Score: 0.5158)

ID 586: Knowledge of control systems for optimizing SMR/ATR processes (Similarity Score: 0.3548)

## 19.2: Monitoring Control Systems

ID 228: Selection of electronic systems for electrolyzer hydrogen production (Similarity Score: 0.6001)

ID 589: Understanding of control systems used in SMR/ATR hydrogen production plants (Similarity Score: 0.6259)

ID 65: Knowledge of control systems in electrolyzer hydrogen production plants (Similarity Score: 0.6952)

ID 67: Knowledge of monitoring systems for electrolyzer hydrogen production plants (Similarity Score: 0.7022)

ID 285: Knowledge of instrumentation systems for hydrogen fueling (Similarity Score: 0.6264)

ID 252: Maintenance of PLCs and control software (Similarity Score: 0.3947)

ID 354: Knowledge of advanced control systems for combined-cycle power generation using hydrogen (Similarity Score: 0.6133)

ID 451: Understanding of automated process systems used in carbon capture (Similarity Score: 0.4739)

ID 32: Operation of hydrogen dispensing systems (Similarity Score: 0.6179)

ID 146: Instrumented system analysis for hydrogen processes (Similarity Score: 0.6445)

ID 250: Maintenance of dispensers in hydrogen fueling systems (Similarity Score: 0.5891)

ID 338: Selection of instrumentation and controls for fueling operations (Similarity Score: 0.5095)

ID 397: Knowledge of control systems for hydrogen blending in power generation (Similarity Score: 0.6530)

ID 590: Optimization of control systems in SMR/ATR hydrogen production processes (Similarity Score: 0.6082)

ID 317: Selection of key instrumentation equipment for electrolyzer hydrogen production (Similarity Score: 0.5948)

ID 310: Knowledge of instrumentation systems in hydrogen transmission (Similarity Score: 0.6224)

ID 13: Knowledge of systems associated with hydrogen pipeline transmission (Similarity Score: 0.5694)

### 19.2.2: Diagnostics and Troubleshooting

ID 252: Maintenance of PLCs and control software (Similarity Score: 0.3975)

## 19.3: Ensuring Safe Operation of Hydrogen Processes

ID 599: Maintenance of vessels, piping systems, cryogenic systems, valves, and seals (Similarity Score: 0.5179)

ID 586: Knowledge of control systems for optimizing SMR/ATR processes (Similarity Score: 0.3472)

ID 590: Optimization of control systems in SMR/ATR hydrogen production processes (Similarity Score: 0.6158)

ID 589: Understanding of control systems used in SMR/ATR hydrogen production plants (Similarity Score: 0.5971)

ID 316: Maintenance of fuel tanks, piping, valves, and seals in hydrogen systems (Similarity Score: 0.6546)

ID 65: Knowledge of control systems in electrolyzer hydrogen production plants (Similarity Score: 0.6375)

ID 366: Maintenance of fuel tanks, piping, valves, and seals in hydrogen systems (Similarity Score: 0.6546)

ID 285: Knowledge of instrumentation systems for hydrogen fueling (Similarity Score: 0.6105)

ID 338: Selection of instrumentation and controls for fueling operations (Similarity Score: 0.4881)

ID 397: Knowledge of control systems for hydrogen blending in power generation (Similarity Score: 0.6124)

ID 246: Ensuring quality and safety of welds in hydrogen systems (Similarity Score: 0.6121)

ID 250: Maintenance of dispensers in hydrogen fueling systems (Similarity Score: 0.6051)

ID 252: Maintenance of PLCs and control software (Similarity Score: 0.4091)

ID 120: Maintenance of electrolyzers, vessels, compressors, piping systems, valves, and seals to withstand hydrogen pressure and temperatures (Similarity Score: 0.5834)

### 19.3.1: Compliance with Safety Standards

ID 228: Selection of electronic systems for electrolyzer hydrogen production (Similarity Score: 0.5783)

ID 285: Knowledge of instrumentation systems for hydrogen fueling (Similarity Score: 0.6284)

ID 397: Knowledge of control systems for hydrogen blending in power generation (Similarity Score: 0.6096)

ID 590: Optimization of control systems in SMR/ATR hydrogen production processes (Similarity Score: 0.5849)

ID 159: Maintenance of piping systems, fittings, valves, and seals (Similarity Score: 0.4934)

ID 310: Knowledge of instrumentation systems in hydrogen transmission (Similarity Score: 0.6139)

ID 252: Maintenance of PLCs and control software (Similarity Score: 0.3913)

ID 250: Maintenance of dispensers in hydrogen fueling systems (Similarity Score: 0.5906)

ID 589: Understanding of control systems used in SMR/ATR hydrogen production plants (Similarity Score: 0.5755)

ID 511: Maintenance of combustion, compression, pumping, and turbine systems to ensure reliability under hydrogen conditions (Similarity Score: 0.6452)

ID 239: Keeping up-to-date with changes in hydrogen codes (Similarity Score: 0.5249)

ID 246: Ensuring quality and safety of welds in hydrogen systems (Similarity Score: 0.6345)

ID 471: Maintenance of electrolyzers, vessels, compressors, piping systems, valves, and seals (Similarity Score: 0.5097)

ID 599: Maintenance of vessels, piping systems, cryogenic systems, valves, and seals (Similarity Score: 0.5153)

ID 586: Knowledge of control systems for optimizing SMR/ATR processes (Similarity Score: 0.3261)

ID 120: Maintenance of electrolyzers, vessels, compressors, piping systems, valves, and seals to withstand hydrogen pressure and temperatures (Similarity Score: 0.6049)

ID 316: Maintenance of fuel tanks, piping, valves, and seals in hydrogen systems (Similarity Score: 0.6585)

ID 319: Maintenance of instrumentation systems in electrolyzer hydrogen production (Similarity Score: 0.6822)

ID 67: Knowledge of monitoring systems for electrolyzer hydrogen production plants (Similarity Score: 0.6661)

ID 11: Knowledge of key instrumentation for hydrogen pipelines (Similarity Score: 0.5711)

ID 443: Selection and design of valves and seals to maintain integrity under hydrogen conditions (Similarity Score: 0.5781)

ID 562: Application of hydrogen safety codes and standards in operations (Similarity Score: 0.6684)

ID 65: Knowledge of control systems in electrolyzer hydrogen production plants (Similarity Score: 0.6350)

ID 335: Maintenance of key hydrogen systems to ensure reliability under varying conditions (Similarity Score: 0.6798)

ID 415: Staying informed about updates in hydrogen technology (Similarity Score: 0.5413)

ID 366: Maintenance of fuel tanks, piping, valves, and seals in hydrogen systems (Similarity Score: 0.6585)

ID 444: Maintenance of vessels, compressors, piping systems, valves, and seals to ensure reliability under hydrogen conditions (Similarity Score: 0.6594)

ID 338: Selection of instrumentation and controls for fueling operations (Similarity Score: 0.4739)

ID 13: Knowledge of systems associated with hydrogen pipeline transmission (Similarity Score: 0.5703)

#### 19.3.1.1: Adherence to Regulatory Requirements

ID 239: Keeping up-to-date with changes in hydrogen codes (Similarity Score: 0.5101)

ID 444: Maintenance of vessels, compressors, piping systems, valves, and seals to ensure reliability under hydrogen conditions (Similarity Score: 0.6674)

ID 416: Keeping current with regulatory, standard, and code changes in the hydrogen sector (Similarity Score: 0.5970)

ID 443: Selection and design of valves and seals to maintain integrity under hydrogen conditions (Similarity Score: 0.5822)

ID 599: Maintenance of vessels, piping systems, cryogenic systems, valves, and seals (Similarity Score: 0.5139)

ID 471: Maintenance of electrolyzers, vessels, compressors, piping systems, valves, and seals (Similarity Score: 0.5120)

ID 648: Maintenance of turbine systems to ensure reliability under hydrogen conditions (Similarity Score: 0.6497)

ID 159: Maintenance of piping systems, fittings, valves, and seals (Similarity Score: 0.4932)

ID 120: Maintenance of electrolyzers, vessels, compressors, piping systems, valves, and seals to withstand hydrogen pressure and temperatures (Similarity Score: 0.6053)

ID 246: Ensuring quality and safety of welds in hydrogen systems (Similarity Score: 0.6203)

ID 13: Knowledge of systems associated with hydrogen pipeline transmission (Similarity Score: 0.5696)

ID 511: Maintenance of combustion, compression, pumping, and turbine systems to ensure reliability under hydrogen conditions (Similarity Score: 0.6529)

ID 397: Knowledge of control systems for hydrogen blending in power generation (Similarity Score: 0.5954)

ID 285: Knowledge of instrumentation systems for hydrogen fueling (Similarity Score: 0.6155)

ID 586: Knowledge of control systems for optimizing SMR/ATR processes (Similarity Score: 0.3268)

ID 335: Maintenance of key hydrogen systems to ensure reliability under varying conditions (Similarity Score: 0.6749)

ID 562: Application of hydrogen safety codes and standards in operations (Similarity Score: 0.6590)

#### 19.3.1.2: Regular Safety Audits and Inspections

ID 335: Maintenance of key hydrogen systems to ensure reliability under varying conditions (Similarity Score: 0.6667)

ID 444: Maintenance of vessels, compressors, piping systems, valves, and seals to ensure reliability under hydrogen conditions (Similarity Score: 0.6673)

ID 239: Keeping up-to-date with changes in hydrogen codes (Similarity Score: 0.5159)

ID 562: Application of hydrogen safety codes and standards in operations (Similarity Score: 0.6402)

ID 285: Knowledge of instrumentation systems for hydrogen fueling (Similarity Score: 0.6038)

ID 416: Keeping current with regulatory, standard, and code changes in the hydrogen sector (Similarity Score: 0.5828)

ID 246: Ensuring quality and safety of welds in hydrogen systems (Similarity Score: 0.6145)

ID 443: Selection and design of valves and seals to maintain integrity under hydrogen conditions (Similarity Score: 0.5695)

ID 471: Maintenance of electrolyzers, vessels, compressors, piping systems, valves, and seals (Similarity Score: 0.5082)

ID 599: Maintenance of vessels, piping systems, cryogenic systems, valves, and seals (Similarity Score: 0.5135)

ID 511: Maintenance of combustion, compression, pumping, and turbine systems to ensure reliability under hydrogen conditions (Similarity Score: 0.6378)

ID 120: Maintenance of electrolyzers, vessels, compressors, piping systems, valves, and seals to withstand hydrogen pressure and temperatures (Similarity Score: 0.6064)

### 19.3.2: Risk Mitigation and Response

ID 120: Maintenance of electrolyzers, vessels, compressors, piping systems, valves, and seals to withstand hydrogen pressure and temperatures (Similarity Score: 0.5605)

ID 599: Maintenance of vessels, piping systems, cryogenic systems, valves, and seals (Similarity Score: 0.4882)

#### 19.3.2.1: Hazard Identification and Risk Assessment

ID 120: Maintenance of electrolyzers, vessels, compressors, piping systems, valves, and seals to withstand hydrogen pressure and temperatures (Similarity Score: 0.5529)

## 19.4: Continuous Improvement and System Updates

ID 599: Maintenance of vessels, piping systems, cryogenic systems, valves, and seals (Similarity Score: 0.4931)

ID 123: Continuous improvement of hydrogen fueling station operations (Similarity Score: 0.6113)

ID 65: Knowledge of control systems in electrolyzer hydrogen production plants (Similarity Score: 0.6280)

ID 590: Optimization of control systems in SMR/ATR hydrogen production processes (Similarity Score: 0.5874)

ID 239: Keeping up-to-date with changes in hydrogen codes (Similarity Score: 0.5134)

ID 252: Maintenance of PLCs and control software (Similarity Score: 0.4271)

ID 415: Staying informed about updates in hydrogen technology (Similarity Score: 0.5887)

### 19.4.1: Software Updates and Patching

ID 252: Maintenance of PLCs and control software (Similarity Score: 0.4194)

ID 599: Maintenance of vessels, piping systems, cryogenic systems, valves, and seals (Similarity Score: 0.4859)

ID 415: Staying informed about updates in hydrogen technology (Similarity Score: 0.5313)

#### 19.4.1.1: Implementation of New Control Features

ID 252: Maintenance of PLCs and control software (Similarity Score: 0.4171)

#### 19.4.1.2: Enhancing System Security

ID 415: Staying informed about updates in hydrogen technology (Similarity Score: 0.5335)

ID 252: Maintenance of PLCs and control software (Similarity Score: 0.3914)

### 19.4.2: System Performance Reviews

ID 415: Staying informed about updates in hydrogen technology (Similarity Score: 0.5424)

ID 123: Continuous improvement of hydrogen fueling station operations (Similarity Score: 0.5753)

#### 19.4.2.2: Feedback Loops for Process Refinement

ID 415: Staying informed about updates in hydrogen technology (Similarity Score: 0.5365)

### 19.4.3: Advanced Data Analysis and AI Integration

ID 123: Continuous improvement of hydrogen fueling station operations (Similarity Score: 0.5746)

ID 13: Knowledge of systems associated with hydrogen pipeline transmission (Similarity Score: 0.5768)

ID 415: Staying informed about updates in hydrogen technology (Similarity Score: 0.5380)

ID 66: Knowledge of advanced control systems for process optimization (Similarity Score: 0.4816)

#### 19.4.3.1: Use of AI and Machine Learning in Process Optimization

ID 66: Knowledge of advanced control systems for process optimization (Similarity Score: 0.5119)

## 19.5: System Enhancements

ID 567: Understanding control systems in carbon capture plants (Similarity Score: 0.4717)

ID 31: Knowledge of hydrogen refueling systems (Similarity Score: 0.5890)

ID 149: Knowledge of turbine systems used in hydrogen blending (Similarity Score: 0.5593)

ID 146: Instrumented system analysis for hydrogen processes (Similarity Score: 0.6430)

ID 65: Knowledge of control systems in electrolyzer hydrogen production plants (Similarity Score: 0.6457)

ID 412: Optimization of rectification systems for electrolyzer plants (Similarity Score: 0.4152)

ID 397: Knowledge of control systems for hydrogen blending in power generation (Similarity Score: 0.6451)

ID 396: Understanding of automated process systems in power generation using hydrogen blending (Similarity Score: 0.6344)

ID 451: Understanding of automated process systems used in carbon capture (Similarity Score: 0.4860)

ID 586: Knowledge of control systems for optimizing SMR/ATR processes (Similarity Score: 0.3323)

ID 392: Knowledge of operational adjustments for hydrogen blending (Similarity Score: 0.5738)

ID 310: Knowledge of instrumentation systems in hydrogen transmission (Similarity Score: 0.6084)

ID 590: Optimization of control systems in SMR/ATR hydrogen production processes (Similarity Score: 0.6153)

ID 13: Knowledge of systems associated with hydrogen pipeline transmission (Similarity Score: 0.5837)

ID 123: Continuous improvement of hydrogen fueling station operations (Similarity Score: 0.5826)

ID 415: Staying informed about updates in hydrogen technology (Similarity Score: 0.5384)

ID 285: Knowledge of instrumentation systems for hydrogen fueling (Similarity Score: 0.6038)

ID 549: Application of coatings to protect carbon capture systems (Similarity Score: 0.3678)

ID 589: Understanding of control systems used in SMR/ATR hydrogen production plants (Similarity Score: 0.5756)

# 20: Inspection and Maintenance of Hydrogen Fuel Cell Electric Vehicles (FCEVs)

ID 257: Management of FCEV fleet for optimized safety and utilization (Similarity Score: 0.6199)

ID 258: Maintenance of FCEV fleet to ensure safety and cost savings (Similarity Score: 0.6478)

ID 186: Ability to inspect FCEV vehicles (Similarity Score: 0.6673)

ID 188: Conducting hydrogen refueling for FCEVs (Similarity Score: 0.7645)

ID 185: Knowledge of fuel cell technology for FCEV drivers (Similarity Score: 0.6549)

ID 196: Ability to inspect fuel cell vehicles (Similarity Score: 0.5395)

ID 187: Conducting basic maintenance on FCEVs (Similarity Score: 0.6312)

## 20.1: Safe Depowering of Hydrogen Fuel Cell Systems

ID 257: Management of FCEV fleet for optimized safety and utilization (Similarity Score: 0.6383)

ID 185: Knowledge of fuel cell technology for FCEV drivers (Similarity Score: 0.6553)

ID 188: Conducting hydrogen refueling for FCEVs (Similarity Score: 0.6972)

ID 258: Maintenance of FCEV fleet to ensure safety and cost savings (Similarity Score: 0.6652)

ID 186: Ability to inspect FCEV vehicles (Similarity Score: 0.6661)

ID 196: Ability to inspect fuel cell vehicles (Similarity Score: 0.4948)

### 20.1.1: Depowering Procedures for Fuel Cells

ID 257: Management of FCEV fleet for optimized safety and utilization (Similarity Score: 0.6349)

ID 185: Knowledge of fuel cell technology for FCEV drivers (Similarity Score: 0.6537)

ID 186: Ability to inspect FCEV vehicles (Similarity Score: 0.6611)

ID 258: Maintenance of FCEV fleet to ensure safety and cost savings (Similarity Score: 0.6562)

#### 20.1.1.1: Isolation of Electrical Systems

ID 257: Management of FCEV fleet for optimized safety and utilization (Similarity Score: 0.6340)

ID 185: Knowledge of fuel cell technology for FCEV drivers (Similarity Score: 0.6573)

ID 186: Ability to inspect FCEV vehicles (Similarity Score: 0.6492)

ID 258: Maintenance of FCEV fleet to ensure safety and cost savings (Similarity Score: 0.6512)

#### 20.1.1.2: Depressurization of Hydrogen Lines

ID 185: Knowledge of fuel cell technology for FCEV drivers (Similarity Score: 0.6613)

ID 186: Ability to inspect FCEV vehicles (Similarity Score: 0.6417)

ID 257: Management of FCEV fleet for optimized safety and utilization (Similarity Score: 0.6388)

ID 258: Maintenance of FCEV fleet to ensure safety and cost savings (Similarity Score: 0.6548)

### 20.1.2: Safety Protocols during Depowering

ID 186: Ability to inspect FCEV vehicles (Similarity Score: 0.6632)

ID 188: Conducting hydrogen refueling for FCEVs (Similarity Score: 0.6913)

ID 185: Knowledge of fuel cell technology for FCEV drivers (Similarity Score: 0.6364)

