Basic level

1. What is SPP&ID?

➤ It is intelligent software i.e.; it has properties of total plant different from other AutoCAD & Micro station.

2. Difference between filters & strainers?

Filters-Equipment

Strainers-piping components

Both functionality is same, Filters operate Liquids & Strainers operate Fluids Filter Size is up to 2 Microns

Strainer's size 10 Microns

3. How can you Identify Equipment, Instruments & Piping Components in Given Source?

➤ Equipment-By seeing Labels

Instrument-If any valve or flow instrument or Components having Loop Tag it is

instrument

Piping-Without Loop Tag of any valve or component we consider it under Piping

4. What is Onscreen?

➤ Checking of total P &ID Properties in Database.

5. What we are using for Onscreen?

➤ By using Engineering Data Editor we do Onscreen.

6. What is OPC?

➤ Off Page Connector i.e., connecting between one P& ID to other P& ID.

7. How many types of OPC's are there?

➤ Two types

1. Off Drawing Connector-Connection between two P & ID s which are in the same unit.

2. Off Unit Connector-Connection between two P & ID s which are in different unit.

8. Difference between Utility Lines and Process Lines?

➤ Process Lines-Using for Primary purpose.

Example Fluid codes- P (Process)

Utility Lines-Using for Secondary purpose

Example Fluid codes-F, DC (Closed Drain)

9. What type of problems do you get when placing OPC's? How can u solve it?

While placing OPC's. If the properties are not matching From and To lines it will show inconsistency for solving those inconsistencies by comparing with source and give right properties.

10.In Onscreen what we have to do?

➤ Checking properties of Equipment -Labels, Tag no's

Equipment Component-Unit type & Unit name

Nozzles-Sequence no, Nominal Diameter, Heat Tracing, Insulation Instrument-Instrument Loops

Pipe run-Flow Direction, Fluid code, sequence no, Pmc, Spec Break, Flow passing From and To

OPC's- Checking of whether is there any Green OPC or not and then Place it properly, if there is any inconsistence solve it by checking source file.

11. What is Global Validation?

➤ Global Validation means updating the properties of given lists if the files not valid, means wrong updating of properties.

12. What is reports and how to generate the reports?

➤ Reports are Generated after the completion of total P&ID, It will have total properties of the given P&ID.

Generating of reports is it has direct option in Engineering Data Editor.

13. What is Line List? How to update it?

➤ Line list is given by Client We can update it in the Properties of the particular Component or Segment.

14. What are Primary and Secondary Pipe runs? And how do you recognize them?

And how do you consider whether its primary or secondary while drafting?

15. What is versioning and how do you do this in SPPID? And how does it help you in

the drafting?

16. What is System editing option in SPPID software?

17. What is multiple representation? How do you do this process and why?

18. What is OPC? And What are green OPC's?

19. What is stockpile? What are the types of stockpiles?

20. What is grid setting? And What is the purpose of these settings?

21. What is control station setup? And can you show me by drafting?

22. What is Fail Action & Open Action And where we can find them?

23. To which pipe line will you give gaps when two pipes overlap each other?

   Answer: I prefer to give gaps to vertical pipe.

24. What is pump?

25. What is equipment ID?

26. What is item tag?

27. What are Drains & Vents And Flanges?

28. What is tank, Drum, Column, Heat Exchanger, Compressor?

Intermediate-Level Questions

1. What is SmartPlant P&ID, and how is it used in engineering projects?

SmartPlant P&ID is a software tool developed by Intergraph for creating intelligent piping and instrumentation diagrams. It is used to design, document, and manage the piping and instrumentation of process plants. The software helps ensure data consistency, reduces errors, and improves project efficiency through its database-driven approach.

2. Explain the significance of data consistency in SmartPlant P&ID.

Data consistency in SmartPlant P&ID is crucial because it ensures that all information related to piping and instrumentation is accurate and up-to-date across the entire project. This reduces the likelihood of errors and discrepancies, which can lead to costly rework and project delays.

3. How does SmartPlant P&ID integrate with other SmartPlant tools?

SmartPlant P&ID integrates seamlessly with other SmartPlant tools such as SmartPlant 3D, SmartPlant Instrumentation, and SmartPlant Electrical. This integration allows for the sharing of data and designs across different disciplines, enhancing collaboration and ensuring that all project aspects are synchronized.

