



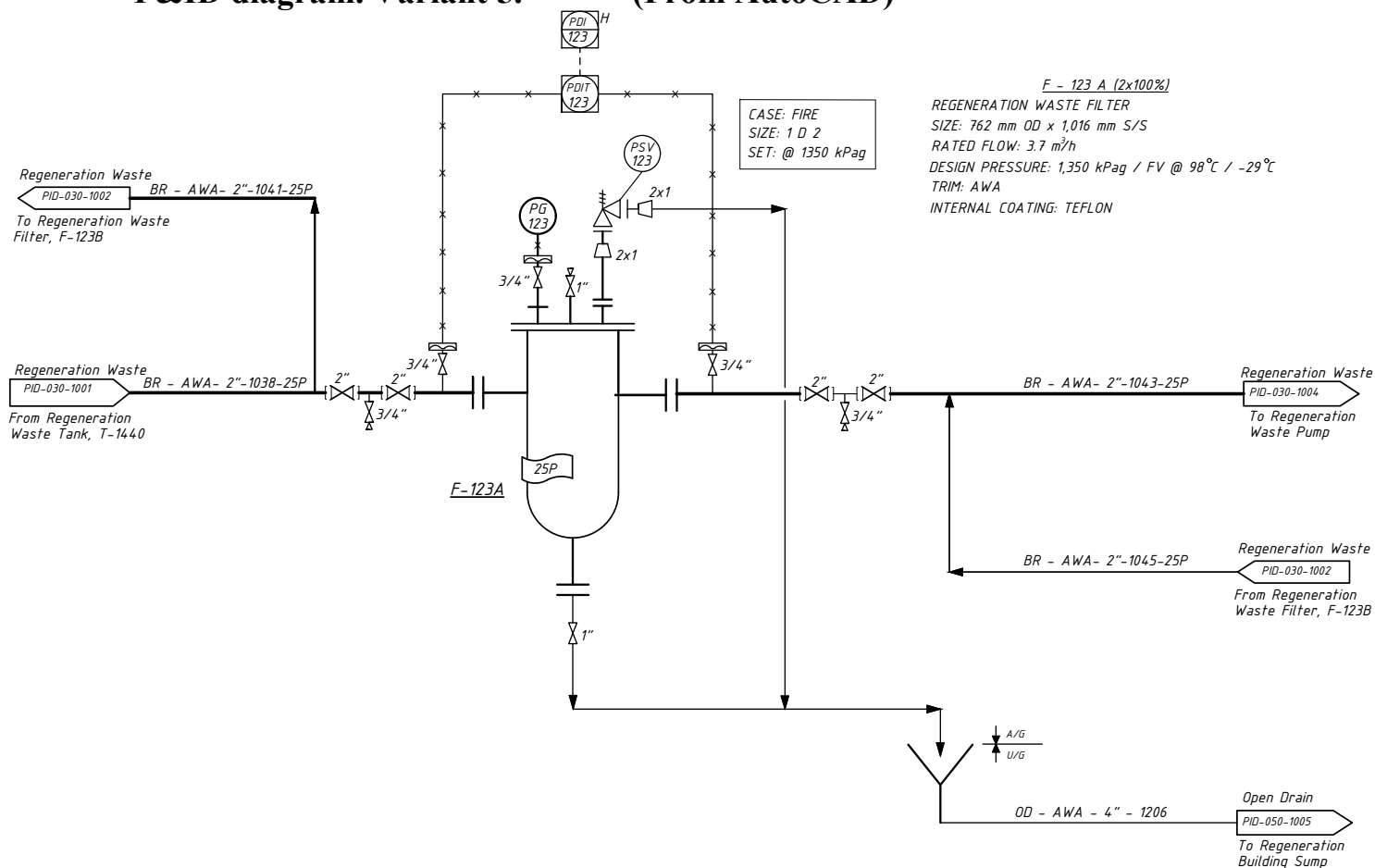
Kazakh-British Technical University
School of Information Technology and Engineering