ID 258: Maintenance of FCEV fleet to ensure safety and cost savings (Similarity Score: 0.6693)

ID 257: Management of FCEV fleet for optimized safety and utilization (Similarity Score: 0.6441)

#### 20.1.2.1: Ventilation and Purging of Hydrogen Gas

ID 186: Ability to inspect FCEV vehicles (Similarity Score: 0.6474)

ID 185: Knowledge of fuel cell technology for FCEV drivers (Similarity Score: 0.6611)

ID 258: Maintenance of FCEV fleet to ensure safety and cost savings (Similarity Score: 0.6782)

ID 257: Management of FCEV fleet for optimized safety and utilization (Similarity Score: 0.6583)

ID 188: Conducting hydrogen refueling for FCEVs (Similarity Score: 0.6921)

#### 20.1.2.2: Use of Personal Protective Equipment (PPE)

ID 185: Knowledge of fuel cell technology for FCEV drivers (Similarity Score: 0.6391)

ID 235: Handling compliance issues in electrical systems for road vehicles (Similarity Score: 0.3943)

ID 186: Ability to inspect FCEV vehicles (Similarity Score: 0.6177)

ID 257: Management of FCEV fleet for optimized safety and utilization (Similarity Score: 0.6085)

ID 258: Maintenance of FCEV fleet to ensure safety and cost savings (Similarity Score: 0.6339)

## 20.2: Inspection of Hydrogen Gas Cylinders

ID 187: Conducting basic maintenance on FCEVs (Similarity Score: 0.6141)

ID 185: Knowledge of fuel cell technology for FCEV drivers (Similarity Score: 0.6428)

ID 188: Conducting hydrogen refueling for FCEVs (Similarity Score: 0.7562)

ID 196: Ability to inspect fuel cell vehicles (Similarity Score: 0.5012)

ID 257: Management of FCEV fleet for optimized safety and utilization (Similarity Score: 0.6116)

ID 186: Ability to inspect FCEV vehicles (Similarity Score: 0.6640)

### 20.2.1: Visual Inspection of Cylinders

ID 258: Maintenance of FCEV fleet to ensure safety and cost savings (Similarity Score: 0.6268)

ID 257: Management of FCEV fleet for optimized safety and utilization (Similarity Score: 0.6221)

ID 185: Knowledge of fuel cell technology for FCEV drivers (Similarity Score: 0.6413)

ID 186: Ability to inspect FCEV vehicles (Similarity Score: 0.6674)

ID 188: Conducting hydrogen refueling for FCEVs (Similarity Score: 0.7214)

#### 20.2.1.1: Checking for Physical Damage

ID 185: Knowledge of fuel cell technology for FCEV drivers (Similarity Score: 0.6214)

ID 188: Conducting hydrogen refueling for FCEVs (Similarity Score: 0.6958)

ID 257: Management of FCEV fleet for optimized safety and utilization (Similarity Score: 0.6045)

ID 186: Ability to inspect FCEV vehicles (Similarity Score: 0.6730)

#### 20.2.1.2: Corrosion and Wear Assessment

ID 257: Management of FCEV fleet for optimized safety and utilization (Similarity Score: 0.6170)

ID 185: Knowledge of fuel cell technology for FCEV drivers (Similarity Score: 0.6289)

ID 188: Conducting hydrogen refueling for FCEVs (Similarity Score: 0.6979)

ID 186: Ability to inspect FCEV vehicles (Similarity Score: 0.6585)

### 20.2.2: Pressure Testing of Cylinders

ID 187: Conducting basic maintenance on FCEVs (Similarity Score: 0.6120)

ID 185: Knowledge of fuel cell technology for FCEV drivers (Similarity Score: 0.6489)

ID 188: Conducting hydrogen refueling for FCEVs (Similarity Score: 0.7293)

ID 186: Ability to inspect FCEV vehicles (Similarity Score: 0.6799)

ID 257: Management of FCEV fleet for optimized safety and utilization (Similarity Score: 0.6152)

#### 20.2.2.1: Hydrostatic Testing Procedures

ID 187: Conducting basic maintenance on FCEVs (Similarity Score: 0.6114)

ID 258: Maintenance of FCEV fleet to ensure safety and cost savings (Similarity Score: 0.6254)

ID 188: Conducting hydrogen refueling for FCEVs (Similarity Score: 0.7150)

ID 186: Ability to inspect FCEV vehicles (Similarity Score: 0.6715)

ID 185: Knowledge of fuel cell technology for FCEV drivers (Similarity Score: 0.6483)

ID 257: Management of FCEV fleet for optimized safety and utilization (Similarity Score: 0.6263)

#### 20.2.2.2: Leak Detection Techniques

ID 185: Knowledge of fuel cell technology for FCEV drivers (Similarity Score: 0.6383)

ID 257: Management of FCEV fleet for optimized safety and utilization (Similarity Score: 0.6104)

ID 188: Conducting hydrogen refueling for FCEVs (Similarity Score: 0.7132)

ID 186: Ability to inspect FCEV vehicles (Similarity Score: 0.6708)

### 20.2.3: Compliance with Regulatory Standards

ID 188: Conducting hydrogen refueling for FCEVs (Similarity Score: 0.7281)

ID 186: Ability to inspect FCEV vehicles (Similarity Score: 0.6512)

ID 185: Knowledge of fuel cell technology for FCEV drivers (Similarity Score: 0.6427)

ID 257: Management of FCEV fleet for optimized safety and utilization (Similarity Score: 0.6186)

ID 258: Maintenance of FCEV fleet to ensure safety and cost savings (Similarity Score: 0.6296)

#### 20.2.3.1: Adherence to Cylinder Certification Requirements

ID 258: Maintenance of FCEV fleet to ensure safety and cost savings (Similarity Score: 0.6297)

ID 188: Conducting hydrogen refueling for FCEVs (Similarity Score: 0.7136)

ID 257: Management of FCEV fleet for optimized safety and utilization (Similarity Score: 0.6178)

ID 185: Knowledge of fuel cell technology for FCEV drivers (Similarity Score: 0.6481)

ID 186: Ability to inspect FCEV vehicles (Similarity Score: 0.6309)

#### 20.2.3.2: Inspection Interval Requirements

ID 257: Management of FCEV fleet for optimized safety and utilization (Similarity Score: 0.6190)

ID 188: Conducting hydrogen refueling for FCEVs (Similarity Score: 0.7203)

ID 185: Knowledge of fuel cell technology for FCEV drivers (Similarity Score: 0.6393)

ID 186: Ability to inspect FCEV vehicles (Similarity Score: 0.6425)

ID 258: Maintenance of FCEV fleet to ensure safety and cost savings (Similarity Score: 0.6311)

## 20.3: Maintenance Procedures for FCEV Systems

ID 258: Maintenance of FCEV fleet to ensure safety and cost savings (Similarity Score: 0.6929)

ID 188: Conducting hydrogen refueling for FCEVs (Similarity Score: 0.7263)

ID 186: Ability to inspect FCEV vehicles (Similarity Score: 0.6278)

ID 257: Management of FCEV fleet for optimized safety and utilization (Similarity Score: 0.6492)

ID 185: Knowledge of fuel cell technology for FCEV drivers (Similarity Score: 0.6476)

ID 187: Conducting basic maintenance on FCEVs (Similarity Score: 0.6763)

### 20.3.1: Regular Maintenance of Fuel Cell Components

ID 187: Conducting basic maintenance on FCEVs (Similarity Score: 0.6361)

ID 257: Management of FCEV fleet for optimized safety and utilization (Similarity Score: 0.6433)

ID 258: Maintenance of FCEV fleet to ensure safety and cost savings (Similarity Score: 0.6790)

ID 185: Knowledge of fuel cell technology for FCEV drivers (Similarity Score: 0.6484)

#### 20.3.1.1: Membrane Electrode Assembly (MEA) Inspection

ID 258: Maintenance of FCEV fleet to ensure safety and cost savings (Similarity Score: 0.6452)

ID 257: Management of FCEV fleet for optimized safety and utilization (Similarity Score: 0.6289)

ID 187: Conducting basic maintenance on FCEVs (Similarity Score: 0.6107)

ID 185: Knowledge of fuel cell technology for FCEV drivers (Similarity Score: 0.6188)

#### 20.3.1.2: Catalyst Layer Integrity Check

ID 258: Maintenance of FCEV fleet to ensure safety and cost savings (Similarity Score: 0.6703)

ID 187: Conducting basic maintenance on FCEVs (Similarity Score: 0.6139)

ID 185: Knowledge of fuel cell technology for FCEV drivers (Similarity Score: 0.6531)

ID 257: Management of FCEV fleet for optimized safety and utilization (Similarity Score: 0.6345)

### 20.3.2: Maintenance of Hydrogen Storage Systems

ID 187: Conducting basic maintenance on FCEVs (Similarity Score: 0.6319)

ID 257: Management of FCEV fleet for optimized safety and utilization (Similarity Score: 0.6398)

ID 185: Knowledge of fuel cell technology for FCEV drivers (Similarity Score: 0.6368)

ID 258: Maintenance of FCEV fleet to ensure safety and cost savings (Similarity Score: 0.6611)

#### 20.3.2.1: Inspection of Storage Tanks and Valves

ID 258: Maintenance of FCEV fleet to ensure safety and cost savings (Similarity Score: 0.6410)

ID 185: Knowledge of fuel cell technology for FCEV drivers (Similarity Score: 0.6435)

ID 257: Management of FCEV fleet for optimized safety and utilization (Similarity Score: 0.6426)

#### 20.3.2.2: Replacement of Aging Components

ID 258: Maintenance of FCEV fleet to ensure safety and cost savings (Similarity Score: 0.6642)

ID 187: Conducting basic maintenance on FCEVs (Similarity Score: 0.6187)

ID 185: Knowledge of fuel cell technology for FCEV drivers (Similarity Score: 0.6423)

ID 257: Management of FCEV fleet for optimized safety and utilization (Similarity Score: 0.6536)

## 20.4: System Modifications and Upgrades

ID 188: Conducting hydrogen refueling for FCEVs (Similarity Score: 0.7296)

ID 187: Conducting basic maintenance on FCEVs (Similarity Score: 0.6100)

ID 185: Knowledge of fuel cell technology for FCEV drivers (Similarity Score: 0.6470)

ID 258: Maintenance of FCEV fleet to ensure safety and cost savings (Similarity Score: 0.6300)

ID 257: Management of FCEV fleet for optimized safety and utilization (Similarity Score: 0.6117)

### 20.4.1: Identification of Required Modifications

ID 185: Knowledge of fuel cell technology for FCEV drivers (Similarity Score: 0.6621)

ID 188: Conducting hydrogen refueling for FCEVs (Similarity Score: 0.7152)

ID 257: Management of FCEV fleet for optimized safety and utilization (Similarity Score: 0.6102)

#### 20.4.1.1: Adapting to New Fuel Cell Technologies

ID 257: Management of FCEV fleet for optimized safety and utilization (Similarity Score: 0.6220)

ID 185: Knowledge of fuel cell technology for FCEV drivers (Similarity Score: 0.6782)

ID 258: Maintenance of FCEV fleet to ensure safety and cost savings (Similarity Score: 0.6253)

ID 188: Conducting hydrogen refueling for FCEVs (Similarity Score: 0.6981)

#### 20.4.1.2: Integration with Vehicle Control Systems

ID 257: Management of FCEV fleet for optimized safety and utilization (Similarity Score: 0.6145)

ID 188: Conducting hydrogen refueling for FCEVs (Similarity Score: 0.7040)

ID 185: Knowledge of fuel cell technology for FCEV drivers (Similarity Score: 0.6645)

### 20.4.2: Implementation of System Upgrades

ID 188: Conducting hydrogen refueling for FCEVs (Similarity Score: 0.7152)

ID 258: Maintenance of FCEV fleet to ensure safety and cost savings (Similarity Score: 0.6297)

ID 185: Knowledge of fuel cell technology for FCEV drivers (Similarity Score: 0.6533)

ID 257: Management of FCEV fleet for optimized safety and utilization (Similarity Score: 0.6293)

#### 20.4.2.1: Retrofitting with Enhanced Components

ID 185: Knowledge of fuel cell technology for FCEV drivers (Similarity Score: 0.6633)

ID 188: Conducting hydrogen refueling for FCEVs (Similarity Score: 0.7042)

ID 258: Maintenance of FCEV fleet to ensure safety and cost savings (Similarity Score: 0.6246)

ID 257: Management of FCEV fleet for optimized safety and utilization (Similarity Score: 0.6316)

#### 20.4.2.2: Software Updates and Calibration Adjustments

ID 257: Management of FCEV fleet for optimized safety and utilization (Similarity Score: 0.6343)

ID 188: Conducting hydrogen refueling for FCEVs (Similarity Score: 0.6962)

ID 258: Maintenance of FCEV fleet to ensure safety and cost savings (Similarity Score: 0.6267)

ID 185: Knowledge of fuel cell technology for FCEV drivers (Similarity Score: 0.6619)

# 21: High-Voltage Power Electronics in Hydrogen Production

ID 234: Experience with standards for electrical systems in road vehicles (Similarity Score: 0.3711)

ID 12: Knowledge of electrical equipment for hydrogen pipelines (Similarity Score: 0.6063)

ID 355: Knowledge of high-power electrical equipment in renewable electricity powered electrolyzers (Similarity Score: 0.4874)

ID 354: Knowledge of advanced control systems for combined-cycle power generation using hydrogen (Similarity Score: 0.6000)

ID 44: Understanding of hydrogen blending in power generation (Similarity Score: 0.6413)

ID 646: Selection of turbine systems suitable for hydrogen applications (Similarity Score: 0.5796)

ID 88: Understanding the principles of hydrogen-blending in power generation (Similarity Score: 0.5936)

ID 227: Selection of key electrical equipment for an electrolyzer hydrogen production plant (Similarity Score: 0.6324)

ID 203: Maintenance of electronic systems in hydrogen blending power generation (Similarity Score: 0.6414)

ID 178: Appropriate selection of electrical equipment for pipeline transmission of gaseous hydrogen (Similarity Score: 0.5984)

ID 301: Knowledge of electrical systems used for leak detection in hydrogen blending (Similarity Score: 0.5828)

ID 293: Knowledge of key electrical equipment in electrolyzer hydrogen production (Similarity Score: 0.6374)

ID 202: Maintenance of electrical equipment for hydrogen blending power generation (Similarity Score: 0.6475)

ID 374: Selection of key instrumentation equipment for power generation using hydrogen blending (Similarity Score: 0.6606)

ID 201: Selection of electronic systems for hydrogen blending power generation (Similarity Score: 0.6891)

ID 200: Selection of key electrical equipment for power generation using hydrogen blending (Similarity Score: 0.6958)

ID 284: Knowledge of electrical equipment used in hydrogen fueling systems (Similarity Score: 0.6599)

ID 228: Selection of electronic systems for electrolyzer hydrogen production (Similarity Score: 0.6246)

ID 387: Understanding of high-power electrical equipment in electrolyzer systems (Similarity Score: 0.5127)

ID 240: Understanding of high-power electrical equipment for hydrogen blending power generation (Similarity Score: 0.7300)

ID 484: Selection of power generation equipment for hydrogen blending (Similarity Score: 0.6715)

ID 420: Selection of electrical equipment suitable for hydrogen environments (Similarity Score: 0.6825)

ID 503: Selection of electrical and electronic equipment for SMR and/or ATR hydrogen production (Similarity Score: 0.5867)

ID 409: Selection of turbines that are compatible with hydrogen pressure (Similarity Score: 0.4661)

ID 397: Knowledge of control systems for hydrogen blending in power generation (Similarity Score: 0.6301)

ID 434: Selection of key electrical equipment for carbon capture technology (Similarity Score: 0.3945)

ID 485: Design of power generation systems for hydrogen blending (Similarity Score: 0.6411)

## 21.1: Overview of High-Voltage Systems

ID 397: Knowledge of control systems for hydrogen blending in power generation (Similarity Score: 0.6151)

ID 12: Knowledge of electrical equipment for hydrogen pipelines (Similarity Score: 0.5792)

ID 374: Selection of key instrumentation equipment for power generation using hydrogen blending (Similarity Score: 0.6019)

ID 284: Knowledge of electrical equipment used in hydrogen fueling systems (Similarity Score: 0.6573)

ID 200: Selection of key electrical equipment for power generation using hydrogen blending (Similarity Score: 0.6405)

ID 228: Selection of electronic systems for electrolyzer hydrogen production (Similarity Score: 0.5953)

ID 293: Knowledge of key electrical equipment in electrolyzer hydrogen production (Similarity Score: 0.6310)

ID 387: Understanding of high-power electrical equipment in electrolyzer systems (Similarity Score: 0.5420)

ID 227: Selection of key electrical equipment for an electrolyzer hydrogen production plant (Similarity Score: 0.6050)

ID 485: Design of power generation systems for hydrogen blending (Similarity Score: 0.6117)

ID 201: Selection of electronic systems for hydrogen blending power generation (Similarity Score: 0.6272)

ID 240: Understanding of high-power electrical equipment for hydrogen blending power generation (Similarity Score: 0.6920)

### 21.1.2: Key Components of High-Voltage Systems

ID 284: Knowledge of electrical equipment used in hydrogen fueling systems (Similarity Score: 0.6051)

## 21.2: Transformers in Hydrogen Production

ID 434: Selection of key electrical equipment for carbon capture technology (Similarity Score: 0.3883)

ID 227: Selection of key electrical equipment for an electrolyzer hydrogen production plant (Similarity Score: 0.6196)

ID 12: Knowledge of electrical equipment for hydrogen pipelines (Similarity Score: 0.6289)

ID 389: Maintenance of high-power electrical equipment in electrolyzer systems (Similarity Score: 0.4592)

ID 355: Knowledge of high-power electrical equipment in renewable electricity powered electrolyzers (Similarity Score: 0.5024)

ID 200: Selection of key electrical equipment for power generation using hydrogen blending (Similarity Score: 0.6489)

ID 178: Appropriate selection of electrical equipment for pipeline transmission of gaseous hydrogen (Similarity Score: 0.5893)

ID 293: Knowledge of key electrical equipment in electrolyzer hydrogen production (Similarity Score: 0.6162)

ID 234: Experience with standards for electrical systems in road vehicles (Similarity Score: 0.3954)

ID 241: Knowledge of transformers used in hydrogen blending (Similarity Score: 0.6690)