4. Describe the process of creating a new P&ID in SmartPlant P&ID.

Creating a new P&ID in SmartPlant P&ID involves several steps: setting up the project environment, selecting the appropriate templates, placing equipment and instruments, connecting these components with pipelines, and annotating the diagram with necessary details. The software's intelligent functionality ensures that all components are correctly linked and comply with project standards.

5. What are the benefits of using SmartPlant P&ID's intelligent tagging system?

The intelligent tagging system in SmartPlant P&ID provides unique identifiers for each component, making it easier to manage and track them throughout the project lifecycle. This system enhances data retrieval, facilitates maintenance, and improves overall project management by ensuring that each item is easily identifiable.

6. How can SmartPlant P&ID help in ensuring compliance with industry standards?

SmartPlant P&ID includes built-in support for industry standards and codes, which helps ensure that designs comply with regulatory requirements. The software's validation tools can check for compliance, identify potential issues, and suggest corrections, thereby reducing the risk of non-compliance and associated penalties.

7. Explain the role of specifications in SmartPlant P&ID.

Specifications in SmartPlant P&ID define the properties and standards for components such as pipes, valves, and instruments. These specifications ensure that all components meet project requirements and industry standards, which helps maintain consistency and quality across the project.

8. What are the advantages of using the rule-based design approach in SmartPlant P&ID?

The rule-based design approach in SmartPlant P&ID automates many aspects of the design process by applying predefined rules and constraints. This approach reduces manual effort, minimizes errors, and ensures that the design adheres to project and industry standards.

9. Describe how SmartPlant P&ID manages revisions and change tracking.

SmartPlant P&ID has built-in revision management and change tracking features that allow users to document and manage changes throughout the project lifecycle. These features help maintain an accurate record of all modifications, facilitate communication among project stakeholders, and ensure that the latest design version is always available.

10. How does SmartPlant P&ID handle the creation and management of equipment data sheets?

SmartPlant P&ID allows users to create and manage equipment data sheets by linking them directly to the P&ID diagrams. This integration ensures that all relevant information is easily accessible, up-to-date, and consistent across the project, which aids in accurate specification and procurement of equipment.

11. What are the key features of SmartPlant P&ID that enhance collaboration among project teams?

Key features that enhance collaboration include a centralized database, real-time data sharing, integration with other SmartPlant tools, and comprehensive change management capabilities. These features facilitate communication, ensure data consistency, and enable efficient coordination among project teams.

12. Explain the concept of intelligent objects in SmartPlant P&ID.

Intelligent objects in SmartPlant P&ID are components with embedded data and behavior that correspond to real-world counterparts. These objects carry attributes and properties that make them "smart," allowing for automatic data validation, rule enforcement, and enhanced design accuracy.

13. How does SmartPlant P&ID assist in generating reports and documentation?

SmartPlant P&ID provides tools for generating detailed reports and documentation, such as equipment lists, line lists, and valve lists. These reports can be customized to meet project requirements and are automatically updated to reflect the latest design changes, ensuring accuracy and efficiency in documentation.

14. What is the significance of using reference data libraries in SmartPlant P&ID?

Reference data libraries in SmartPlant P&ID contain standardized data and specifications for various components and materials. Using these libraries

ensures consistency, compliance with standards, and reduces the time needed for data entry, thereby improving overall project efficiency.

15. How can SmartPlant P&ID improve the efficiency of the design review process?

SmartPlant P&ID improves the efficiency of the design review process by providing tools for visualizing, analyzing, and validating the design. The software's intelligent features can identify potential issues and suggest corrections, enabling faster and more accurate reviews.

Advance-Level Questions

1. Can you explain the concept of dynamic lines in SmartPlant P&ID? How do they differ from standard lines?

SmartPlant P&ID allows for the creation of dynamic lines, which are lines that automatically adjust their length and routing based on the placement of equipment and instruments. Unlike standard lines, which require manual adjustment when components are moved, dynamic lines in SmartPlant P&ID help maintain the integrity of the diagram and reduce the need for manual corrections.

2. How does SmartPlant P&ID handle the management of line numbers and line lists?

SmartPlant P&ID includes tools for automatically generating and managing line numbers and line lists. Users can define the numbering scheme and format for lines, and the software will assign and update line numbers based on project standards. This feature helps ensure consistency and accuracy in line numbering across the project.