Practice 8
P&ID diagram

Created by: Fazkullin Farid
Checked by: Diana A. Butakova



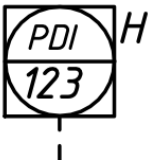

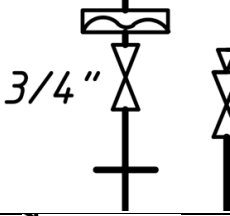
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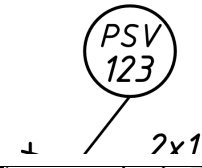
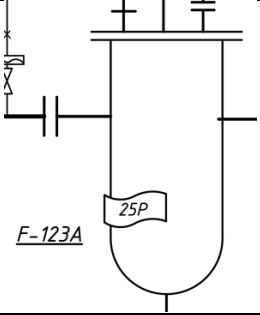

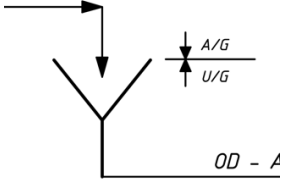
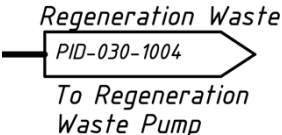
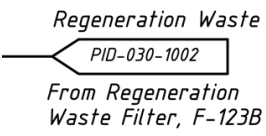
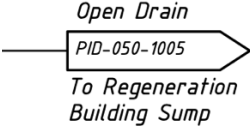
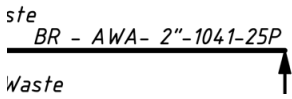
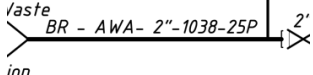
P&ID diagram. Variant 5. (From AutoCAD)



Description

| Screen | Description |
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| | <p>This is - <u>Regeneration Waste line labeled “PID-030-1002.”</u></p> <p>This pipeline carries regeneration waste toward the next stage (F-123B). Ties in with the outlet side of the Regeneration Waste Filter (F-123A). Referenced by line, which defines its piping characteristics. (BR-AWA-2”-1041-25P)</p> |
| | <p>This is - <u>Regeneration Waste line labeled “PID-030-1001.”</u></p> <p>Conveys regeneration waste feed from an upstream source (Tank T-1440) into the filter vessel (F-123A). Connects from Tank T-1440 to the inlet of the filter vessel. Referenced by line for size, rating, and material details. (BR-AWA-2”-1038-25P)</p> |
| | <p><u>This is - Drainage or drain unit of the pipeline system.</u></p> <p>Serves as a low-point drain or bleed point, allowing maintenance personnel to drain liquid from the line between the vessel inlet and the filter. It consists of: 2 x two-way on-off solenoid valves (2”) for closing system from direct way and 1 x one-way on-off solenoid valve for drain liquid from the system. Installed on the 2” line segment feeding F-123A. May lead to a closed drain system or open drain, depending on the plant design.</p> |
| | <p><u>This is - Diaphragm pressure seal (welded).</u></p> <p>Protects the connected pressure instruments from direct contact with potentially corrosive or dirty process fluid. The diaphragm transfers pressure hydraulically to the instrument side. Tapped off the vessel (F-123A) or an associated nozzle. Connects via a capillary line to the differential pressure instruments or a local gauge. Tapped off the</p> |