ID 240: Understanding of high-power electrical equipment for hydrogen blending power generation (Similarity Score: 0.6729)

ID 387: Understanding of high-power electrical equipment in electrolyzer systems (Similarity Score: 0.5319)

ID 420: Selection of electrical equipment suitable for hydrogen environments (Similarity Score: 0.6334)

ID 284: Knowledge of electrical equipment used in hydrogen fueling systems (Similarity Score: 0.6239)

### 21.2.1: Function and Operation of Transformers

ID 12: Knowledge of electrical equipment for hydrogen pipelines (Similarity Score: 0.5699)

ID 241: Knowledge of transformers used in hydrogen blending (Similarity Score: 0.6188)

ID 284: Knowledge of electrical equipment used in hydrogen fueling systems (Similarity Score: 0.5987)

### 21.2.3: Maintenance and Monitoring of Transformers

ID 12: Knowledge of electrical equipment for hydrogen pipelines (Similarity Score: 0.5753)

## 21.3: Substations and Power Distribution

ID 227: Selection of key electrical equipment for an electrolyzer hydrogen production plant (Similarity Score: 0.6385)

ID 503: Selection of electrical and electronic equipment for SMR and/or ATR hydrogen production (Similarity Score: 0.5999)

ID 200: Selection of key electrical equipment for power generation using hydrogen blending (Similarity Score: 0.6925)

ID 178: Appropriate selection of electrical equipment for pipeline transmission of gaseous hydrogen (Similarity Score: 0.6366)

ID 434: Selection of key electrical equipment for carbon capture technology (Similarity Score: 0.4012)

ID 234: Experience with standards for electrical systems in road vehicles (Similarity Score: 0.3680)

ID 284: Knowledge of electrical equipment used in hydrogen fueling systems (Similarity Score: 0.6616)

ID 201: Selection of electronic systems for hydrogen blending power generation (Similarity Score: 0.6499)

ID 228: Selection of electronic systems for electrolyzer hydrogen production (Similarity Score: 0.5822)

ID 387: Understanding of high-power electrical equipment in electrolyzer systems (Similarity Score: 0.5131)

ID 202: Maintenance of electrical equipment for hydrogen blending power generation (Similarity Score: 0.6477)

ID 485: Design of power generation systems for hydrogen blending (Similarity Score: 0.6236)

ID 240: Understanding of high-power electrical equipment for hydrogen blending power generation (Similarity Score: 0.7176)

ID 374: Selection of key instrumentation equipment for power generation using hydrogen blending (Similarity Score: 0.6571)

ID 12: Knowledge of electrical equipment for hydrogen pipelines (Similarity Score: 0.6281)

ID 242: Knowledge of substations in hydrogen blending power generation (Similarity Score: 0.7165)

ID 293: Knowledge of key electrical equipment in electrolyzer hydrogen production (Similarity Score: 0.6275)

ID 397: Knowledge of control systems for hydrogen blending in power generation (Similarity Score: 0.6125)

ID 646: Selection of turbine systems suitable for hydrogen applications (Similarity Score: 0.5724)

ID 420: Selection of electrical equipment suitable for hydrogen environments (Similarity Score: 0.6858)

ID 484: Selection of power generation equipment for hydrogen blending (Similarity Score: 0.6634)

### 21.3.1: Role of Substations in Power Distribution

ID 242: Knowledge of substations in hydrogen blending power generation (Similarity Score: 0.6785)

### 21.3.2: Design and Configuration of Substations

ID 284: Knowledge of electrical equipment used in hydrogen fueling systems (Similarity Score: 0.6023)

ID 242: Knowledge of substations in hydrogen blending power generation (Similarity Score: 0.6843)

### 21.3.3: Safety Protocols in Substation Operations

ID 234: Experience with standards for electrical systems in road vehicles (Similarity Score: 0.3970)

ID 233: Experience with codes related to electrical systems in road vehicles (Similarity Score: 0.3199)

ID 68: Understanding of safety protocols in electrolyzer control systems (Similarity Score: 0.4895)

ID 235: Handling compliance issues in electrical systems for road vehicles (Similarity Score: 0.4203)

ID 242: Knowledge of substations in hydrogen blending power generation (Similarity Score: 0.6642)

## 21.4: Capacitors and Energy Storage

ID 374: Selection of key instrumentation equipment for power generation using hydrogen blending (Similarity Score: 0.6120)

ID 240: Understanding of high-power electrical equipment for hydrogen blending power generation (Similarity Score: 0.6904)

ID 284: Knowledge of electrical equipment used in hydrogen fueling systems (Similarity Score: 0.6182)

ID 503: Selection of electrical and electronic equipment for SMR and/or ATR hydrogen production (Similarity Score: 0.5583)

ID 434: Selection of key electrical equipment for carbon capture technology (Similarity Score: 0.4275)

ID 387: Understanding of high-power electrical equipment in electrolyzer systems (Similarity Score: 0.4979)

ID 243: Knowledge of capacitors used in hydrogen blending (Similarity Score: 0.6314)

ID 201: Selection of electronic systems for hydrogen blending power generation (Similarity Score: 0.6236)

ID 420: Selection of electrical equipment suitable for hydrogen environments (Similarity Score: 0.6385)

ID 200: Selection of key electrical equipment for power generation using hydrogen blending (Similarity Score: 0.6310)

ID 12: Knowledge of electrical equipment for hydrogen pipelines (Similarity Score: 0.5772)

ID 355: Knowledge of high-power electrical equipment in renewable electricity powered electrolyzers (Similarity Score: 0.5145)

ID 484: Selection of power generation equipment for hydrogen blending (Similarity Score: 0.6124)

ID 93: Advanced understanding of personal protective equipment (PPE) for hydrogen environments (Similarity Score: 0.4676)

### 21.4.2: Energy Storage and Discharge Mechanisms

ID 355: Knowledge of high-power electrical equipment in renewable electricity powered electrolyzers (Similarity Score: 0.4970)

ID 387: Understanding of high-power electrical equipment in electrolyzer systems (Similarity Score: 0.4947)

### 21.4.3: Maintenance and Safety Considerations

ID 243: Knowledge of capacitors used in hydrogen blending (Similarity Score: 0.6231)

ID 434: Selection of key electrical equipment for carbon capture technology (Similarity Score: 0.3851)

ID 389: Maintenance of high-power electrical equipment in electrolyzer systems (Similarity Score: 0.4684)

## 21.5: Integration of High-Voltage Systems with Hydrogen Production

ID 44: Understanding of hydrogen blending in power generation (Similarity Score: 0.6375)

ID 397: Knowledge of control systems for hydrogen blending in power generation (Similarity Score: 0.6544)

ID 228: Selection of electronic systems for electrolyzer hydrogen production (Similarity Score: 0.6191)

ID 12: Knowledge of electrical equipment for hydrogen pipelines (Similarity Score: 0.5975)

ID 390: Understanding of the combined-cycle power generation process using hydrogen blending (Similarity Score: 0.5525)

ID 388: Knowledge of integrating high-power electrical equipment with electrolyzers (Similarity Score: 0.4822)

ID 203: Maintenance of electronic systems in hydrogen blending power generation (Similarity Score: 0.6347)

ID 227: Selection of key electrical equipment for an electrolyzer hydrogen production plant (Similarity Score: 0.6323)

ID 202: Maintenance of electrical equipment for hydrogen blending power generation (Similarity Score: 0.6407)

ID 284: Knowledge of electrical equipment used in hydrogen fueling systems (Similarity Score: 0.6521)

ID 485: Design of power generation systems for hydrogen blending (Similarity Score: 0.6641)

ID 484: Selection of power generation equipment for hydrogen blending (Similarity Score: 0.6401)

ID 358: Selection and design of turbines for hydrogen blending (Similarity Score: 0.5299)

ID 420: Selection of electrical equipment suitable for hydrogen environments (Similarity Score: 0.6319)

ID 240: Understanding of high-power electrical equipment for hydrogen blending power generation (Similarity Score: 0.7308)

ID 353: Knowledge of basic control systems for combined-cycle power generation using hydrogen blending (Similarity Score: 0.5908)

ID 200: Selection of key electrical equipment for power generation using hydrogen blending (Similarity Score: 0.6662)

ID 355: Knowledge of high-power electrical equipment in renewable electricity powered electrolyzers (Similarity Score: 0.4933)

ID 88: Understanding the principles of hydrogen-blending in power generation (Similarity Score: 0.6156)

ID 354: Knowledge of advanced control systems for combined-cycle power generation using hydrogen (Similarity Score: 0.6128)

ID 387: Understanding of high-power electrical equipment in electrolyzer systems (Similarity Score: 0.5118)

ID 201: Selection of electronic systems for hydrogen blending power generation (Similarity Score: 0.6698)

ID 293: Knowledge of key electrical equipment in electrolyzer hydrogen production (Similarity Score: 0.6432)

ID 374: Selection of key instrumentation equipment for power generation using hydrogen blending (Similarity Score: 0.6355)

### 21.5.1: Power Supply Requirements for Electrolyzers

ID 355: Knowledge of high-power electrical equipment in renewable electricity powered electrolyzers (Similarity Score: 0.5317)

ID 227: Selection of key electrical equipment for an electrolyzer hydrogen production plant (Similarity Score: 0.6189)

ID 388: Knowledge of integrating high-power electrical equipment with electrolyzers (Similarity Score: 0.5284)

ID 293: Knowledge of key electrical equipment in electrolyzer hydrogen production (Similarity Score: 0.6295)

ID 389: Maintenance of high-power electrical equipment in electrolyzer systems (Similarity Score: 0.4705)

ID 228: Selection of electronic systems for electrolyzer hydrogen production (Similarity Score: 0.5821)

ID 387: Understanding of high-power electrical equipment in electrolyzer systems (Similarity Score: 0.5113)

ID 284: Knowledge of electrical equipment used in hydrogen fueling systems (Similarity Score: 0.6021)

### 21.5.2: Impact of High-Voltage Inputs on Production Efficiency

ID 485: Design of power generation systems for hydrogen blending (Similarity Score: 0.6019)

ID 397: Knowledge of control systems for hydrogen blending in power generation (Similarity Score: 0.6011)

ID 88: Understanding the principles of hydrogen-blending in power generation (Similarity Score: 0.5824)

# 22: Logistical Management of Hydrogen Supply Chain

ID 121: Management of hydrogen fueling stations (Similarity Score: 0.6857)

ID 378: Understanding distribution and logistics in the hydrogen value chain (Similarity Score: 0.6359)

## 22.2: Ensuring Consistent and Even Supply Flow

ID 335: Maintenance of key hydrogen systems to ensure reliability under varying conditions (Similarity Score: 0.6688)

ID 351: Maintenance of piping systems and fittings under hydrogen conditions (Similarity Score: 0.6342)

ID 607: Maintenance of piping systems and fittings under hydrogen conditions (Similarity Score: 0.6342)

## 22.4: Reducing Carrying Costs and Idle Time

ID 259: Continuous improvement of fleet operations for cost savings and efficiency (Similarity Score: 0.3910)

ID 348: Achieving cost savings through eco-driving practices (Similarity Score: 0.3255)

ID 275: Achieving cost savings through eco-driving (Similarity Score: 0.3149)

ID 378: Understanding distribution and logistics in the hydrogen value chain (Similarity Score: 0.6316)

ID 326: Achieving cost savings through eco-driving practices (Similarity Score: 0.3255)

### 22.4.1: Optimization of Inventory Levels

ID 378: Understanding distribution and logistics in the hydrogen value chain (Similarity Score: 0.6306)

ID 279: Knowledge of end-use applications in the hydrogen value chain (Similarity Score: 0.5446)

ID 275: Achieving cost savings through eco-driving (Similarity Score: 0.3077)

ID 348: Achieving cost savings through eco-driving practices (Similarity Score: 0.3200)

ID 326: Achieving cost savings through eco-driving practices (Similarity Score: 0.3200)

ID 259: Continuous improvement of fleet operations for cost savings and efficiency (Similarity Score: 0.4113)

#### 22.4.1.1: Minimizing Excess Stock

ID 348: Achieving cost savings through eco-driving practices (Similarity Score: 0.3015)

ID 279: Knowledge of end-use applications in the hydrogen value chain (Similarity Score: 0.5416)

ID 259: Continuous improvement of fleet operations for cost savings and efficiency (Similarity Score: 0.3828)

ID 326: Achieving cost savings through eco-driving practices (Similarity Score: 0.3015)

#### 22.4.1.2: Efficient Inventory Turnover

ID 259: Continuous improvement of fleet operations for cost savings and efficiency (Similarity Score: 0.4204)

ID 348: Achieving cost savings through eco-driving practices (Similarity Score: 0.3120)

ID 326: Achieving cost savings through eco-driving practices (Similarity Score: 0.3120)

### 22.4.3: Cost Management and Efficiency Improvement

ID 326: Achieving cost savings through eco-driving practices (Similarity Score: 0.3067)

ID 259: Continuous improvement of fleet operations for cost savings and efficiency (Similarity Score: 0.4157)

ID 348: Achieving cost savings through eco-driving practices (Similarity Score: 0.3067)

#### 22.4.3.1: Cost-Benefit Analysis of Logistical Options

ID 259: Continuous improvement of fleet operations for cost savings and efficiency (Similarity Score: 0.3793)

#### 22.4.3.2: Implementation of Cost-Effective Solutions

ID 348: Achieving cost savings through eco-driving practices (Similarity Score: 0.3073)

ID 259: Continuous improvement of fleet operations for cost savings and efficiency (Similarity Score: 0.3994)

ID 326: Achieving cost savings through eco-driving practices (Similarity Score: 0.3073)

# 23: Repurposing Hydrogen and Production By-Products

ID 6: Experience with hydrogen dispensing (Similarity Score: 0.4796)

## 23.3: Repurposing Carbon By-Products

ID 482: Keep up-to-date with changes to carbon capture and storage technology (Similarity Score: 0.3496)

ID 135: Understanding the carbon impact of hydrogen technologies (Similarity Score: 0.5773)

### 23.3.1: Carbon Dioxide (CO2) Utilization

ID 453: Keep up-to-date with advancements in carbon dioxide (CO2) storage technology (Similarity Score: 0.4184)

ID 501: Understanding the components of carbon dioxide (CO2) value-chains (Similarity Score: 0.3599)

ID 613: PVT characterization specific to sequestered carbon dioxide (CO2) composition (Similarity Score: 0.3891)

ID 502: Application of carbon dioxide (CO2) value-chain knowledge in the industry (Similarity Score: 0.3953)

ID 598: Selection and design of valves and seals for carbon dioxide (CO2) environments (Similarity Score: 0.4117)

ID 579: Understanding of well completion solutions for carbon dioxide (CO2) based on subsurface conditions (Similarity Score: 0.3586)

ID 565: Understanding of the carbon dioxide (CO2) value chain, including production, transportation, and storage (Similarity Score: 0.3748)

#### 23.3.1.2: CO2 in Carbon Capture, Utilization, and Storage (CCUS)

ID 551: Understanding reservoir engineering fundamentals for carbon dioxide (CO2) injection (Similarity Score: 0.4149)

ID 529: Understanding of reservoir data for carbon dioxide (CO2) storage (Similarity Score: 0.4361)

ID 501: Understanding the components of carbon dioxide (CO2) value-chains (Similarity Score: 0.3712)

ID 598: Selection and design of valves and seals for carbon dioxide (CO2) environments (Similarity Score: 0.4050)

ID 513: Modeling carbon dioxide (CO2)-water-mineral interactions in reservoirs (Similarity Score: 0.3791)

ID 453: Keep up-to-date with advancements in carbon dioxide (CO2) storage technology (Similarity Score: 0.4047)

ID 502: Application of carbon dioxide (CO2) value-chain knowledge in the industry (Similarity Score: 0.3586)

ID 512: Understanding reservoir geochemistry related to carbon dioxide (CO2)-water-mineral interactions (Similarity Score: 0.3629)

ID 565: Understanding of the carbon dioxide (CO2) value chain, including production, transportation, and storage (Similarity Score: 0.3963)

ID 528: Understanding of reservoir data for carbon dioxide (CO2) injection (Similarity Score: 0.3799)

ID 482: Keep up-to-date with changes to carbon capture and storage technology (Similarity Score: 0.3596)

### 23.3.3: Circular Economy Strategies

ID 482: Keep up-to-date with changes to carbon capture and storage technology (Similarity Score: 0.3249)

ID 324: Techniques to reduce environmental impact through eco-driving (Similarity Score: 0.3669)

ID 346: Techniques to reduce environmental impact through eco-driving (Similarity Score: 0.3669)

## 23.4: Integration with Other Industries

ID 2: Experience with on-site hydrogen generation (Similarity Score: 0.5358)

ID 88: Understanding the principles of hydrogen-blending in power generation (Similarity Score: 0.5947)

ID 45: Understanding the operational implications of hydrogen blending in combined-cycle power generation (Similarity Score: 0.6352)

ID 390: Understanding of the combined-cycle power generation process using hydrogen blending (Similarity Score: 0.5798)

ID 358: Selection and design of turbines for hydrogen blending (Similarity Score: 0.5441)

### 23.4.1: Identifying Cross-Industry Use Cases

ID 45: Understanding the operational implications of hydrogen blending in combined-cycle power generation (Similarity Score: 0.5914)

#### 23.4.1.2: Collaboration with Energy Providers

ID 45: Understanding the operational implications of hydrogen blending in combined-cycle power generation (Similarity Score: 0.5976)

### 23.4.3: Economic and Environmental Benefits

ID 390: Understanding of the combined-cycle power generation process using hydrogen blending (Similarity Score: 0.5526)

ID 88: Understanding the principles of hydrogen-blending in power generation (Similarity Score: 0.5930)

ID 45: Understanding the operational implications of hydrogen blending in combined-cycle power generation (Similarity Score: 0.6515)

#### 23.4.3.1: Cost Reduction through By-Product Sales

ID 326: Achieving cost savings through eco-driving practices (Similarity Score: 0.3134)

ID 348: Achieving cost savings through eco-driving practices (Similarity Score: 0.3134)

ID 275: Achieving cost savings through eco-driving (Similarity Score: 0.3181)

ID 134: Understanding the cost aspects of hydrogen technologies (Similarity Score: 0.5711)

## 23.5: Advanced Utilization Techniques

ID 344: Techniques for repairing hydrogen leaks (Similarity Score: 0.5098)