3. Explain the role of the data manager in SmartPlant P&ID. How does it facilitate data validation and management?

The data manager in SmartPlant P&ID is a central component that manages all data associated with the P&ID diagrams. It allows users to define data attributes for components, enforce data validation rules, and ensure data

consistency throughout the project. The data manager also facilitates data exchange with other systems, such as ERP or maintenance systems, enhancing overall data management efficiency.

4. How does SmartPlant P&ID handle the creation and management of instrument indexes?

SmartPlant P&ID provides tools for creating and managing instrument indexes, which are used to track and manage all instruments in the project. Users can define instrument types, specifications, and other relevant data, and the software will generate indexes and datasheets based on this information. This feature helps ensure that all instruments are correctly specified and managed.

5. Describe the role of SmartPlant P&ID in the design and management of control systems.

SmartPlant P&ID plays a crucial role in the design and management of control systems by providing tools for defining control loops, specifying control devices, and integrating control system components into the P&ID diagrams. This integration ensures that control systems are accurately represented and coordinated with the overall plant design.

6. How does SmartPlant P&ID support the creation of piping isometrics?

SmartPlant P&ID supports the creation of piping isometrics by providing tools for generating isometric drawings directly from the P&ID data. Users can customize isometric templates, specify drawing settings, and generate isometrics for different sections of the plant. This feature helps streamline the piping design process and ensures consistency between P&ID and isometric drawings.

7. Explain the concept of material classes in SmartPlant P&ID. How are they used in the design process?

Material classes in SmartPlant P&ID are used to categorize piping components based on their material properties and specifications. Users can define material classes for different types of materials (e.g., carbon steel, stainless steel) and assign them to piping components in the design.

This classification helps ensure that components are correctly specified and compatible with the process requirements.

8. How does SmartPlant P&ID handle the integration of equipment datasheets?

SmartPlant P&ID allows users to link equipment datasheets directly to the P&ID diagrams. Users can access datasheets from within the software, view equipment specifications, and ensure that all equipment is correctly specified and integrated into the design. This integration helps streamline the equipment specification process and ensures that all equipment meets project requirements.

9. Describe the role of SmartPlant P&ID in the creation and management of process flow diagrams (PFDs).

SmartPlant P&ID supports the creation and management of process flow diagrams by providing tools for placing and connecting process equipment, defining process streams, and annotating the diagram with relevant data. This feature helps engineers visualize and analyze the process flow, ensuring that all elements are correctly represented and coordinated with the P&ID diagrams.

10. How does SmartPlant P&ID handle the specification and management of pipe supports?

SmartPlant P&ID includes tools for specifying and managing pipe supports, such as hangers, anchors, and guides. Users can define support types, specify support locations, and generate support drawings directly from the P&ID data. This feature helps ensure that piping is adequately supported and meets project requirements.

11. Explain the concept of multi-discipline coordination in SmartPlant P&ID. How does it enhance collaboration among project teams?

Multi-discipline coordination in SmartPlant P&ID refers to the ability to integrate piping and instrumentation designs with other disciplines, such as structural, electrical, and mechanical. This integration enhances

collaboration by providing a unified platform for all project teams to work together, ensuring that all aspects of the design are coordinated and compatible.

12. How does SmartPlant P&ID handle the management of design revisions and change control?

SmartPlant P&ID includes tools for managing design revisions and change control processes. Users can track and document all design changes, including the reason for the change, the person responsible, and the date of the change. This feature helps ensure that all changes are properly documented and communicated to all stakeholders.

13. Describe the role of SmartPlant P&ID in the generation of project deliverables, such as equipment lists and line lists.

SmartPlant P&ID supports the generation of project deliverables by providing tools for extracting data from the P&ID diagrams and generating reports and lists. Users can generate equipment lists, line lists, valve lists, and other deliverables based on project requirements. This feature helps streamline the documentation process and ensures that all project deliverables are accurate and up-to-date.

14. How does SmartPlant P&ID handle the management of project standards and templates?

SmartPlant P&ID allows users to define project standards and templates, which can be used to enforce design consistency and compliance with industry standards. Users can create and manage standard symbols, line types, and other design elements, ensuring that all project designs adhere to the established standards.

15. Explain the role of SmartPlant P&ID in the integration of 3D models with P&ID diagrams.

SmartPlant P&ID integrates with 3D modeling tools, such as SmartPlant 3D, to synchronize P&ID diagrams with 3D models. This integration allows for the visualization of the P&ID components in the 3D model, ensuring that both representations are accurate and consistent. It also facilitates clash

detection and design review processes, helping to identify and resolve issues early in the project lifecycle.