**Sabalan2 Petrochemical Industries**

**SYSTEMS & SUBSYSTEM**

**IDENTIFICATION**

**Doc- Number: COM-KC-8694-001 REV- NO: 04**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **REVISION RECORD SHEET** | | | | |
| **ROW** | **REV-NO** | **PAGES** | **DATE** | **Remark** |
| **1** | **1** | **8** | **5/11/2022** | **Initial Release** |
| **2** | **2** | **9** | **2/21/2024** | **Updated** |
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**Introduction**

This document provides a comprehensive definition and classification of the systems and subsystems for the Sabalan 2 Methanol Project. The purpose of this document is to establish a clear and structured overview of all main systems and their corresponding subsystems, which are essential for the construction, commissioning, and operation of the plant. Each system and subsystem is identified by a unique code and description, facilitating effective communication, project management, and technical coordination among all stakeholders involved in the project.

**Project Systems and Subsystems Overview**

**1- Main Systems**

|  |  |
| --- | --- |
| System Code | System Name |
| 1000 | **Gas Preparation** |
| 2000 | **Reforming** |
| 3000 | **Compression and Synthesis** |
| 4000 | **Utility-1** |
| 5000 | **Distillation & Methanol Product** |
| 7000 | **Flare** |
| 120 | **Electrical Distribution Substation** |
| LS | **Lighting System** |
| ESD | **Emergency Shutdown** |
| FGS | **Fire and Gas Detection** |
| ES | **Earthing System** |
| TEL | **Telecom Systems** |
| DCS | **Distributed Control System** |
| BL | **Building System** |
| HVAC | **HVAC System** |

**2- Subsystems by Main System**

**2-1** **Gas Preparation (1000)**

|  |  |
| --- | --- |
| Subsystem Code | Subsystem Name |
| 1000-01 | Natural Gas and Desulphurization |
| 1000-02 | Fuel Gas & Distribution |
| 1000-03 | Natural Gas Saturation & Condensate |
| 1000-04 | Gas Station |

**2-2** **Reforming (Unit 2000)**

|  |  |
| --- | --- |
| Subsystem Code | Subsystem Name |
| 2000-01 | Pre Reforming |
| 2000-02 | Primary Reforming |
| 2000-03 | Process Oxygen and Secondary Reformer |
| 2000-04 | Steam Generation & Superheated Steam |
| 2000-05 | Gas Cooling and Separation |
| 2000-06 | Nitrogen Circuit |

**2-3** **Compression and Synthesis (Unit 3000)**

|  |  |
| --- | --- |
| Subsystem Code | Subsystem Name |
| 3000-01 | Synthesis Gas Compression |
| 3000-02 | Methanol Synthesis |
| 3000-03 | Synthesis Gas Cooling |
| 3000-04 | Hydrogen System |

**2-4 Utility-1 (Unit 4000)**

|  |  |
| --- | --- |
| Subsystem Code | Subsystem Name |
| 4000-01 | Nitrogen |
| 4000-02 | HHP, HP and LP Steam |
| 4000-03 | MP Steam |
| 4000-04 | Boiler Feed Water (BFW) Generation & Distribution |
| 4000-05 | Blow Down |
| 4000-06 | DM & Polishing Water & Neutralization System |
| 4000-07 | Plant Air |
| 4000-08 | Cooling Water |
| 4000-09 | Oily Water Treatment |
| 4000-10 | Sanitary Water Collection |
| 4000-11 | Instrument Air |
| 4000-12 | COC Water and Lab Chemical Sump |
| 4000-13 | Slope Close Drain |
| 4000-14 | Fire Water |
| 4000-15 | Potable Water & Service Water |

**2-5** **Distillation & Methanol Product (Unit 5000)**

|  |  |
| --- | --- |
| Subsystem Code | Subsystem Name |
| 5000-01 | Crude Methanol and Stabilizer & Slope Methanol |
| 5000-02 | Low Pressure (LP) Methanol |
| 5000-03 | Medium Pressure (MP) Methanol |
| 5000-04 | Methanol Product |
| 5000-05 | Liquid Off Stream |

**2-6** **Flare (Unit 7000)**

|  |  |
| --- | --- |
| Subsystem Code | Subsystem Name |
| 7000-01 | Flare System |

**2-7** **Electrical Distribution Substation (Unit 120)**

|  |  |
| --- | --- |
| Subsystem Code | Subsystem Name |
| 120-01 | 6kV SWITCHBOARD SS-SWB2A/B-01 |
| 120-02 | 0-4KV SWITCHBOARD SS-SWB3A/B-01 |
| 120-03 | 0-4KV SWITCHBOARD SS-SWB3A/B-02 |
| 120-04 | 0-4KV SWITCHBOARD SS-SWB3A/B-03 |
| 120-05 | 0-4KV SWITCHBOARD SS-SWB3A/B-04 |
| 120-06 | 0-4KV SWITCHBOARD SS-SWB3A/B-05 |
| 120-07 | 0-4KV SWITCHBOARD SS-ESWB3A/B-01 |
| 120-08 | Emergency Diesel Generator SS-DG-5701 |
| 120-09 | CR-UPS-01 for Instrument Supply 190/110 AC UPS |
| 120-10 | SS-CH-01 for Electrical Supply 110V DC |
| 120-11 | SS-UPS-01 for Safety Lighting Supply 230 AC UPS |
| 120-12 | SS PDCS System |
| 120-13 | Cathodic Protection System |
| 120-14 | Electric Heat Tracing System |
| 120-15 | Capacitor Bank |
| 120-16 | MV Transformer |
| 120-17 | LV Transformer |
| 120-18 | E/I Cabinet |