ID 274: Techniques to optimize fuel consumption (Similarity Score: 0.4376)

ID 383: Understanding of dispensing technology for hydrogen (Similarity Score: 0.5997)

ID 261: Experience with hydrogen production and handling processes (Similarity Score: 0.6487)

ID 245: Techniques for welding in hydrogen environments (Similarity Score: 0.6209)

ID 464: Understanding separation and purification techniques in carbon capture (Similarity Score: 0.4217)

ID 2: Experience with on-site hydrogen generation (Similarity Score: 0.5585)

ID 312: Techniques for implementing cathodic protection in hydrogen systems (Similarity Score: 0.5407)

ID 6: Experience with hydrogen dispensing (Similarity Score: 0.4972)

ID 390: Understanding of the combined-cycle power generation process using hydrogen blending (Similarity Score: 0.5546)

ID 506: Application of well completion techniques to ensure safe hydrogen extraction (Similarity Score: 0.5714)

ID 139: Knowledge of hydrogen production technology (Similarity Score: 0.6474)

# 24: Integration of Hydrogen System Components

ID 622: Maintenance of systems for hydrogen blending in combined-cycle power generation (Similarity Score: 0.6936)

ID 45: Understanding the operational implications of hydrogen blending in combined-cycle power generation (Similarity Score: 0.6228)

ID 285: Knowledge of instrumentation systems for hydrogen fueling (Similarity Score: 0.6120)

ID 392: Knowledge of operational adjustments for hydrogen blending (Similarity Score: 0.6011)

ID 398: Integration of automated systems in hydrogen blending power generation (Similarity Score: 0.8059)

ID 359: Selection and design of combustion systems for hydrogen blending (Similarity Score: 0.6091)

ID 167: Understanding of codes related to hydrogen systems (Similarity Score: 0.6401)

ID 485: Design of power generation systems for hydrogen blending (Similarity Score: 0.6582)

ID 141: Knowledge of hydrogen dispensing systems (Similarity Score: 0.5758)

ID 88: Understanding the principles of hydrogen-blending in power generation (Similarity Score: 0.6068)

ID 361: Selection and design of piping systems for hydrogen blending (Similarity Score: 0.6225)

ID 621: Maintenance of power generation equipment used in combined-cycle systems with hydrogen blending (Similarity Score: 0.6206)

ID 150: Knowledge of combustion systems in hydrogen blending (Similarity Score: 0.6076)

ID 402: Advanced knowledge of regulatory systems governing hydrogen (Similarity Score: 0.6267)

ID 279: Knowledge of end-use applications in the hydrogen value chain (Similarity Score: 0.5410)

ID 140: Knowledge of distribution systems for hydrogen (Similarity Score: 0.6046)

ID 354: Knowledge of advanced control systems for combined-cycle power generation using hydrogen (Similarity Score: 0.6650)

ID 151: Understanding of other relevant equipment for hydrogen blending (Similarity Score: 0.6120)

ID 390: Understanding of the combined-cycle power generation process using hydrogen blending (Similarity Score: 0.5825)

ID 126: Understanding the impact of hydrogen blending on heating systems (Similarity Score: 0.6037)

ID 201: Selection of electronic systems for hydrogen blending power generation (Similarity Score: 0.6324)

ID 353: Knowledge of basic control systems for combined-cycle power generation using hydrogen blending (Similarity Score: 0.6461)

ID 142: Understanding how to match hydrogen technology with the needs of different fleets (Similarity Score: 0.5024)

ID 149: Knowledge of turbine systems used in hydrogen blending (Similarity Score: 0.6167)

ID 89: Understanding operational adjustments needed for hydrogen-blending (Similarity Score: 0.5930)

ID 397: Knowledge of control systems for hydrogen blending in power generation (Similarity Score: 0.6579)

ID 505: Knowledge of well completion solutions tailored for hydrogen environments (Similarity Score: 0.5736)

ID 536: Knowledge of components that can endure hydrogen pressure and temperatures (Similarity Score: 0.5022)

ID 396: Understanding of automated process systems in power generation using hydrogen blending (Similarity Score: 0.6648)

ID 486: Maintenance of power generation systems for hydrogen blending (Similarity Score: 0.6503)

ID 31: Knowledge of hydrogen refueling systems (Similarity Score: 0.6125)

ID 414: Integration of optimized rectification systems in plant operations (Similarity Score: 0.4630)

ID 203: Maintenance of electronic systems in hydrogen blending power generation (Similarity Score: 0.6286)

ID 207: Knowledge of end-use applications within the hydrogen value chain (Similarity Score: 0.5473)

ID 221: Understanding of installation procedures unique to hydrogen (Similarity Score: 0.6127)

ID 646: Selection of turbine systems suitable for hydrogen applications (Similarity Score: 0.5751)

ID 146: Instrumented system analysis for hydrogen processes (Similarity Score: 0.6452)

ID 358: Selection and design of turbines for hydrogen blending (Similarity Score: 0.5671)

ID 360: Selection and design of valves and fittings for hydrogen blending (Similarity Score: 0.5742)

ID 286: Integration of electrical and instrumentation systems in fueling operations (Similarity Score: 0.6130)

ID 13: Knowledge of systems associated with hydrogen pipeline transmission (Similarity Score: 0.6259)

ID 364: Selection and design of piping systems and fittings for hydrogen (Similarity Score: 0.6070)

ID 314: Selection and design of piping systems and fittings for hydrogen (Similarity Score: 0.6070)

ID 125: Understanding the principles of hydrogen blending for heating (Similarity Score: 0.5629)

ID 32: Operation of hydrogen dispensing systems (Similarity Score: 0.6147)

## 24.1: Integration of Fuel Cells into Electric Vehicles

ID 31: Knowledge of hydrogen refueling systems (Similarity Score: 0.5937)

ID 397: Knowledge of control systems for hydrogen blending in power generation (Similarity Score: 0.6400)

ID 150: Knowledge of combustion systems in hydrogen blending (Similarity Score: 0.5914)

ID 436: Integration of electrical systems within carbon capture technology (Similarity Score: 0.6051)

ID 233: Experience with codes related to electrical systems in road vehicles (Similarity Score: 0.3428)

ID 272: Understanding and application of eco-driving techniques (Similarity Score: 0.4033)

ID 398: Integration of automated systems in hydrogen blending power generation (Similarity Score: 0.7554)

ID 485: Design of power generation systems for hydrogen blending (Similarity Score: 0.6353)

ID 359: Selection and design of combustion systems for hydrogen blending (Similarity Score: 0.5930)

ID 396: Understanding of automated process systems in power generation using hydrogen blending (Similarity Score: 0.6649)

ID 44: Understanding of hydrogen blending in power generation (Similarity Score: 0.6198)

ID 353: Knowledge of basic control systems for combined-cycle power generation using hydrogen blending (Similarity Score: 0.6016)

ID 142: Understanding how to match hydrogen technology with the needs of different fleets (Similarity Score: 0.4980)

ID 325: Optimizing fuel consumption in vehicle operations (Similarity Score: 0.4226)

ID 286: Integration of electrical and instrumentation systems in fueling operations (Similarity Score: 0.6582)

ID 304: Selection and design of combustion systems for hydrogen environments (Similarity Score: 0.5999)

ID 345: Understanding and application of eco-driving techniques (Similarity Score: 0.4033)

ID 323: Understanding and application of eco-driving techniques (Similarity Score: 0.4033)

ID 149: Knowledge of turbine systems used in hydrogen blending (Similarity Score: 0.5666)

ID 414: Integration of optimized rectification systems in plant operations (Similarity Score: 0.4628)

ID 390: Understanding of the combined-cycle power generation process using hydrogen blending (Similarity Score: 0.5648)

ID 347: Optimizing fuel consumption in vehicle operations (Similarity Score: 0.4226)

ID 255: Value proposition of hydrogen fuel cells for emissions targets (Similarity Score: 0.5532)

ID 234: Experience with standards for electrical systems in road vehicles (Similarity Score: 0.3583)

ID 88: Understanding the principles of hydrogen-blending in power generation (Similarity Score: 0.6122)

ID 354: Knowledge of advanced control systems for combined-cycle power generation using hydrogen (Similarity Score: 0.6428)

ID 273: Understanding the impact of eco-driving on fleet sustainability (Similarity Score: 0.4609)

ID 275: Achieving cost savings through eco-driving (Similarity Score: 0.3070)

ID 126: Understanding the impact of hydrogen blending on heating systems (Similarity Score: 0.5602)

### 24.1.1: Component Selection and Sourcing

ID 398: Integration of automated systems in hydrogen blending power generation (Similarity Score: 0.7396)

ID 325: Optimizing fuel consumption in vehicle operations (Similarity Score: 0.4234)

ID 304: Selection and design of combustion systems for hydrogen environments (Similarity Score: 0.6212)

ID 126: Understanding the impact of hydrogen blending on heating systems (Similarity Score: 0.5491)

ID 396: Understanding of automated process systems in power generation using hydrogen blending (Similarity Score: 0.6404)

ID 646: Selection of turbine systems suitable for hydrogen applications (Similarity Score: 0.5706)

ID 485: Design of power generation systems for hydrogen blending (Similarity Score: 0.6289)

ID 142: Understanding how to match hydrogen technology with the needs of different fleets (Similarity Score: 0.5211)

ID 397: Knowledge of control systems for hydrogen blending in power generation (Similarity Score: 0.6329)

ID 414: Integration of optimized rectification systems in plant operations (Similarity Score: 0.4567)

ID 323: Understanding and application of eco-driving techniques (Similarity Score: 0.3681)

ID 272: Understanding and application of eco-driving techniques (Similarity Score: 0.3681)

ID 1: Experience with hydrogen fueling equipment and systems (Similarity Score: 0.6376)

ID 347: Optimizing fuel consumption in vehicle operations (Similarity Score: 0.4234)

ID 358: Selection and design of turbines for hydrogen blending (Similarity Score: 0.5365)

ID 88: Understanding the principles of hydrogen-blending in power generation (Similarity Score: 0.5952)

ID 345: Understanding and application of eco-driving techniques (Similarity Score: 0.3681)

ID 149: Knowledge of turbine systems used in hydrogen blending (Similarity Score: 0.5692)

ID 285: Knowledge of instrumentation systems for hydrogen fueling (Similarity Score: 0.6033)

ID 286: Integration of electrical and instrumentation systems in fueling operations (Similarity Score: 0.6301)

ID 359: Selection and design of combustion systems for hydrogen blending (Similarity Score: 0.6237)

ID 354: Knowledge of advanced control systems for combined-cycle power generation using hydrogen (Similarity Score: 0.6128)

ID 436: Integration of electrical systems within carbon capture technology (Similarity Score: 0.5494)

ID 150: Knowledge of combustion systems in hydrogen blending (Similarity Score: 0.5965)

ID 233: Experience with codes related to electrical systems in road vehicles (Similarity Score: 0.3311)

#### 24.1.1.1: Identification of Compatible Fuel Cells

ID 142: Understanding how to match hydrogen technology with the needs of different fleets (Similarity Score: 0.5327)

ID 359: Selection and design of combustion systems for hydrogen blending (Similarity Score: 0.5811)

ID 233: Experience with codes related to electrical systems in road vehicles (Similarity Score: 0.3299)

ID 414: Integration of optimized rectification systems in plant operations (Similarity Score: 0.4310)

#### 24.1.1.2: Sourcing of Ancillary Components (e.g., power electronics, cooling systems)

ID 325: Optimizing fuel consumption in vehicle operations (Similarity Score: 0.3858)

ID 347: Optimizing fuel consumption in vehicle operations (Similarity Score: 0.3858)

ID 233: Experience with codes related to electrical systems in road vehicles (Similarity Score: 0.3367)

### 24.1.2: System Integration for Purpose-Built Vehicles

ID 414: Integration of optimized rectification systems in plant operations (Similarity Score: 0.4583)

#### 24.1.2.2: Electrical and Mechanical Integration

ID 233: Experience with codes related to electrical systems in road vehicles (Similarity Score: 0.3270)

ID 414: Integration of optimized rectification systems in plant operations (Similarity Score: 0.4224)

### 24.1.3: Retrofitting and Homologation of Existing Vehicles

ID 414: Integration of optimized rectification systems in plant operations (Similarity Score: 0.4492)

#### 24.1.3.1: Certification and Compliance with Standards

ID 142: Understanding how to match hydrogen technology with the needs of different fleets (Similarity Score: 0.4943)

#### 24.1.3.2: Modifications and Adaptations for Fuel Cell Integration

ID 414: Integration of optimized rectification systems in plant operations (Similarity Score: 0.4403)

## 24.2: Integration of Subassemblies into Electrolysers

ID 321: Understanding of control systems for electrolyzers (Similarity Score: 0.4896)

ID 228: Selection of electronic systems for electrolyzer hydrogen production (Similarity Score: 0.5926)

ID 436: Integration of electrical systems within carbon capture technology (Similarity Score: 0.5762)

ID 320: Understanding of automated process systems in electrolyzer operations (Similarity Score: 0.5050)

ID 414: Integration of optimized rectification systems in plant operations (Similarity Score: 0.4319)

ID 356: Understanding interconnection applications in renewable energy powered electrolyzers (Similarity Score: 0.4888)

ID 295: Maintenance of instrumentation and electrical systems in electrolyzers (Similarity Score: 0.4884)

ID 318: Integration of key instrumentation systems in electrolyzer operations (Similarity Score: 0.7043)

ID 292: Knowledge of key instrumentation systems for electrolyzers (Similarity Score: 0.5084)

ID 368: Maintenance of systems supporting PEM electrolyzers (Similarity Score: 0.4621)

ID 579: Understanding of well completion solutions for carbon dioxide (CO2) based on subsurface conditions (Similarity Score: 0.3463)

ID 294: Integration of instrumentation and electrical systems in electrolyzer operations (Similarity Score: 0.6952)

ID 388: Knowledge of integrating high-power electrical equipment with electrolyzers (Similarity Score: 0.5146)

ID 322: Integration of automated and control systems in electrolyzer operations (Similarity Score: 0.6815)

ID 412: Optimization of rectification systems for electrolyzer plants (Similarity Score: 0.4569)

### 24.2.1: Assembly of Electrolyser Components

ID 320: Understanding of automated process systems in electrolyzer operations (Similarity Score: 0.4757)

ID 414: Integration of optimized rectification systems in plant operations (Similarity Score: 0.4219)

ID 388: Knowledge of integrating high-power electrical equipment with electrolyzers (Similarity Score: 0.4770)

ID 292: Knowledge of key instrumentation systems for electrolyzers (Similarity Score: 0.4745)

ID 294: Integration of instrumentation and electrical systems in electrolyzer operations (Similarity Score: 0.6616)

ID 322: Integration of automated and control systems in electrolyzer operations (Similarity Score: 0.6466)

ID 318: Integration of key instrumentation systems in electrolyzer operations (Similarity Score: 0.6740)

#### 24.2.1.1: Integration of Electrodes and Membranes

ID 294: Integration of instrumentation and electrical systems in electrolyzer operations (Similarity Score: 0.6289)

#### 24.2.1.2: Integration of Power Supply and Control Systems

ID 320: Understanding of automated process systems in electrolyzer operations (Similarity Score: 0.4658)

ID 292: Knowledge of key instrumentation systems for electrolyzers (Similarity Score: 0.4639)

ID 294: Integration of instrumentation and electrical systems in electrolyzer operations (Similarity Score: 0.6308)

ID 322: Integration of automated and control systems in electrolyzer operations (Similarity Score: 0.6224)

ID 388: Knowledge of integrating high-power electrical equipment with electrolyzers (Similarity Score: 0.4778)

### 24.2.2: System-Level Integration

ID 233: Experience with codes related to electrical systems in road vehicles (Similarity Score: 0.3117)

ID 436: Integration of electrical systems within carbon capture technology (Similarity Score: 0.5501)

ID 292: Knowledge of key instrumentation systems for electrolyzers (Similarity Score: 0.4838)

ID 318: Integration of key instrumentation systems in electrolyzer operations (Similarity Score: 0.6756)

ID 320: Understanding of automated process systems in electrolyzer operations (Similarity Score: 0.4837)

ID 579: Understanding of well completion solutions for carbon dioxide (CO2) based on subsurface conditions (Similarity Score: 0.3521)

ID 294: Integration of instrumentation and electrical systems in electrolyzer operations (Similarity Score: 0.6673)

ID 388: Knowledge of integrating high-power electrical equipment with electrolyzers (Similarity Score: 0.4982)

ID 322: Integration of automated and control systems in electrolyzer operations (Similarity Score: 0.6585)

#### 24.2.2.1: Fluid and Gas Management Systems

ID 579: Understanding of well completion solutions for carbon dioxide (CO2) based on subsurface conditions (Similarity Score: 0.3795)

ID 320: Understanding of automated process systems in electrolyzer operations (Similarity Score: 0.4597)

ID 322: Integration of automated and control systems in electrolyzer operations (Similarity Score: 0.6161)

#### 24.2.2.2: Safety and Monitoring Systems

ID 322: Integration of automated and control systems in electrolyzer operations (Similarity Score: 0.6140)

ID 318: Integration of key instrumentation systems in electrolyzer operations (Similarity Score: 0.6436)

ID 388: Knowledge of integrating high-power electrical equipment with electrolyzers (Similarity Score: 0.4807)

ID 68: Understanding of safety protocols in electrolyzer control systems (Similarity Score: 0.4677)

ID 233: Experience with codes related to electrical systems in road vehicles (Similarity Score: 0.3205)

ID 292: Knowledge of key instrumentation systems for electrolyzers (Similarity Score: 0.4930)

ID 294: Integration of instrumentation and electrical systems in electrolyzer operations (Similarity Score: 0.6270)

## 24.3: Testing and Validation of Integrated Systems

ID 221: Understanding of installation procedures unique to hydrogen (Similarity Score: 0.6693)

ID 632: Well design based on understanding of hydrogen injection stream properties (Similarity Score: 0.5991)

ID 126: Understanding the impact of hydrogen blending on heating systems (Similarity Score: 0.5721)

ID 203: Maintenance of electronic systems in hydrogen blending power generation (Similarity Score: 0.6142)

ID 207: Knowledge of end-use applications within the hydrogen value chain (Similarity Score: 0.5449)

ID 216: Design and selection of coatings for protection against hydrogen (Similarity Score: 0.5195)

