

PFD & P&ID

Differences

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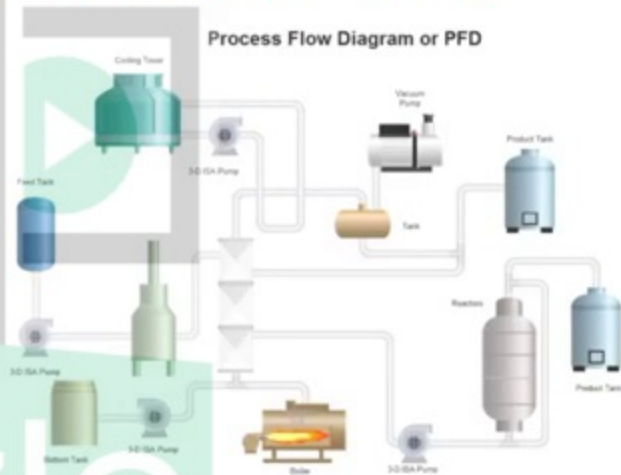
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Process Flow Diagram (PFD)

- ✓ Shows the relationships between the major equipment's (columns, vessels, pumps, turbines, heaters etc) in the system.
- ✓ Shows flow of chemical fluids and the equipment's involved in the process.
- ✓ PFD does not show minor components (like pressure, temperature and flow instruments), piping systems (like control loops, by-pass lines, drain lines etc), pipe properties (like size, spec, ratings etc) etc.



Process Flow Diagram (PFD) Cont.....

- ✓ Gives an overview of the complete chemical plant processes.
- ✓ Simplified version of P&ID's.
- ✓ Process engineers are responsible for designing PFD based on the chemical process and thermodynamic properties of the fluid in question.

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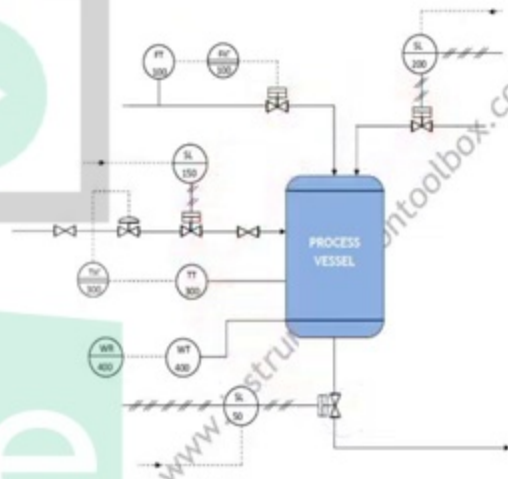
PFD include

- ✓ Main equipment
- ✓ Main process piping
- ✓ System ratings and operational values (pressure, temperature, flow, density)

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Piping / Process & Instrumentation Diagram (P&ID)

- ✓ Includes more details than a PFD.
- ✓ Includes both major and minor details of the chemical process.
- ✓ Show all major equipment's, piping details (like service, size, spec, rating, insulation etc), instrumentation details (like all the pressure, temperature and flow instruments, control valves, pressure safety valves, meters etc) and the actual pipe routing conditions (like free flow, slope, minimum distance, tapping from top/bottom requirements etc).



Piping / Process & Instrumentation Diagram (P&ID) Co

- ✓ P&ID is a detail form of PFD.
- ✓ Process engineers, with coordination of piping, instrumentation, electrical and safety engineers, are responsible for designing P&ID's.
- ✓ P&ID plays as the basic documents for piping engineers for purpose of material procurement and deciding of pipe routing.
- ✓ A P&ID can be best understood with the help of a legend sheet given by the P&ID developer.
- ✓ Legend sheet contains information regarding the nomenclature, tag philosophy, symbols, a lot more.











































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P&ID include

- ✓ Pipe line number, size, material, insulation
- ✓ Every instrument and its pneumatic/ electric signal
- ✓ Detailed control loops
- ✓ Utility lines, drain and vent lines, sampling lines etc
- ✓ Parallel and spare equipment's and connected piping
- ✓ Isolation and shut off valves.

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P&ID Legends...

GATE VALVES							
 Gate Valve	 Manual Operated Valve	 Pneumatic	 Motor	 Hydraulic	 Bleeder Valves		
GLOBE VALVES							
 Globe Valve	 Pneumatic	 Motor	 Hydraulic	 Angle	 Pneumatic	 Motor	 Needle
BALL VALVES			PLUG VALVES				
 Ball	 Ball	 Motor or Hydraulic	 Plug	 Plug	 Motor or Hydraulic		
BUTTERFLY VALVES				CHECK VALVES			
 Butterfly	 Butterfly	 Butterfly	 Motor or Hydraulic	 Pneumatic Operated	 Solenoid Valve CLOSED		
DIAPHRAGM VALVES			CHECK VALVES				
 Diaphragm	 Diaphragm	 Motor	 Check Valve	 Check Valve	 Stop Check		
SAFETY (Gases)		RELIEF (Liquids)		Four-Way		Three-Way Valve	
 Safety	 Safety	 Relief Valve	 Four-Way	 Three-Way Valve			
 Knife Valve	 Pinch Valve	 Gauge	 Rotameter	 Orifice			



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