**2-8** **Lighting System (LS)**

|  |  |
| --- | --- |
| Subsystem Code | Subsystem Name |
| LS-01 | SS-MLP-01 for Normal Lighting System |
| LS-02 | SS-EMLP-01 for Emergency Lighting System |
| LS-03 | Lighting System for Substation |
| LS-04 | Lighting System for Control Building |
| LS-05 | Lighting System for Laboratory & Yard Office |
| LS-06 | Lighting System for Street |
| LS-07 | Lighting System for Area-02 |
| LS-08 | Lighting System for Area-03 |
| LS-09 | Lighting System for Area-04 |
| LS-10 | Lighting System for Area-05 |
| LS-11 | Lighting System for Area-06 |
| LS-12 | Lighting System for Area-07 |
| LS-13 | Lighting System for Warehouse |
| LS-14 | Lighting System for Analyzer House |
| LS-15 | Lighting System for Security Building |

**2-9** **Emergency Shutdown (ESD)**

|  |  |
| --- | --- |
| Subsystem Code | Subsystem Name |
| ESD-01 | Emergency Shutdown Unit-1000 |
| ESD-02 | Emergency Shutdown Unit-2000 |
| ESD-03 | Emergency Shutdown Unit-3000 |
| ESD-04 | Emergency Shutdown Unit-4000 |
| ESD-05 | Emergency Shutdown Unit-5000 |

**2-10 Fire and Gas Detection (F&G)**

|  |  |
| --- | --- |
| Subsystem Code | Subsystem Name |
| FGS-01 | Fire & Gas Detection for Fire Zone 1001 |
| FGS-02 | Fire & Gas Detection for Fire Zone 1002 |
| FGS-03 | Fire & Gas Detection for Fire Zone 1003 |
| FGS-04 | Fire & Gas Detection for Fire Zone 1004 |
| FGS-05 | Fire & Gas Detection for Fire Zone 1005 |
| FGS-06 | Fire & Gas Detection for Fire Zone 1006 |
| FGS-07 | Fire & Gas Detection for Fire Zone 1007 |
| FGS-08 | Fire & Gas Detection for Substation |
| FGS-09 | Fire & Gas Detection for Control Building |
| FGS-10 | Fire & Gas Detection for Laboratory |
| FGS-11 | Fire & Gas Detection for Diesel Room |
| FGS-12 | Fire & Gas Detection for Analyzer House |
| FGS-13 | Fire & Gas Detection for Security Building |
| FGS-14 | Fire & Gas Detection for Warehouse Building |

**2-11 Earthing System (ES)**

|  |  |
| --- | --- |
| Subsystem Code | Subsystem Name |
| ES-01 | Earthing & Roof Lightning System for Substation |
| ES-02 | Earthing & Roof Lightning System for Control Building |
| ES-03 | Earthing & Roof Lightning System for Laboratory & Yard Office |
| ES-04 | Earthing & Roof Lightning System for Analyzer House |
| ES-05 | Earthing & Roof Lightning System for Warehouse |
| ES-06 | Earthing System for Area-02 |
| ES-07 | Earthing System for Area-03 |
| ES-08 | Earthing System for Area-04 |
| ES-09 | Earthing System for Area-05 |
| ES-10 | Earthing System for Area-06 |
| ES-11 | Earthing System for Area-07 |
| ES-12 | Earthing & Roof Lightning System for Security Building |
| ES-13 | Earthing & Roof Lightning System for Diesel Room |

**2-12 Telecom Systems (TELE)**

|  |  |
| --- | --- |
| Subsystem Code | Subsystem Name |
| TEL-01 | Telecom System for Area-01 |
| TEL-02 | Telecom System for Area-02 |
| TEL-03 | Telecom System for Area-03 |
| TEL-04 | Telecom System for Area-04 |
| TEL-05 | Telecom System for Area-05 |
| TEL-06 | Telecom System for Area-06 |
| TEL-07 | Telecom System for Area-07 |
| TEL-08 | Telecom System for Substation |
| TEL-09 | Telecom System for Control Building |
| TEL-10 | Telecom System for Laboratory |
| TEL-11 | CCTV |
| TEL-12 | Telecom System for Analyzer House |
| TEL-13 | Telecom System for Security Building |
| TEL-14 | Telecom System for Warehouse Building |

**2-13 Distributed Control System (DCS)**

|  |  |
| --- | --- |
| Subsystem Code | Subsystem Name |
| DCS-01 | Panels & Marshaling Cabinets |

**2-14 Building System (BL)**

|  |  |
| --- | --- |
| Subsystem Code | Subsystem Name |
| BL-01 | Substation |
| BL-02 | Control Building |
| BL-03 | Laboratory |
| BL-04 | Security Building |
| BL-05 | Diesel Room |
| BL-06 | Warehouse Building |
| BL-07 | Analyzer House |

**2-15 HVAC System (HVAC)**

|  |  |
| --- | --- |
| Subsystem Code | Subsystem Name |
| HVAC-01 | HVAC for Substation |
| HVAC-02 | HVAC for Control Building |
| HVAC-03 | HVAC for Laboratory & Yard Office |
| HVAC-04 | HVAC for Analyzer House |