ID 323: Understanding and application of eco-driving techniques (Similarity Score: 0.3736)

ID 109: Maintenance of flame detection systems for hydrogen blending (Similarity Score: 0.6018)

ID 562: Application of hydrogen safety codes and standards in operations (Similarity Score: 0.6651)

ID 469: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.6012)

ID 333: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.6012)

ID 1: Experience with hydrogen fueling equipment and systems (Similarity Score: 0.6370)

ID 375: Calibration of instrumentation systems for hydrogen blending (Similarity Score: 0.6674)

ID 232: Knowledge of standards for EMC/EMI in hydrogen systems (Similarity Score: 0.5285)

ID 364: Selection and design of piping systems and fittings for hydrogen (Similarity Score: 0.6098)

ID 361: Selection and design of piping systems for hydrogen blending (Similarity Score: 0.6131)

ID 13: Knowledge of systems associated with hydrogen pipeline transmission (Similarity Score: 0.6157)

ID 31: Knowledge of hydrogen refueling systems (Similarity Score: 0.6023)

ID 89: Understanding operational adjustments needed for hydrogen-blending (Similarity Score: 0.5876)

ID 505: Knowledge of well completion solutions tailored for hydrogen environments (Similarity Score: 0.5976)

ID 552: Understanding well testing and analysis for carbon dioxide (CO2) injection (Similarity Score: 0.4032)

ID 45: Understanding the operational implications of hydrogen blending in combined-cycle power generation (Similarity Score: 0.6039)

ID 359: Selection and design of combustion systems for hydrogen blending (Similarity Score: 0.6354)

ID 358: Selection and design of turbines for hydrogen blending (Similarity Score: 0.5297)

ID 354: Knowledge of advanced control systems for combined-cycle power generation using hydrogen (Similarity Score: 0.6363)

ID 353: Knowledge of basic control systems for combined-cycle power generation using hydrogen blending (Similarity Score: 0.6135)

ID 345: Understanding and application of eco-driving techniques (Similarity Score: 0.3736)

ID 360: Selection and design of valves and fittings for hydrogen blending (Similarity Score: 0.6043)

ID 223: Selection and design of production equipment for hydrogen systems (Similarity Score: 0.6385)

ID 142: Understanding how to match hydrogen technology with the needs of different fleets (Similarity Score: 0.5074)

ID 315: Selection and design of valves and seals for hydrogen systems (Similarity Score: 0.5697)

ID 153: Assess integrity of piping systems and fittings (Similarity Score: 0.4825)

ID 422: Calibration and testing of instrumentation systems for hydrogen processes (Similarity Score: 0.7254)

ID 425: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.6012)

ID 167: Understanding of codes related to hydrogen systems (Similarity Score: 0.6022)

ID 169: Knowledge of seals compatible with hydrogen blending (Similarity Score: 0.5571)

ID 170: Knowledge of coatings effective for hydrogen blending (Similarity Score: 0.5477)

ID 183: Advanced knowledge of evolving standards in hydrogen industry (Similarity Score: 0.5917)

ID 489: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.6012)

ID 485: Design of power generation systems for hydrogen blending (Similarity Score: 0.6005)

ID 396: Understanding of automated process systems in power generation using hydrogen blending (Similarity Score: 0.6683)

ID 397: Knowledge of control systems for hydrogen blending in power generation (Similarity Score: 0.6324)

ID 533: Understanding of fluid characterization for carbon dioxide (CO2) injection (Similarity Score: 0.3729)

ID 414: Integration of optimized rectification systems in plant operations (Similarity Score: 0.4258)

ID 398: Integration of automated systems in hydrogen blending power generation (Similarity Score: 0.7804)

ID 399: Understanding acceptance criteria for hydrogen infrastructure (Similarity Score: 0.5987)

ID 400: Knowledge of compliance testing in hydrogen infrastructure (Similarity Score: 0.6900)

ID 583: Understanding of reservoir data interpretation for hydrogen injection (Similarity Score: 0.4894)

ID 442: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.6012)

ID 244: Understanding welding procedures for hydrogen systems (Similarity Score: 0.6275)

ID 151: Understanding of other relevant equipment for hydrogen blending (Similarity Score: 0.6204)

ID 272: Understanding and application of eco-driving techniques (Similarity Score: 0.3736)

ID 622: Maintenance of systems for hydrogen blending in combined-cycle power generation (Similarity Score: 0.6481)

ID 145: Mechanical integrity analysis for hydrogen systems (Similarity Score: 0.6829)

ID 314: Selection and design of piping systems and fittings for hydrogen (Similarity Score: 0.6098)

ID 312: Techniques for implementing cathodic protection in hydrogen systems (Similarity Score: 0.5459)

ID 310: Knowledge of instrumentation systems in hydrogen transmission (Similarity Score: 0.6085)

ID 146: Instrumented system analysis for hydrogen processes (Similarity Score: 0.6955)

ID 304: Selection and design of combustion systems for hydrogen environments (Similarity Score: 0.6289)

ID 149: Knowledge of turbine systems used in hydrogen blending (Similarity Score: 0.5726)

ID 572: Thermal and flow modeling for sequestered gas composition (Similarity Score: 0.3892)

ID 285: Knowledge of instrumentation systems for hydrogen fueling (Similarity Score: 0.6279)

ID 150: Knowledge of combustion systems in hydrogen blending (Similarity Score: 0.6230)

ID 279: Knowledge of end-use applications in the hydrogen value chain (Similarity Score: 0.5435)

ID 392: Knowledge of operational adjustments for hydrogen blending (Similarity Score: 0.6078)

ID 228: Selection of electronic systems for electrolyzer hydrogen production (Similarity Score: 0.5799)

### 24.3.1: Functional Testing of Integrated Components

ID 169: Knowledge of seals compatible with hydrogen blending (Similarity Score: 0.5154)

ID 150: Knowledge of combustion systems in hydrogen blending (Similarity Score: 0.5887)

ID 89: Understanding operational adjustments needed for hydrogen-blending (Similarity Score: 0.5598)

ID 146: Instrumented system analysis for hydrogen processes (Similarity Score: 0.6586)

ID 13: Knowledge of systems associated with hydrogen pipeline transmission (Similarity Score: 0.5757)

ID 167: Understanding of codes related to hydrogen systems (Similarity Score: 0.5864)

ID 145: Mechanical integrity analysis for hydrogen systems (Similarity Score: 0.6412)

ID 221: Understanding of installation procedures unique to hydrogen (Similarity Score: 0.6271)

ID 632: Well design based on understanding of hydrogen injection stream properties (Similarity Score: 0.5574)

ID 505: Knowledge of well completion solutions tailored for hydrogen environments (Similarity Score: 0.5534)

ID 314: Selection and design of piping systems and fittings for hydrogen (Similarity Score: 0.5863)

ID 359: Selection and design of combustion systems for hydrogen blending (Similarity Score: 0.6044)

ID 304: Selection and design of combustion systems for hydrogen environments (Similarity Score: 0.6036)

ID 392: Knowledge of operational adjustments for hydrogen blending (Similarity Score: 0.5734)

ID 398: Integration of automated systems in hydrogen blending power generation (Similarity Score: 0.7353)

ID 360: Selection and design of valves and fittings for hydrogen blending (Similarity Score: 0.5838)

ID 361: Selection and design of piping systems for hydrogen blending (Similarity Score: 0.5795)

ID 364: Selection and design of piping systems and fittings for hydrogen (Similarity Score: 0.5863)

ID 396: Understanding of automated process systems in power generation using hydrogen blending (Similarity Score: 0.6262)

#### 24.3.1.1: Electrical Performance Testing

ID 364: Selection and design of piping systems and fittings for hydrogen (Similarity Score: 0.5777)

ID 360: Selection and design of valves and fittings for hydrogen blending (Similarity Score: 0.5515)

ID 150: Knowledge of combustion systems in hydrogen blending (Similarity Score: 0.5821)

ID 359: Selection and design of combustion systems for hydrogen blending (Similarity Score: 0.5892)

ID 233: Experience with codes related to electrical systems in road vehicles (Similarity Score: 0.3406)

ID 314: Selection and design of piping systems and fittings for hydrogen (Similarity Score: 0.5777)

ID 221: Understanding of installation procedures unique to hydrogen (Similarity Score: 0.6075)

#### 24.3.1.2: Mechanical Integrity Testing

ID 145: Mechanical integrity analysis for hydrogen systems (Similarity Score: 0.7036)

ID 13: Knowledge of systems associated with hydrogen pipeline transmission (Similarity Score: 0.5789)

ID 167: Understanding of codes related to hydrogen systems (Similarity Score: 0.5913)

ID 360: Selection and design of valves and fittings for hydrogen blending (Similarity Score: 0.5591)

ID 221: Understanding of installation procedures unique to hydrogen (Similarity Score: 0.6046)

ID 153: Assess integrity of piping systems and fittings (Similarity Score: 0.4669)

### 24.3.2: System-Level Validation

ID 469: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.5960)

ID 359: Selection and design of combustion systems for hydrogen blending (Similarity Score: 0.6044)

ID 505: Knowledge of well completion solutions tailored for hydrogen environments (Similarity Score: 0.5669)

ID 562: Application of hydrogen safety codes and standards in operations (Similarity Score: 0.6505)

ID 360: Selection and design of valves and fittings for hydrogen blending (Similarity Score: 0.5814)

ID 402: Advanced knowledge of regulatory systems governing hydrogen (Similarity Score: 0.6285)

ID 632: Well design based on understanding of hydrogen injection stream properties (Similarity Score: 0.5602)

ID 400: Knowledge of compliance testing in hydrogen infrastructure (Similarity Score: 0.6711)

ID 354: Knowledge of advanced control systems for combined-cycle power generation using hydrogen (Similarity Score: 0.6344)

ID 399: Understanding acceptance criteria for hydrogen infrastructure (Similarity Score: 0.5899)

ID 397: Knowledge of control systems for hydrogen blending in power generation (Similarity Score: 0.6214)

ID 89: Understanding operational adjustments needed for hydrogen-blending (Similarity Score: 0.5723)

ID 425: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.5960)

ID 182: Advanced knowledge of current hydrogen regulatory systems (Similarity Score: 0.6041)

ID 244: Understanding welding procedures for hydrogen systems (Similarity Score: 0.6151)

ID 183: Advanced knowledge of evolving standards in hydrogen industry (Similarity Score: 0.5868)

ID 422: Calibration and testing of instrumentation systems for hydrogen processes (Similarity Score: 0.7149)

ID 398: Integration of automated systems in hydrogen blending power generation (Similarity Score: 0.7457)

ID 353: Knowledge of basic control systems for combined-cycle power generation using hydrogen blending (Similarity Score: 0.5930)

ID 31: Knowledge of hydrogen refueling systems (Similarity Score: 0.5997)

ID 126: Understanding the impact of hydrogen blending on heating systems (Similarity Score: 0.5564)

ID 489: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.5960)

ID 396: Understanding of automated process systems in power generation using hydrogen blending (Similarity Score: 0.6409)

ID 333: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.5960)

ID 315: Selection and design of valves and seals for hydrogen systems (Similarity Score: 0.5667)

ID 150: Knowledge of combustion systems in hydrogen blending (Similarity Score: 0.5940)

ID 167: Understanding of codes related to hydrogen systems (Similarity Score: 0.6204)

ID 232: Knowledge of standards for EMC/EMI in hydrogen systems (Similarity Score: 0.5392)

ID 285: Knowledge of instrumentation systems for hydrogen fueling (Similarity Score: 0.6323)

ID 1: Experience with hydrogen fueling equipment and systems (Similarity Score: 0.6500)

ID 304: Selection and design of combustion systems for hydrogen environments (Similarity Score: 0.6060)

ID 153: Assess integrity of piping systems and fittings (Similarity Score: 0.4736)

ID 375: Calibration of instrumentation systems for hydrogen blending (Similarity Score: 0.6528)

ID 146: Instrumented system analysis for hydrogen processes (Similarity Score: 0.6885)

ID 314: Selection and design of piping systems and fittings for hydrogen (Similarity Score: 0.6089)

ID 145: Mechanical integrity analysis for hydrogen systems (Similarity Score: 0.6622)

ID 221: Understanding of installation procedures unique to hydrogen (Similarity Score: 0.6381)

ID 207: Knowledge of end-use applications within the hydrogen value chain (Similarity Score: 0.5332)

ID 392: Knowledge of operational adjustments for hydrogen blending (Similarity Score: 0.5841)

ID 442: Selection and design of piping systems and fittings for hydrogen conditions (Similarity Score: 0.5960)

ID 169: Knowledge of seals compatible with hydrogen blending (Similarity Score: 0.5406)

ID 142: Understanding how to match hydrogen technology with the needs of different fleets (Similarity Score: 0.5045)

ID 13: Knowledge of systems associated with hydrogen pipeline transmission (Similarity Score: 0.6275)

ID 361: Selection and design of piping systems for hydrogen blending (Similarity Score: 0.6027)

ID 364: Selection and design of piping systems and fittings for hydrogen (Similarity Score: 0.6089)

#### 24.3.2.1: Validation of System Performance under Load

ID 314: Selection and design of piping systems and fittings for hydrogen (Similarity Score: 0.5773)

ID 146: Instrumented system analysis for hydrogen processes (Similarity Score: 0.6366)

ID 399: Understanding acceptance criteria for hydrogen infrastructure (Similarity Score: 0.5454)

ID 153: Assess integrity of piping systems and fittings (Similarity Score: 0.4583)

ID 13: Knowledge of systems associated with hydrogen pipeline transmission (Similarity Score: 0.5883)

ID 364: Selection and design of piping systems and fittings for hydrogen (Similarity Score: 0.5773)

ID 167: Understanding of codes related to hydrogen systems (Similarity Score: 0.5925)

#### 24.3.2.2: Compliance with Safety and Efficiency Standards

ID 126: Understanding the impact of hydrogen blending on heating systems (Similarity Score: 0.5439)

ID 169: Knowledge of seals compatible with hydrogen blending (Similarity Score: 0.5403)

ID 150: Knowledge of combustion systems in hydrogen blending (Similarity Score: 0.5744)

ID 403: In-depth knowledge of standards for hydrogen infrastructure and operations (Similarity Score: 0.5902)

ID 285: Knowledge of instrumentation systems for hydrogen fueling (Similarity Score: 0.6085)

ID 89: Understanding operational adjustments needed for hydrogen-blending (Similarity Score: 0.5613)

ID 392: Knowledge of operational adjustments for hydrogen blending (Similarity Score: 0.5690)

ID 400: Knowledge of compliance testing in hydrogen infrastructure (Similarity Score: 0.6744)

ID 153: Assess integrity of piping systems and fittings (Similarity Score: 0.4787)

ID 167: Understanding of codes related to hydrogen systems (Similarity Score: 0.6075)

ID 183: Advanced knowledge of evolving standards in hydrogen industry (Similarity Score: 0.6170)

ID 142: Understanding how to match hydrogen technology with the needs of different fleets (Similarity Score: 0.5161)

ID 562: Application of hydrogen safety codes and standards in operations (Similarity Score: 0.6662)

ID 314: Selection and design of piping systems and fittings for hydrogen (Similarity Score: 0.5890)

ID 399: Understanding acceptance criteria for hydrogen infrastructure (Similarity Score: 0.5685)

ID 232: Knowledge of standards for EMC/EMI in hydrogen systems (Similarity Score: 0.5487)

ID 364: Selection and design of piping systems and fittings for hydrogen (Similarity Score: 0.5890)

ID 221: Understanding of installation procedures unique to hydrogen (Similarity Score: 0.6117)

ID 1: Experience with hydrogen fueling equipment and systems (Similarity Score: 0.6492)

ID 191: Knowledge of relevant codes applicable to hydrogen (Similarity Score: 0.6218)

ID 360: Selection and design of valves and fittings for hydrogen blending (Similarity Score: 0.5729)

ID 505: Knowledge of well completion solutions tailored for hydrogen environments (Similarity Score: 0.5583)

ID 13: Knowledge of systems associated with hydrogen pipeline transmission (Similarity Score: 0.5993)

## 24.4: Troubleshooting and Optimization

ID 142: Understanding how to match hydrogen technology with the needs of different fleets (Similarity Score: 0.5163)

ID 89: Understanding operational adjustments needed for hydrogen-blending (Similarity Score: 0.6209)

ID 327: Troubleshooting hydrogen fuel compression equipment (Similarity Score: 0.6249)

ID 392: Knowledge of operational adjustments for hydrogen blending (Similarity Score: 0.6089)

ID 622: Maintenance of systems for hydrogen blending in combined-cycle power generation (Similarity Score: 0.6593)

ID 45: Understanding the operational implications of hydrogen blending in combined-cycle power generation (Similarity Score: 0.5888)

ID 505: Knowledge of well completion solutions tailored for hydrogen environments (Similarity Score: 0.5967)

ID 590: Optimization of control systems in SMR/ATR hydrogen production processes (Similarity Score: 0.5982)

### 24.4.1: Identifying Integration Issues

ID 505: Knowledge of well completion solutions tailored for hydrogen environments (Similarity Score: 0.5608)

ID 89: Understanding operational adjustments needed for hydrogen-blending (Similarity Score: 0.6170)

ID 142: Understanding how to match hydrogen technology with the needs of different fleets (Similarity Score: 0.5080)

ID 167: Understanding of codes related to hydrogen systems (Similarity Score: 0.5832)

ID 622: Maintenance of systems for hydrogen blending in combined-cycle power generation (Similarity Score: 0.6294)

ID 327: Troubleshooting hydrogen fuel compression equipment (Similarity Score: 0.5886)

ID 45: Understanding the operational implications of hydrogen blending in combined-cycle power generation (Similarity Score: 0.6016)

ID 392: Knowledge of operational adjustments for hydrogen blending (Similarity Score: 0.5988)

#### 24.4.1.2: Analysis of Compatibility Issues

ID 89: Understanding operational adjustments needed for hydrogen-blending (Similarity Score: 0.5777)

ID 142: Understanding how to match hydrogen technology with the needs of different fleets (Similarity Score: 0.4916)

### 24.4.2: Optimization of Integrated Systems

ID 167: Understanding of codes related to hydrogen systems (Similarity Score: 0.5788)

ID 398: Integration of automated systems in hydrogen blending power generation (Similarity Score: 0.7324)

ID 207: Knowledge of end-use applications within the hydrogen value chain (Similarity Score: 0.5344)