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| | vessel (F-123A) or an associated nozzle. Connects via a capillary line to the differential pressure instruments or a local gauge. |
|  | <u>This is - Filled thermal element capillary tube (sensing line).</u> Transmits the process pressure from the diaphragm seal to the instruments without exposing those instruments directly to the process fluid. The fluid inside the capillary is typically oil or another stable fill fluid. Runs between the pressure seal and the pressure instruments. |
|  | <u>This is - PDIT (Pressure Differential Indicating Transmitter), field-mounted.</u> Measures the differential pressure across the filter (F-123A) to monitor filter loading or clogging. Outputs a signal to the control system. Receives the high- and low-pressure signals via capillary lines from taps on F-123A. Sends an electronic signal to the control system. |
|  | <u>This is - PDI (Pressure Differential Indicator), typically panel/console-mounted with HIGH pressure difference level</u> Displays the differential pressure reading for the operator at the main control panel or local control station. Shares the same or parallel pressure taps (via capillary tubes). Receives the differential pressure signal for indication. |
|  | <u>This is - PG (Pressure Gauge).</u> Provides a local (field) reading of the absolute or gauge pressure inside F-123A. Operators can quickly verify vessel pressure without needing the control room. Typically mounted on a top or side nozzle of F-123A. May include a small isolation valve for maintenance. |
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|  | <p>This is - PSV 123 (Pressure Safety Valve). The primary safety valve dedicated to F-123A, set at a specific relief pressure (e.g., 1350 kPag). Automatically relieves excess pressure. Mounted on a vessel nozzle or dedicated piping spool. Discharges to a flare system, vent, or other safe containment line.</p> |
|  | <p>This is - F-123 A, the Regeneration Waste Filter vessel (internally coated with Teflon). Filters regeneration waste fluid, removing particulates or impurities before discharge or further processing. Rated for the specified design pressure (e.g., 1350 kPag).</p> |
|  | <p>This is - Two-way on-off solenoid valve. (1") Automated valve controlling flow in or out of the vessel's lower region. Could be part of a drain or feed line used during regeneration cycles or maintenance. Mounted on a line branching off the vessel's bottom or side nozzle. Receives electrical signal from the control system to open/close.</p> |
|  | <p>This is - Drain connection. A dedicated drain line from the bottom or low point of F-123A, collecting any residual liquid. Merges with or leads to the open drain or possibly a sump.</p> |
|  | <p>This is - "Regeneration Waste PID-030-1004" line to the Regeneration Waste Pump. Carries filtered waste from F-123A to a pump (F-123B's feed or a separate regeneration waste pump). The discharge side of F-123A that leads to further processing or disposal. Connected with pipe line (BR-AWA-2"-1043-25P)</p> |
|  | <p>This is - "Regeneration Waste PID-030-1002" line from Regeneration Waste Filter F-123B. Another waste line segment, possibly interconnecting two filters (F-123A and F-123B) or tying back into a common manifold. May be part of a parallel or series filtration arrangement. Connected with pipe line (BR-AWA-2"-1045-25P)</p> |
|  | <p>This is - Open Drain "PID-050-1005" to the Regeneration Building Sump. Collects drainage from various low-point drains and directs it to a building sump or wastewater treatment area. Downstream of drain valves and drain lines. Referenced by line or other site drain standards. (OD-AWA-4"-1206)</p> |
|  | <p>This is - Line spec "BR – AWA – 2"–1041–25P." Specifies the piping material, diameter, schedule, and other mechanical/chemical design parameters for the pipeline. Governs the pipeline leading from F-123A to the next stage. Ensures consistent design with process requirements (pressure/temperature/chemical compatibility).</p> |
|  | <p>This is Line spec "BR – AWA – 2"–1038–25P."</p> |

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| | Defines the piping characteristics (size, rating, material) for the pipeline labeled. Covers the inlet line from Tank T-1440 to F-123A. Ensures correct pressure/temperature ratings and corrosion allowance. |
| <u>BR - AWA- 2"-1043-25P</u> | <u>This is - Line spec "BR – AWA – 2"-1043-25P."</u> Governs the pipeline, leading from F-123A's outlet to the Regeneration Waste Pump. Ensures consistent design and safe operation under specified conditions. |
| <u>BR - AWA- 2"-1045-25P</u> | <u>This is - Line spec "BR – AWA – 2"-1045-25P."</u> Defines piping requirements for the line (from Filter F-123B). Manages the design and material specs for the interconnection or discharge line associated with F-123B. |
| <u>OD - AWA - 4" - 1206</u> | <u>This is - Line spec "OD – AWA – 4"-1206."</u> Specifies design for the Open Drain line that leads to the Regeneration Building Sump. Ensures adequate sizing (4") and proper material selection for drain service. Final route for draining or flushing fluids from F-123A. |

Overall System Context

Flow: Regeneration waste from upstream sources (Tank T-1440) enters F-123A through line. After filtration, the waste exits via line to subsequent treatment or disposal.

Safety/Instrumentation: The vessel is protected by a PSV and a generic relief valve.

Instrumentation taps feed pressure, level, or flow signals to instruments or provide drain/vent functions. Drain points and open drain lines allow maintenance and emergency drainage.