ID 505: Knowledge of well completion solutions tailored for hydrogen environments (Similarity Score: 0.5920)

ID 89: Understanding operational adjustments needed for hydrogen-blending (Similarity Score: 0.6002)

ID 392: Knowledge of operational adjustments for hydrogen blending (Similarity Score: 0.5911)

ID 45: Understanding the operational implications of hydrogen blending in combined-cycle power generation (Similarity Score: 0.6000)

ID 414: Integration of optimized rectification systems in plant operations (Similarity Score: 0.4189)

ID 126: Understanding the impact of hydrogen blending on heating systems (Similarity Score: 0.5531)

ID 142: Understanding how to match hydrogen technology with the needs of different fleets (Similarity Score: 0.5083)

ID 150: Knowledge of combustion systems in hydrogen blending (Similarity Score: 0.5610)

ID 622: Maintenance of systems for hydrogen blending in combined-cycle power generation (Similarity Score: 0.6510)

#### 24.4.2.1: Fine-Tuning of System Performance

ID 142: Understanding how to match hydrogen technology with the needs of different fleets (Similarity Score: 0.5141)

ID 505: Knowledge of well completion solutions tailored for hydrogen environments (Similarity Score: 0.5583)

ID 89: Understanding operational adjustments needed for hydrogen-blending (Similarity Score: 0.5844)

ID 392: Knowledge of operational adjustments for hydrogen blending (Similarity Score: 0.5672)

#### 24.4.2.2: Enhancements for Efficiency and Reliability

ID 259: Continuous improvement of fleet operations for cost savings and efficiency (Similarity Score: 0.3952)

ID 45: Understanding the operational implications of hydrogen blending in combined-cycle power generation (Similarity Score: 0.5889)

ID 142: Understanding how to match hydrogen technology with the needs of different fleets (Similarity Score: 0.5087)

ID 505: Knowledge of well completion solutions tailored for hydrogen environments (Similarity Score: 0.5589)

ID 89: Understanding operational adjustments needed for hydrogen-blending (Similarity Score: 0.5667)

# 25: Operations and Processes in Co-Firing Power Plants

ID 43: Understanding of combined-cycle power generation (Similarity Score: 0.4877)

ID 434: Selection of key electrical equipment for carbon capture technology (Similarity Score: 0.3872)

ID 87: Understanding of combined-cycle power generation (Similarity Score: 0.4877)

ID 451: Understanding of automated process systems used in carbon capture (Similarity Score: 0.4847)

ID 585: Understanding of automated process systems for SMR/ATR (Similarity Score: 0.3227)

ID 320: Understanding of automated process systems in electrolyzer operations (Similarity Score: 0.4600)

## 25.1: Fundamentals of Co-Firing with Hydrogen and Natural Gas

ID 637: Knowledge of systems used in carbon separation, purification, and liquefaction processes (Similarity Score: 0.4581)

## 25.2: Fuel Mixing and Proportioning

ID 390: Understanding of the combined-cycle power generation process using hydrogen blending (Similarity Score: 0.5962)

ID 43: Understanding of combined-cycle power generation (Similarity Score: 0.5060)

ID 87: Understanding of combined-cycle power generation (Similarity Score: 0.5060)

### 25.2.1: Determining Optimal Hydrogen/Natural Gas Ratios

ID 359: Selection and design of combustion systems for hydrogen blending (Similarity Score: 0.5772)

ID 592: Selection and design of turbine systems for carbon dioxide (CO2) environments (Similarity Score: 0.4899)

ID 390: Understanding of the combined-cycle power generation process using hydrogen blending (Similarity Score: 0.6092)

### 25.2.2: Fuel Handling and Blending Systems

ID 87: Understanding of combined-cycle power generation (Similarity Score: 0.4830)

ID 43: Understanding of combined-cycle power generation (Similarity Score: 0.4830)

ID 390: Understanding of the combined-cycle power generation process using hydrogen blending (Similarity Score: 0.5930)

#### 25.2.2.1: Mixing Technologies

ID 87: Understanding of combined-cycle power generation (Similarity Score: 0.4582)

ID 390: Understanding of the combined-cycle power generation process using hydrogen blending (Similarity Score: 0.5698)

ID 43: Understanding of combined-cycle power generation (Similarity Score: 0.4582)

#### 25.2.2.2: Control Systems for Proportioning

ID 586: Knowledge of control systems for optimizing SMR/ATR processes (Similarity Score: 0.3296)

## 25.4: Operational Adjustments for Co-Firing

ID 586: Knowledge of control systems for optimizing SMR/ATR processes (Similarity Score: 0.3268)

ID 585: Understanding of automated process systems for SMR/ATR (Similarity Score: 0.3061)

## 25.5: Environmental and Regulatory Compliance

ID 324: Techniques to reduce environmental impact through eco-driving (Similarity Score: 0.3468)

ID 566: Application of carbon dioxide (CO2) value chain knowledge to optimize processes (Similarity Score: 0.4049)

ID 532: Understanding of pressure and rate transient analysis for carbon dioxide (CO2) injection (Similarity Score: 0.4225)

ID 586: Knowledge of control systems for optimizing SMR/ATR processes (Similarity Score: 0.3428)

ID 346: Techniques to reduce environmental impact through eco-driving (Similarity Score: 0.3468)

ID 592: Selection and design of turbine systems for carbon dioxide (CO2) environments (Similarity Score: 0.4869)

ID 585: Understanding of automated process systems for SMR/ATR (Similarity Score: 0.3008)

ID 637: Knowledge of systems used in carbon separation, purification, and liquefaction processes (Similarity Score: 0.4235)

ID 451: Understanding of automated process systems used in carbon capture (Similarity Score: 0.4635)

ID 614: Thermal/flow modeling specific to sequestered carbon dioxide (CO2) composition (Similarity Score: 0.4009)

ID 553: Understanding pressure and rate transient analysis for carbon dioxide (CO2) injection (Similarity Score: 0.4121)

ID 433: Knowledge of carbon dioxide (CO2) behavior in different states (Similarity Score: 0.3567)

ID 533: Understanding of fluid characterization for carbon dioxide (CO2) injection (Similarity Score: 0.3801)

ID 594: Maintenance of turbine systems for carbon dioxide (CO2) environments (Similarity Score: 0.4993)

ID 546: Application of coatings to protect carbon dioxide (CO2) pipelines (Similarity Score: 0.3942)

ID 636: Knowledge of electrical equipment associated with carbon capture (Similarity Score: 0.4152)

ID 530: Understanding of reservoir engineering fundamentals for carbon dioxide (CO2) injection (Similarity Score: 0.4139)

ID 549: Application of coatings to protect carbon capture systems (Similarity Score: 0.3668)

ID 527: Knowledge of rotating equipment required for pipeline transmission of gaseous carbon dioxide (CO2) (Similarity Score: 0.4457)

ID 235: Handling compliance issues in electrical systems for road vehicles (Similarity Score: 0.4144)

ID 526: Knowledge of rotating equipment required for pipeline transmission of liquid carbon dioxide (CO2) (Similarity Score: 0.4410)

### 25.5.1: Emission Control and Reduction

ID 530: Understanding of reservoir engineering fundamentals for carbon dioxide (CO2) injection (Similarity Score: 0.4586)

ID 235: Handling compliance issues in electrical systems for road vehicles (Similarity Score: 0.4018)

ID 567: Understanding control systems in carbon capture plants (Similarity Score: 0.5219)

ID 612: Understanding of measurement equipment and instrumentation for carbon liquefication (Similarity Score: 0.4522)

ID 532: Understanding of pressure and rate transient analysis for carbon dioxide (CO2) injection (Similarity Score: 0.4610)

ID 594: Maintenance of turbine systems for carbon dioxide (CO2) environments (Similarity Score: 0.5239)

ID 573: Understanding of carbon capture and separation processes (Similarity Score: 0.4412)

ID 568: Optimization of control systems for process efficiency in carbon capture (Similarity Score: 0.5850)

ID 614: Thermal/flow modeling specific to sequestered carbon dioxide (CO2) composition (Similarity Score: 0.4418)

ID 613: PVT characterization specific to sequestered carbon dioxide (CO2) composition (Similarity Score: 0.3817)

ID 549: Application of coatings to protect carbon capture systems (Similarity Score: 0.3879)

ID 550: Maintenance of carbon capture systems and materials (Similarity Score: 0.4223)

ID 598: Selection and design of valves and seals for carbon dioxide (CO2) environments (Similarity Score: 0.4312)

ID 546: Application of coatings to protect carbon dioxide (CO2) pipelines (Similarity Score: 0.4222)

ID 547: Selection and design of carbon capture equipment (Similarity Score: 0.4434)

ID 592: Selection and design of turbine systems for carbon dioxide (CO2) environments (Similarity Score: 0.5400)

ID 595: Selection and design of vessels for carbon dioxide (CO2) environments (Similarity Score: 0.4074)

ID 610: Understanding of measurement equipment and instrumentation for carbon capture processes (Similarity Score: 0.4834)

ID 596: Selection and design of piping systems and fittings for carbon dioxide (CO2) environments (Similarity Score: 0.4287)

ID 482: Keep up-to-date with changes to carbon capture and storage technology (Similarity Score: 0.3312)

ID 533: Understanding of fluid characterization for carbon dioxide (CO2) injection (Similarity Score: 0.4072)

ID 538: Understanding of instrumentation used in carbon dioxide (CO2) transmission (Similarity Score: 0.4699)

ID 635: Knowledge of key instrumentation associated with carbon capture (Similarity Score: 0.4060)

ID 537: Understanding of measurement equipment used in carbon dioxide (CO2) transmission (Similarity Score: 0.4714)

ID 452: Knowledge of control systems specific to carbon capture processes (Similarity Score: 0.5366)

ID 526: Knowledge of rotating equipment required for pipeline transmission of liquid carbon dioxide (CO2) (Similarity Score: 0.4736)

ID 428: Knowledge of instrumentation systems for carbon dioxide (CO2) pipeline transmission (Similarity Score: 0.4994)

ID 525: Knowledge of stationary equipment required for pipeline transmission of gaseous carbon dioxide (CO2) (Similarity Score: 0.4462)

ID 429: Knowledge of electrical systems required for carbon dioxide (CO2) pipeline transmission (Similarity Score: 0.4729)

ID 433: Knowledge of carbon dioxide (CO2) behavior in different states (Similarity Score: 0.3713)

ID 483: Stay informed about changes to carbon capture and storage regulations, standards, and codes (Similarity Score: 0.4270)

ID 434: Selection of key electrical equipment for carbon capture technology (Similarity Score: 0.4107)

ID 454: Stay informed on carbon dioxide (CO2) monitoring techniques and options (Similarity Score: 0.3976)

ID 554: Understanding fluid characterization in carbon dioxide (CO2) injection contexts (Similarity Score: 0.3996)

ID 636: Knowledge of electrical equipment associated with carbon capture (Similarity Score: 0.4490)

ID 464: Understanding separation and purification techniques in carbon capture (Similarity Score: 0.4328)

ID 478: Knowledge of control systems for carbon dioxide (CO2) pipeline transmission (Similarity Score: 0.5484)

ID 477: Understanding of automated process systems in carbon dioxide (CO2) pipeline transmission (Similarity Score: 0.5470)

ID 527: Knowledge of rotating equipment required for pipeline transmission of gaseous carbon dioxide (CO2) (Similarity Score: 0.4763)

ID 498: Understanding of carbon dioxide (CO2) liquification processes (Similarity Score: 0.4152)

ID 348: Achieving cost savings through eco-driving practices (Similarity Score: 0.3012)

ID 552: Understanding well testing and analysis for carbon dioxide (CO2) injection (Similarity Score: 0.4413)

ID 586: Knowledge of control systems for optimizing SMR/ATR processes (Similarity Score: 0.3447)

ID 624: Stay up to date on carbon dioxide (CO2) monitoring options (Similarity Score: 0.3510)

ID 566: Application of carbon dioxide (CO2) value chain knowledge to optimize processes (Similarity Score: 0.4479)

ID 585: Understanding of automated process systems for SMR/ATR (Similarity Score: 0.3065)

ID 451: Understanding of automated process systems used in carbon capture (Similarity Score: 0.5114)

ID 626: Understanding instrumentation techniques for permanent carbon dioxide (CO2) storage (Similarity Score: 0.4242)

ID 564: Application of carbon capture and storage related codes in project implementation (Similarity Score: 0.4430)

ID 637: Knowledge of systems used in carbon separation, purification, and liquefaction processes (Similarity Score: 0.4639)

ID 587: Understanding of electrical equipment required for pipeline transmission of carbon dioxide (CO2) (Similarity Score: 0.4528)

ID 563: Understanding of regulations and standards specific to Carbon Capture and Storage (CCS) (Similarity Score: 0.5009)

ID 502: Application of carbon dioxide (CO2) value-chain knowledge in the industry (Similarity Score: 0.3855)

ID 324: Techniques to reduce environmental impact through eco-driving (Similarity Score: 0.3784)

ID 551: Understanding reservoir engineering fundamentals for carbon dioxide (CO2) injection (Similarity Score: 0.4581)

ID 553: Understanding pressure and rate transient analysis for carbon dioxide (CO2) injection (Similarity Score: 0.4556)

ID 326: Achieving cost savings through eco-driving practices (Similarity Score: 0.3012)

ID 528: Understanding of reservoir data for carbon dioxide (CO2) injection (Similarity Score: 0.3738)

ID 346: Techniques to reduce environmental impact through eco-driving (Similarity Score: 0.3784)

ID 524: Knowledge of stationary equipment required for pipeline transmission of liquid carbon dioxide (CO2) (Similarity Score: 0.4438)

#### 25.5.1.1: NOx, CO2, and Other Emission Management

ID 553: Understanding pressure and rate transient analysis for carbon dioxide (CO2) injection (Similarity Score: 0.4338)

ID 637: Knowledge of systems used in carbon separation, purification, and liquefaction processes (Similarity Score: 0.4414)

ID 552: Understanding well testing and analysis for carbon dioxide (CO2) injection (Similarity Score: 0.4291)

ID 554: Understanding fluid characterization in carbon dioxide (CO2) injection contexts (Similarity Score: 0.3814)

ID 546: Application of coatings to protect carbon dioxide (CO2) pipelines (Similarity Score: 0.3868)

ID 623: Stay up to date on carbon dioxide (CO2) monitoring technology (Similarity Score: 0.4045)

ID 563: Understanding of regulations and standards specific to Carbon Capture and Storage (CCS) (Similarity Score: 0.4796)

ID 626: Understanding instrumentation techniques for permanent carbon dioxide (CO2) storage (Similarity Score: 0.4278)

ID 530: Understanding of reservoir engineering fundamentals for carbon dioxide (CO2) injection (Similarity Score: 0.4520)

ID 624: Stay up to date on carbon dioxide (CO2) monitoring options (Similarity Score: 0.3852)

ID 566: Application of carbon dioxide (CO2) value chain knowledge to optimize processes (Similarity Score: 0.4325)

ID 636: Knowledge of electrical equipment associated with carbon capture (Similarity Score: 0.4335)

ID 551: Understanding reservoir engineering fundamentals for carbon dioxide (CO2) injection (Similarity Score: 0.4455)

ID 524: Knowledge of stationary equipment required for pipeline transmission of liquid carbon dioxide (CO2) (Similarity Score: 0.4522)

ID 532: Understanding of pressure and rate transient analysis for carbon dioxide (CO2) injection (Similarity Score: 0.4352)

ID 483: Stay informed about changes to carbon capture and storage regulations, standards, and codes (Similarity Score: 0.4389)

ID 596: Selection and design of piping systems and fittings for carbon dioxide (CO2) environments (Similarity Score: 0.4299)

ID 526: Knowledge of rotating equipment required for pipeline transmission of liquid carbon dioxide (CO2) (Similarity Score: 0.4658)

ID 434: Selection of key electrical equipment for carbon capture technology (Similarity Score: 0.3930)

ID 477: Understanding of automated process systems in carbon dioxide (CO2) pipeline transmission (Similarity Score: 0.5030)

ID 537: Understanding of measurement equipment used in carbon dioxide (CO2) transmission (Similarity Score: 0.4703)

ID 595: Selection and design of vessels for carbon dioxide (CO2) environments (Similarity Score: 0.3981)

ID 502: Application of carbon dioxide (CO2) value-chain knowledge in the industry (Similarity Score: 0.3962)

ID 613: PVT characterization specific to sequestered carbon dioxide (CO2) composition (Similarity Score: 0.4001)

ID 433: Knowledge of carbon dioxide (CO2) behavior in different states (Similarity Score: 0.3874)

ID 452: Knowledge of control systems specific to carbon capture processes (Similarity Score: 0.4936)

ID 527: Knowledge of rotating equipment required for pipeline transmission of gaseous carbon dioxide (CO2) (Similarity Score: 0.4676)

ID 454: Stay informed on carbon dioxide (CO2) monitoring techniques and options (Similarity Score: 0.4202)

ID 455: Understanding of carbon dioxide (CO2) properties and behavior in various states (Similarity Score: 0.3741)

ID 538: Understanding of instrumentation used in carbon dioxide (CO2) transmission (Similarity Score: 0.4680)

ID 594: Maintenance of turbine systems for carbon dioxide (CO2) environments (Similarity Score: 0.5039)

ID 533: Understanding of fluid characterization for carbon dioxide (CO2) injection (Similarity Score: 0.4011)

ID 428: Knowledge of instrumentation systems for carbon dioxide (CO2) pipeline transmission (Similarity Score: 0.4842)

ID 614: Thermal/flow modeling specific to sequestered carbon dioxide (CO2) composition (Similarity Score: 0.4299)

ID 592: Selection and design of turbine systems for carbon dioxide (CO2) environments (Similarity Score: 0.5128)

ID 525: Knowledge of stationary equipment required for pipeline transmission of gaseous carbon dioxide (CO2) (Similarity Score: 0.4557)

ID 579: Understanding of well completion solutions for carbon dioxide (CO2) based on subsurface conditions (Similarity Score: 0.3435)

ID 598: Selection and design of valves and seals for carbon dioxide (CO2) environments (Similarity Score: 0.4481)

ID 429: Knowledge of electrical systems required for carbon dioxide (CO2) pipeline transmission (Similarity Score: 0.4809)

ID 528: Understanding of reservoir data for carbon dioxide (CO2) injection (Similarity Score: 0.3682)

ID 478: Knowledge of control systems for carbon dioxide (CO2) pipeline transmission (Similarity Score: 0.5413)

ID 587: Understanding of electrical equipment required for pipeline transmission of carbon dioxide (CO2) (Similarity Score: 0.4602)

#### 25.5.1.2: Implementation of Emission Control Technologies

ID 452: Knowledge of control systems specific to carbon capture processes (Similarity Score: 0.4980)

ID 587: Understanding of electrical equipment required for pipeline transmission of carbon dioxide (CO2) (Similarity Score: 0.4221)

ID 477: Understanding of automated process systems in carbon dioxide (CO2) pipeline transmission (Similarity Score: 0.5040)

ID 526: Knowledge of rotating equipment required for pipeline transmission of liquid carbon dioxide (CO2) (Similarity Score: 0.4377)

ID 568: Optimization of control systems for process efficiency in carbon capture (Similarity Score: 0.5347)

ID 586: Knowledge of control systems for optimizing SMR/ATR processes (Similarity Score: 0.3343)

ID 566: Application of carbon dioxide (CO2) value chain knowledge to optimize processes (Similarity Score: 0.4226)

ID 547: Selection and design of carbon capture equipment (Similarity Score: 0.4053)

ID 478: Knowledge of control systems for carbon dioxide (CO2) pipeline transmission (Similarity Score: 0.5093)

ID 451: Understanding of automated process systems used in carbon capture (Similarity Score: 0.4617)

ID 567: Understanding control systems in carbon capture plants (Similarity Score: 0.4746)

ID 483: Stay informed about changes to carbon capture and storage regulations, standards, and codes (Similarity Score: 0.4222)

ID 592: Selection and design of turbine systems for carbon dioxide (CO2) environments (Similarity Score: 0.4968)

ID 614: Thermal/flow modeling specific to sequestered carbon dioxide (CO2) composition (Similarity Score: 0.4059)

ID 428: Knowledge of instrumentation systems for carbon dioxide (CO2) pipeline transmission (Similarity Score: 0.4639)

ID 538: Understanding of instrumentation used in carbon dioxide (CO2) transmission (Similarity Score: 0.4319)

ID 429: Knowledge of electrical systems required for carbon dioxide (CO2) pipeline transmission (Similarity Score: 0.4351)

ID 551: Understanding reservoir engineering fundamentals for carbon dioxide (CO2) injection (Similarity Score: 0.4250)

ID 553: Understanding pressure and rate transient analysis for carbon dioxide (CO2) injection (Similarity Score: 0.4167)

ID 530: Understanding of reservoir engineering fundamentals for carbon dioxide (CO2) injection (Similarity Score: 0.4321)

ID 598: Selection and design of valves and seals for carbon dioxide (CO2) environments (Similarity Score: 0.4141)

ID 502: Application of carbon dioxide (CO2) value-chain knowledge in the industry (Similarity Score: 0.3758)

ID 637: Knowledge of systems used in carbon separation, purification, and liquefaction processes (Similarity Score: 0.4300)

ID 563: Understanding of regulations and standards specific to Carbon Capture and Storage (CCS) (Similarity Score: 0.4740)

ID 527: Knowledge of rotating equipment required for pipeline transmission of gaseous carbon dioxide (CO2) (Similarity Score: 0.4475)

ID 533: Understanding of fluid characterization for carbon dioxide (CO2) injection (Similarity Score: 0.3766)

ID 532: Understanding of pressure and rate transient analysis for carbon dioxide (CO2) injection (Similarity Score: 0.4247)

ID 552: Understanding well testing and analysis for carbon dioxide (CO2) injection (Similarity Score: 0.4045)

### 25.5.2: Compliance with Regulatory Standards

ID 235: Handling compliance issues in electrical systems for road vehicles (Similarity Score: 0.3865)

ID 636: Knowledge of electrical equipment associated with carbon capture (Similarity Score: 0.4084)

ID 586: Knowledge of control systems for optimizing SMR/ATR processes (Similarity Score: 0.3364)

ID 639: Knowledge of electrical equipment associated with SMR and ATR production plants (Similarity Score: 0.3733)

#### 25.5.2.1: Adherence to Environmental Regulations

ID 586: Knowledge of control systems for optimizing SMR/ATR processes (Similarity Score: 0.3329)

#### 25.5.2.2: Reporting and Documentation Requirements

ID 639: Knowledge of electrical equipment associated with SMR and ATR production plants (Similarity Score: 0.3987)

ID 483: Stay informed about changes to carbon capture and storage regulations, standards, and codes (Similarity Score: 0.4102)

ID 586: Knowledge of control systems for optimizing SMR/ATR processes (Similarity Score: 0.3378)

# 26: Communication of Hydrogen's Role within the Larger Energy Industry

ID 2: Experience with on-site hydrogen generation (Similarity Score: 0.5363)

ID 630: Understanding of hydrogen technologies in relation to ESG factors (Similarity Score: 0.6617)

ID 382: Understanding of distribution technology for hydrogen (Similarity Score: 0.6357)

ID 183: Advanced knowledge of evolving standards in hydrogen industry (Similarity Score: 0.5837)

ID 629: Knowledge of climate targets and their implications for hydrogen (Similarity Score: 0.5657)

ID 135: Understanding the carbon impact of hydrogen technologies (Similarity Score: 0.5898)

ID 44: Understanding of hydrogen blending in power generation (Similarity Score: 0.6197)

ID 177: Measuring social and governance impacts of hydrogen technologies (Similarity Score: 0.5864)

ID 190: Understanding of industry standards for hydrogen (Similarity Score: 0.6601)

ID 643: Understanding the climate change implications of hydrogen technologies (Similarity Score: 0.6589)

ID 236: Staying current with advances in hydrogen technology (Similarity Score: 0.5877)

ID 45: Understanding the operational implications of hydrogen blending in combined-cycle power generation (Similarity Score: 0.5998)

ID 142: Understanding how to match hydrogen technology with the needs of different fleets (Similarity Score: 0.4912)

ID 10: Understanding hydrogen's role in addressing climate change (Similarity Score: 0.6792)

ID 175: Understanding the value proposition of hydrogen technologies related to ESG factors (Similarity Score: 0.6033)

ID 404: Understanding advanced policy considerations for hydrogen (Similarity Score: 0.6159)

ID 502: Application of carbon dioxide (CO2) value-chain knowledge in the industry (Similarity Score: 0.3605)

ID 391: Knowledge of hydrogen's role in combined-cycle power generation (Similarity Score: 0.7074)

ID 134: Understanding the cost aspects of hydrogen technologies (Similarity Score: 0.5711)

ID 88: Understanding the principles of hydrogen-blending in power generation (Similarity Score: 0.6123)

ID 260: Strong industry knowledge of hydrogen technologies (Similarity Score: 0.7042)

## 26.1: Understanding the Audience

ID 177: Measuring social and governance impacts of hydrogen technologies (Similarity Score: 0.5864)

ID 260: Strong industry knowledge of hydrogen technologies (Similarity Score: 0.6461)

ID 643: Understanding the climate change implications of hydrogen technologies (Similarity Score: 0.6245)

ID 175: Understanding the value proposition of hydrogen technologies related to ESG factors (Similarity Score: 0.5727)

ID 10: Understanding hydrogen's role in addressing climate change (Similarity Score: 0.6533)

ID 620: Understanding of the interplay between different policy areas (environmental, energy, climate change) and their impact on hydrogen (Similarity Score: 0.6071)

ID 630: Understanding of hydrogen technologies in relation to ESG factors (Similarity Score: 0.6257)

### 26.1.1: Identifying Key Community Stakeholders

ID 10: Understanding hydrogen's role in addressing climate change (Similarity Score: 0.6396)

ID 135: Understanding the carbon impact of hydrogen technologies (Similarity Score: 0.5628)

ID 620: Understanding of the interplay between different policy areas (environmental, energy, climate change) and their impact on hydrogen (Similarity Score: 0.6085)

ID 630: Understanding of hydrogen technologies in relation to ESG factors (Similarity Score: 0.6063)

ID 175: Understanding the value proposition of hydrogen technologies related to ESG factors (Similarity Score: 0.5611)

ID 643: Understanding the climate change implications of hydrogen technologies (Similarity Score: 0.6180)

ID 177: Measuring social and governance impacts of hydrogen technologies (Similarity Score: 0.6020)

#### 26.1.1.1: Local Residents

ID 630: Understanding of hydrogen technologies in relation to ESG factors (Similarity Score: 0.6202)

ID 643: Understanding the climate change implications of hydrogen technologies (Similarity Score: 0.6369)

ID 177: Measuring social and governance impacts of hydrogen technologies (Similarity Score: 0.5940)

ID 135: Understanding the carbon impact of hydrogen technologies (Similarity Score: 0.5740)

ID 620: Understanding of the interplay between different policy areas (environmental, energy, climate change) and their impact on hydrogen (Similarity Score: 0.6199)

ID 10: Understanding hydrogen's role in addressing climate change (Similarity Score: 0.6526)

ID 175: Understanding the value proposition of hydrogen technologies related to ESG factors (Similarity Score: 0.5702)

#### 26.1.1.2: Environmental Groups

ID 630: Understanding of hydrogen technologies in relation to ESG factors (Similarity Score: 0.6253)

ID 619: Understanding of climate change policy and its influence on hydrogen regulations in Canada, USA, and internationally (Similarity Score: 0.5862)

ID 620: Understanding of the interplay between different policy areas (environmental, energy, climate change) and their impact on hydrogen (Similarity Score: 0.6502)

ID 177: Measuring social and governance impacts of hydrogen technologies (Similarity Score: 0.6041)

ID 175: Understanding the value proposition of hydrogen technologies related to ESG factors (Similarity Score: 0.5758)

ID 629: Knowledge of climate targets and their implications for hydrogen (Similarity Score: 0.5778)

ID 502: Application of carbon dioxide (CO2) value-chain knowledge in the industry (Similarity Score: 0.3585)

ID 628: Understanding of climate issues and science related to hydrogen (Similarity Score: 0.5849)

ID 643: Understanding the climate change implications of hydrogen technologies (Similarity Score: 0.6566)

ID 135: Understanding the carbon impact of hydrogen technologies (Similarity Score: 0.5974)

ID 260: Strong industry knowledge of hydrogen technologies (Similarity Score: 0.6410)

ID 10: Understanding hydrogen's role in addressing climate change (Similarity Score: 0.6850)

#### 26.1.1.3: Industry and Business Leaders

ID 135: Understanding the carbon impact of hydrogen technologies (Similarity Score: 0.5590)

ID 643: Understanding the climate change implications of hydrogen technologies (Similarity Score: 0.6253)

ID 10: Understanding hydrogen's role in addressing climate change (Similarity Score: 0.6414)

ID 630: Understanding of hydrogen technologies in relation to ESG factors (Similarity Score: 0.6101)

ID 620: Understanding of the interplay between different policy areas (environmental, energy, climate change) and their impact on hydrogen (Similarity Score: 0.6136)

ID 177: Measuring social and governance impacts of hydrogen technologies (Similarity Score: 0.5848)

ID 175: Understanding the value proposition of hydrogen technologies related to ESG factors (Similarity Score: 0.5599)

### 26.1.2: Assessing Stakeholder Concerns and Interests

ID 177: Measuring social and governance impacts of hydrogen technologies (Similarity Score: 0.6069)

ID 643: Understanding the climate change implications of hydrogen technologies (Similarity Score: 0.6308)

ID 630: Understanding of hydrogen technologies in relation to ESG factors (Similarity Score: 0.6339)

ID 10: Understanding hydrogen's role in addressing climate change (Similarity Score: 0.6554)

ID 620: Understanding of the interplay between different policy areas (environmental, energy, climate change) and their impact on hydrogen (Similarity Score: 0.6453)

ID 175: Understanding the value proposition of hydrogen technologies related to ESG factors (Similarity Score: 0.5894)

#### 26.1.2.1: Environmental Concerns

ID 175: Understanding the value proposition of hydrogen technologies related to ESG factors (Similarity Score: 0.5950)

ID 628: Understanding of climate issues and science related to hydrogen (Similarity Score: 0.5741)

ID 620: Understanding of the interplay between different policy areas (environmental, energy, climate change) and their impact on hydrogen (Similarity Score: 0.6729)

ID 630: Understanding of hydrogen technologies in relation to ESG factors (Similarity Score: 0.6400)

ID 135: Understanding the carbon impact of hydrogen technologies (Similarity Score: 0.5585)

ID 404: Understanding advanced policy considerations for hydrogen (Similarity Score: 0.6215)

ID 10: Understanding hydrogen's role in addressing climate change (Similarity Score: 0.6752)

ID 177: Measuring social and governance impacts of hydrogen technologies (Similarity Score: 0.6033)

ID 629: Knowledge of climate targets and their implications for hydrogen (Similarity Score: 0.5616)

ID 643: Understanding the climate change implications of hydrogen technologies (Similarity Score: 0.6460)

#### 26.1.2.2: Economic and Employment Impacts

ID 10: Understanding hydrogen's role in addressing climate change (Similarity Score: 0.6620)

ID 175: Understanding the value proposition of hydrogen technologies related to ESG factors (Similarity Score: 0.5888)

ID 630: Understanding of hydrogen technologies in relation to ESG factors (Similarity Score: 0.6296)

ID 177: Measuring social and governance impacts of hydrogen technologies (Similarity Score: 0.6049)

ID 620: Understanding of the interplay between different policy areas (environmental, energy, climate change) and their impact on hydrogen (Similarity Score: 0.6597)

ID 643: Understanding the climate change implications of hydrogen technologies (Similarity Score: 0.6388)

#### 26.1.2.3: Safety and Health Considerations

ID 177: Measuring social and governance impacts of hydrogen technologies (Similarity Score: 0.6018)

ID 404: Understanding advanced policy considerations for hydrogen (Similarity Score: 0.6456)

ID 10: Understanding hydrogen's role in addressing climate change (Similarity Score: 0.6575)

ID 630: Understanding of hydrogen technologies in relation to ESG factors (Similarity Score: 0.6525)

ID 629: Knowledge of climate targets and their implications for hydrogen (Similarity Score: 0.5570)

ID 175: Understanding the value proposition of hydrogen technologies related to ESG factors (Similarity Score: 0.6113)

ID 628: Understanding of climate issues and science related to hydrogen (Similarity Score: 0.5668)

ID 643: Understanding the climate change implications of hydrogen technologies (Similarity Score: 0.6450)

ID 142: Understanding how to match hydrogen technology with the needs of different fleets (Similarity Score: 0.5034)

ID 620: Understanding of the interplay between different policy areas (environmental, energy, climate change) and their impact on hydrogen (Similarity Score: 0.6734)

## 26.2: Communicating the Benefits of Hydrogen

ID 236: Staying current with advances in hydrogen technology (Similarity Score: 0.5575)

ID 88: Understanding the principles of hydrogen-blending in power generation (Similarity Score: 0.5852)

ID 177: Measuring social and governance impacts of hydrogen technologies (Similarity Score: 0.5871)

ID 8: Understanding the socio-economic benefits of hydrogen (Similarity Score: 0.6770)

ID 643: Understanding the climate change implications of hydrogen technologies (Similarity Score: 0.6394)

ID 415: Staying informed about updates in hydrogen technology (Similarity Score: 0.5351)

ID 175: Understanding the value proposition of hydrogen technologies related to ESG factors (Similarity Score: 0.5773)

ID 134: Understanding the cost aspects of hydrogen technologies (Similarity Score: 0.5743)

ID 10: Understanding hydrogen's role in addressing climate change (Similarity Score: 0.6268)

ID 630: Understanding of hydrogen technologies in relation to ESG factors (Similarity Score: 0.6054)

ID 39: Understanding the economic advantages of hydrogen (Similarity Score: 0.6548)

ID 260: Strong industry knowledge of hydrogen technologies (Similarity Score: 0.6577)

ID 135: Understanding the carbon impact of hydrogen technologies (Similarity Score: 0.5814)

### 26.2.1: Environmental Benefits

ID 175: Understanding the value proposition of hydrogen technologies related to ESG factors (Similarity Score: 0.5561)

ID 9: Understanding the environmental benefits of hydrogen (Similarity Score: 0.7711)

ID 620: Understanding of the interplay between different policy areas (environmental, energy, climate change) and their impact on hydrogen (Similarity Score: 0.6349)

ID 176: Measuring environmental impacts of hydrogen technologies (Similarity Score: 0.6775)

ID 10: Understanding hydrogen's role in addressing climate change (Similarity Score: 0.6342)

ID 46: Understanding the environmental impacts of hydrogen blending in power generation (Similarity Score: 0.6606)

ID 415: Staying informed about updates in hydrogen technology (Similarity Score: 0.5313)

ID 393: Knowledge of environmental laws related to hydrogen (Similarity Score: 0.6285)

ID 629: Knowledge of climate targets and their implications for hydrogen (Similarity Score: 0.5725)

ID 177: Measuring social and governance impacts of hydrogen technologies (Similarity Score: 0.5872)

ID 502: Application of carbon dioxide (CO2) value-chain knowledge in the industry (Similarity Score: 0.3720)

ID 90: Understanding the environmental and regulatory aspects of hydrogen-blending (Similarity Score: 0.6859)

ID 135: Understanding the carbon impact of hydrogen technologies (Similarity Score: 0.6001)

ID 642: Understanding the environmental benefits of hydrogen technologies (Similarity Score: 0.7884)

ID 643: Understanding the climate change implications of hydrogen technologies (Similarity Score: 0.6421)

#### 26.2.1.1: Reduction of Greenhouse Gas Emissions

ID 9: Understanding the environmental benefits of hydrogen (Similarity Score: 0.7279)

ID 135: Understanding the carbon impact of hydrogen technologies (Similarity Score: 0.6000)

ID 502: Application of carbon dioxide (CO2) value-chain knowledge in the industry (Similarity Score: 0.3585)

ID 39: Understanding the economic advantages of hydrogen (Similarity Score: 0.6475)

ID 620: Understanding of the interplay between different policy areas (environmental, energy, climate change) and their impact on hydrogen (Similarity Score: 0.6268)

ID 8: Understanding the socio-economic benefits of hydrogen (Similarity Score: 0.6851)

ID 643: Understanding the climate change implications of hydrogen technologies (Similarity Score: 0.6500)

ID 10: Understanding hydrogen's role in addressing climate change (Similarity Score: 0.6332)

ID 642: Understanding the environmental benefits of hydrogen technologies (Similarity Score: 0.7400)

#### 26.2.1.2: Contribution to Renewable Energy Goals

ID 620: Understanding of the interplay between different policy areas (environmental, energy, climate change) and their impact on hydrogen (Similarity Score: 0.6212)

ID 643: Understanding the climate change implications of hydrogen technologies (Similarity Score: 0.6165)

ID 9: Understanding the environmental benefits of hydrogen (Similarity Score: 0.7240)

ID 642: Understanding the environmental benefits of hydrogen technologies (Similarity Score: 0.7424)

ID 502: Application of carbon dioxide (CO2) value-chain knowledge in the industry (Similarity Score: 0.3644)

ID 90: Understanding the environmental and regulatory aspects of hydrogen-blending (Similarity Score: 0.6422)

ID 135: Understanding the carbon impact of hydrogen technologies (Similarity Score: 0.5889)

### 26.2.2: Economic and Social Benefits

ID 175: Understanding the value proposition of hydrogen technologies related to ESG factors (Similarity Score: 0.5534)

ID 39: Understanding the economic advantages of hydrogen (Similarity Score: 0.6944)

ID 8: Understanding the socio-economic benefits of hydrogen (Similarity Score: 0.7463)

ID 41: Understanding the social advantages of hydrogen (Similarity Score: 0.6928)

ID 177: Measuring social and governance impacts of hydrogen technologies (Similarity Score: 0.6433)

#### 26.2.2.1: Job Creation and Economic Growth

ID 8: Understanding the socio-economic benefits of hydrogen (Similarity Score: 0.7402)

ID 39: Understanding the economic advantages of hydrogen (Similarity Score: 0.6936)

ID 41: Understanding the social advantages of hydrogen (Similarity Score: 0.6756)

ID 177: Measuring social and governance impacts of hydrogen technologies (Similarity Score: 0.6091)

ID 643: Understanding the climate change implications of hydrogen technologies (Similarity Score: 0.6139)

#### 26.2.2.2: Energy Security and Independence

ID 39: Understanding the economic advantages of hydrogen (Similarity Score: 0.6744)

ID 177: Measuring social and governance impacts of hydrogen technologies (Similarity Score: 0.6167)

ID 8: Understanding the socio-economic benefits of hydrogen (Similarity Score: 0.7186)

ID 41: Understanding the social advantages of hydrogen (Similarity Score: 0.6660)

### 26.2.3: Technological and Innovation Benefits

ID 175: Understanding the value proposition of hydrogen technologies related to ESG factors (Similarity Score: 0.5532)

ID 135: Understanding the carbon impact of hydrogen technologies (Similarity Score: 0.5683)

ID 236: Staying current with advances in hydrogen technology (Similarity Score: 0.5460)

ID 643: Understanding the climate change implications of hydrogen technologies (Similarity Score: 0.6309)

ID 260: Strong industry knowledge of hydrogen technologies (Similarity Score: 0.6498)

#### 26.2.3.1: Advancements in Clean Energy Technologies

ID 643: Understanding the climate change implications of hydrogen technologies (Similarity Score: 0.6144)

## 26.3: Addressing the Risks of Hydrogen

ID 630: Understanding of hydrogen technologies in relation to ESG factors (Similarity Score: 0.6141)

ID 391: Knowledge of hydrogen's role in combined-cycle power generation (Similarity Score: 0.6375)

ID 260: Strong industry knowledge of hydrogen technologies (Similarity Score: 0.6505)

ID 134: Understanding the cost aspects of hydrogen technologies (Similarity Score: 0.5825)

ID 177: Measuring social and governance impacts of hydrogen technologies (Similarity Score: 0.5807)

ID 643: Understanding the climate change implications of hydrogen technologies (Similarity Score: 0.6434)

ID 629: Knowledge of climate targets and their implications for hydrogen (Similarity Score: 0.5672)

ID 502: Application of carbon dioxide (CO2) value-chain knowledge in the industry (Similarity Score: 0.3587)

ID 135: Understanding the carbon impact of hydrogen technologies (Similarity Score: 0.5735)

ID 415: Staying informed about updates in hydrogen technology (Similarity Score: 0.5406)

ID 236: Staying current with advances in hydrogen technology (Similarity Score: 0.5525)

ID 10: Understanding hydrogen's role in addressing climate change (Similarity Score: 0.6331)

ID 620: Understanding of the interplay between different policy areas (environmental, energy, climate change) and their impact on hydrogen (Similarity Score: 0.6107)

ID 175: Understanding the value proposition of hydrogen technologies related to ESG factors (Similarity Score: 0.5913)

### 26.3.1: Environmental Impact Considerations

ID 643: Understanding the climate change implications of hydrogen technologies (Similarity Score: 0.6447)

ID 10: Understanding hydrogen's role in addressing climate change (Similarity Score: 0.6287)

ID 9: Understanding the environmental benefits of hydrogen (Similarity Score: 0.7293)

ID 642: Understanding the environmental benefits of hydrogen technologies (Similarity Score: 0.7532)

ID 393: Knowledge of environmental laws related to hydrogen (Similarity Score: 0.6404)

ID 176: Measuring environmental impacts of hydrogen technologies (Similarity Score: 0.7187)

ID 45: Understanding the operational implications of hydrogen blending in combined-cycle power generation (Similarity Score: 0.5890)

ID 255: Value proposition of hydrogen fuel cells for emissions targets (Similarity Score: 0.5574)

ID 46: Understanding the environmental impacts of hydrogen blending in power generation (Similarity Score: 0.6802)

ID 629: Knowledge of climate targets and their implications for hydrogen (Similarity Score: 0.6100)

ID 404: Understanding advanced policy considerations for hydrogen (Similarity Score: 0.6204)

ID 135: Understanding the carbon impact of hydrogen technologies (Similarity Score: 0.6146)

ID 620: Understanding of the interplay between different policy areas (environmental, energy, climate change) and their impact on hydrogen (Similarity Score: 0.6705)

ID 90: Understanding the environmental and regulatory aspects of hydrogen-blending (Similarity Score: 0.6967)

ID 502: Application of carbon dioxide (CO2) value-chain knowledge in the industry (Similarity Score: 0.3961)

ID 177: Measuring social and governance impacts of hydrogen technologies (Similarity Score: 0.5990)

ID 630: Understanding of hydrogen technologies in relation to ESG factors (Similarity Score: 0.6015)

ID 175: Understanding the value proposition of hydrogen technologies related to ESG factors (Similarity Score: 0.5984)

#### 26.3.1.1: Managing Hydrogen Production Emissions

ID 90: Understanding the environmental and regulatory aspects of hydrogen-blending (Similarity Score: 0.6427)

ID 135: Understanding the carbon impact of hydrogen technologies (Similarity Score: 0.5817)

ID 643: Understanding the climate change implications of hydrogen technologies (Similarity Score: 0.6144)

ID 629: Knowledge of climate targets and their implications for hydrogen (Similarity Score: 0.5614)

ID 620: Understanding of the interplay between different policy areas (environmental, energy, climate change) and their impact on hydrogen (Similarity Score: 0.6594)

ID 176: Measuring environmental impacts of hydrogen technologies (Similarity Score: 0.6533)

ID 502: Application of carbon dioxide (CO2) value-chain knowledge in the industry (Similarity Score: 0.3681)

#### 26.3.1.2: Water Usage and Resource Management

ID 629: Knowledge of climate targets and their implications for hydrogen (Similarity Score: 0.5835)

ID 502: Application of carbon dioxide (CO2) value-chain knowledge in the industry (Similarity Score: 0.3610)

ID 176: Measuring environmental impacts of hydrogen technologies (Similarity Score: 0.6714)

ID 135: Understanding the carbon impact of hydrogen technologies (Similarity Score: 0.5868)

ID 643: Understanding the climate change implications of hydrogen technologies (Similarity Score: 0.6332)

ID 642: Understanding the environmental benefits of hydrogen technologies (Similarity Score: 0.7274)

ID 90: Understanding the environmental and regulatory aspects of hydrogen-blending (Similarity Score: 0.6616)

ID 9: Understanding the environmental benefits of hydrogen (Similarity Score: 0.7035)

ID 175: Understanding the value proposition of hydrogen technologies related to ESG factors (Similarity Score: 0.5824)

ID 46: Understanding the environmental impacts of hydrogen blending in power generation (Similarity Score: 0.6569)

ID 620: Understanding of the interplay between different policy areas (environmental, energy, climate change) and their impact on hydrogen (Similarity Score: 0.6682)

### 26.3.2: Safety and Health Considerations

ID 630: Understanding of hydrogen technologies in relation to ESG factors (Similarity Score: 0.6338)

ID 134: Understanding the cost aspects of hydrogen technologies (Similarity Score: 0.5738)

ID 416: Keeping current with regulatory, standard, and code changes in the hydrogen sector (Similarity Score: 0.5925)

ID 629: Knowledge of climate targets and their implications for hydrogen (Similarity Score: 0.5628)

ID 175: Understanding the value proposition of hydrogen technologies related to ESG factors (Similarity Score: 0.6084)

ID 135: Understanding the carbon impact of hydrogen technologies (Similarity Score: 0.5740)

ID 236: Staying current with advances in hydrogen technology (Similarity Score: 0.5658)

ID 10: Understanding hydrogen's role in addressing climate change (Similarity Score: 0.6182)

ID 142: Understanding how to match hydrogen technology with the needs of different fleets (Similarity Score: 0.5013)

ID 643: Understanding the climate change implications of hydrogen technologies (Similarity Score: 0.6316)

ID 620: Understanding of the interplay between different policy areas (environmental, energy, climate change) and their impact on hydrogen (Similarity Score: 0.6395)

ID 260: Strong industry knowledge of hydrogen technologies (Similarity Score: 0.6537)

ID 415: Staying informed about updates in hydrogen technology (Similarity Score: 0.5667)

ID 90: Understanding the environmental and regulatory aspects of hydrogen-blending (Similarity Score: 0.6407)

ID 404: Understanding advanced policy considerations for hydrogen (Similarity Score: 0.6301)

ID 561: In-depth understanding of hydrogen safety legislation (Similarity Score: 0.6018)

ID 237: Keeping up-to-date with changes in hydrogen regulations (Similarity Score: 0.5529)

#### 26.3.2.1: Hydrogen Handling and Storage Safety

ID 630: Understanding of hydrogen technologies in relation to ESG factors (Similarity Score: 0.6031)

ID 415: Staying informed about updates in hydrogen technology (Similarity Score: 0.5440)

ID 416: Keeping current with regulatory, standard, and code changes in the hydrogen sector (Similarity Score: 0.5794)

ID 175: Understanding the value proposition of hydrogen technologies related to ESG factors (Similarity Score: 0.5765)

ID 620: Understanding of the interplay between different policy areas (environmental, energy, climate change) and their impact on hydrogen (Similarity Score: 0.6399)

#### 26.3.2.2: Risk Mitigation Strategies

ID 135: Understanding the carbon impact of hydrogen technologies (Similarity Score: 0.5550)

ID 10: Understanding hydrogen's role in addressing climate change (Similarity Score: 0.6310)

ID 630: Understanding of hydrogen technologies in relation to ESG factors (Similarity Score: 0.5991)

ID 415: Staying informed about updates in hydrogen technology (Similarity Score: 0.5455)

ID 175: Understanding the value proposition of hydrogen technologies related to ESG factors (Similarity Score: 0.5719)

ID 620: Understanding of the interplay between different policy areas (environmental, energy, climate change) and their impact on hydrogen (Similarity Score: 0.6566)

ID 142: Understanding how to match hydrogen technology with the needs of different fleets (Similarity Score: 0.4959)

ID 629: Knowledge of climate targets and their implications for hydrogen (Similarity Score: 0.5689)

ID 643: Understanding the climate change implications of hydrogen technologies (Similarity Score: 0.6368)

## 26.4: Engaging with the Community

ID 10: Understanding hydrogen's role in addressing climate change (Similarity Score: 0.6463)

ID 502: Application of carbon dioxide (CO2) value-chain knowledge in the industry (Similarity Score: 0.3592)

ID 630: Understanding of hydrogen technologies in relation to ESG factors (Similarity Score: 0.6023)

ID 643: Understanding the climate change implications of hydrogen technologies (Similarity Score: 0.6122)

ID 135: Understanding the carbon impact of hydrogen technologies (Similarity Score: 0.5709)

ID 177: Measuring social and governance impacts of hydrogen technologies (Similarity Score: 0.6035)

### 26.4.1: Tailoring Communication for Different Stakeholders

ID 630: Understanding of hydrogen technologies in relation to ESG factors (Similarity Score: 0.6055)

ID 502: Application of carbon dioxide (CO2) value-chain knowledge in the industry (Similarity Score: 0.3635)

ID 175: Understanding the value proposition of hydrogen technologies related to ESG factors (Similarity Score: 0.5512)

ID 177: Measuring social and governance impacts of hydrogen technologies (Similarity Score: 0.5999)

ID 135: Understanding the carbon impact of hydrogen technologies (Similarity Score: 0.5651)

ID 643: Understanding the climate change implications of hydrogen technologies (Similarity Score: 0.6215)

ID 10: Understanding hydrogen's role in addressing climate change (Similarity Score: 0.6558)

#### 26.4.1.1: Public Meetings and Information Sessions

ID 620: Understanding of the interplay between different policy areas (environmental, energy, climate change) and their impact on hydrogen (Similarity Score: 0.6144)

ID 502: Application of carbon dioxide (CO2) value-chain knowledge in the industry (Similarity Score: 0.3578)

ID 177: Measuring social and governance impacts of hydrogen technologies (Similarity Score: 0.5937)

ID 10: Understanding hydrogen's role in addressing climate change (Similarity Score: 0.6592)

ID 175: Understanding the value proposition of hydrogen technologies related to ESG factors (Similarity Score: 0.5539)

ID 643: Understanding the climate change implications of hydrogen technologies (Similarity Score: 0.6315)

ID 135: Understanding the carbon impact of hydrogen technologies (Similarity Score: 0.5765)

ID 630: Understanding of hydrogen technologies in relation to ESG factors (Similarity Score: 0.6126)

#### 26.4.1.2: Digital and Print Communication Strategies

ID 643: Understanding the climate change implications of hydrogen technologies (Similarity Score: 0.6384)

ID 630: Understanding of hydrogen technologies in relation to ESG factors (Similarity Score: 0.6130)

ID 620: Understanding of the interplay between different policy areas (environmental, energy, climate change) and their impact on hydrogen (Similarity Score: 0.6067)

ID 135: Understanding the carbon impact of hydrogen technologies (Similarity Score: 0.5714)

ID 175: Understanding the value proposition of hydrogen technologies related to ESG factors (Similarity Score: 0.5619)

ID 177: Measuring social and governance impacts of hydrogen technologies (Similarity Score: 0.6033)

ID 10: Understanding hydrogen's role in addressing climate change (Similarity Score: 0.6632)

### 26.4.2: Building Trust and Transparency

ID 175: Understanding the value proposition of hydrogen technologies related to ESG factors (Similarity Score: 0.5590)

ID 177: Measuring social and governance impacts of hydrogen technologies (Similarity Score: 0.6248)

ID 10: Understanding hydrogen's role in addressing climate change (Similarity Score: 0.6181)

ID 135: Understanding the carbon impact of hydrogen technologies (Similarity Score: 0.5878)

ID 630: Understanding of hydrogen technologies in relation to ESG factors (Similarity Score: 0.6071)

#### 26.4.2.1: Open Dialogue and Feedback Mechanisms

ID 10: Understanding hydrogen's role in addressing climate change (Similarity Score: 0.6182)

ID 643: Understanding the climate change implications of hydrogen technologies (Similarity Score: 0.6162)

ID 177: Measuring social and governance impacts of hydrogen technologies (Similarity Score: 0.5959)

ID 135: Understanding the carbon impact of hydrogen technologies (Similarity Score: 0.5861)

#### 26.4.2.2: Transparency in Project Planning and Implementation

ID 135: Understanding the carbon impact of hydrogen technologies (Similarity Score: 0.5846)

ID 630: Understanding of hydrogen technologies in relation to ESG factors (Similarity Score: 0.6018)

ID 502: Application of carbon dioxide (CO2) value-chain knowledge in the industry (Similarity Score: 0.3585)

ID 177: Measuring social and governance impacts of hydrogen technologies (Similarity Score: 0.6114)

ID 175: Understanding the value proposition of hydrogen technologies related to ESG factors (Similarity Score: 0.5547)

## 26.5: Gaining Acceptance for New Hydrogen Sites

ID 142: Understanding how to match hydrogen technology with the needs of different fleets (Similarity Score: 0.5059)

ID 183: Advanced knowledge of evolving standards in hydrogen industry (Similarity Score: 0.5960)

ID 399: Understanding acceptance criteria for hydrogen infrastructure (Similarity Score: 0.5439)

ID 236: Staying current with advances in hydrogen technology (Similarity Score: 0.5557)

ID 2: Experience with on-site hydrogen generation (Similarity Score: 0.5853)

ID 260: Strong industry knowledge of hydrogen technologies (Similarity Score: 0.6624)

### 26.5.1: Developing a Community Engagement Plan

ID 2: Experience with on-site hydrogen generation (Similarity Score: 0.5415)

#### 26.5.1.1: Early and Continuous Stakeholder Engagement

ID 2: Experience with on-site hydrogen generation (Similarity Score: 0.5624)

ID 236: Staying current with advances in hydrogen technology (Similarity Score: 0.5462)

ID 135: Understanding the carbon impact of hydrogen technologies (Similarity Score: 0.5589)

ID 183: Advanced knowledge of evolving standards in hydrogen industry (Similarity Score: 0.5771)

ID 260: Strong industry knowledge of hydrogen technologies (Similarity Score: 0.6422)

#### 26.5.1.2: Addressing Concerns and Building Consensus

ID 2: Experience with on-site hydrogen generation (Similarity Score: 0.5343)

### 26.5.2: Showcasing Successful Hydrogen Projects

ID 2: Experience with on-site hydrogen generation (Similarity Score: 0.5314)

#### 26.5.2.1: Case Studies of Existing Sites

ID 2: Experience with on-site hydrogen generation (Similarity Score: 0.5386)

#### 26.5.2.2: Demonstrations of Safety and Environmental Stewardship

ID 2: Experience with on-site hydrogen generation (Similarity Score: 0.5422)