

Piping & Instrumentation Diagrams (P&ID)

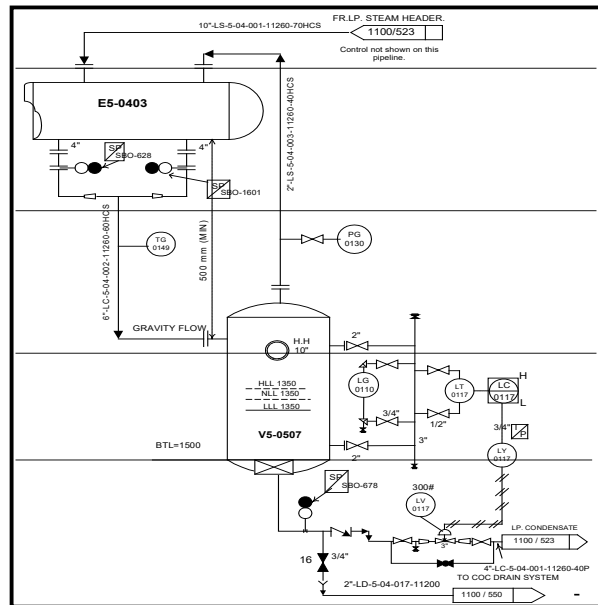
Primer

Introduction:

P&ID is one of the basic and most important documents depicting the process design, operating requirements, all piping and accessories, control and safety requirements. It is the starting point of engineering of a process plant.

The course is designed as a primer for **graduate trainees and engineering / project management executives who are new entrants to a process plant engineering or operation.** It is meant to give them understanding of P&IDs and ability to develop P&IDs with minimum guidance.

The program is focused on the practices in Oil, Gas and Petrochemical industries.



Course Content:

No.	TOPIC	DESCRIPTION
1	The Basic Concepts	<ul style="list-style-type: none"> • Definitions And Abbreviation • Purpose Of PFD And P&ID • Information Provided On PFD And P&ID <ul style="list-style-type: none"> ➤ Process Related Information ➤ Piping Related Information ➤ Safety Related Information ➤ Instrumentation And Control Related Information ➤ Special Information • Relating PFD Information to P&ID • Relating P&ID information to Detailed Engineering • Quiz Session
2	Generic Symbols And Numbering Systems	<ul style="list-style-type: none"> • Symbols <ul style="list-style-type: none"> ◆ Piping <ul style="list-style-type: none"> - types, piping specifications - depiction and tagging system - piping specifications ◆ Valve <ul style="list-style-type: none"> - Types and application, piping specifications - depiction and tagging system

		<ul style="list-style-type: none"> ◆ Instruments <ul style="list-style-type: none"> - types - Components of a control loop - Control valve and actuators - Safety instruments ● Notation, Numbering & Tag System <ul style="list-style-type: none"> ◆ Legend Sheet ◆ Major and minor equipment ◆ Instruments, valve and piping ◆ Piping specialty Items ● Quizzes and Exercises
3	Understanding and Developing P&ID	<ul style="list-style-type: none"> ● Steps from PFD to P&ID ● P&ID inputs related to Datasheets ● Development Of A Simple Basic P&ID ● Development Of Control Loops ● Need And Location Of Measuring Instruments ● Depiction Of DCS And RTU ● Notes ● P&ID Changes and Evolution in Plant Life Cycle ● Depiction of revisions and change list ● Quizzes and Exercises
4	Safety Aspects	<ul style="list-style-type: none"> ● Primary Safety Systems ● Safety Valve and Flare System ● Fire and Gas Detection ● Process Shutdown (PSD) ● Emergency Shutdown Systems (ESD) ● Codes and Standards ● Application Of API RP-14C ● Quizzes and Exercises

Methodology of Presentation:

- Process Engineering is learnt by practice
- Interesting and Interactive Quiz Sessions, practice exercises for better assimilation
- We provide the technique and we supplement it with our experience
- Power Point presentation in html5 with colorful slides packed with information
- Narration wherever needed slide along with animation and script
- Quiz questions and answers.

Duration:

Presentation duration 6 to 8 hours (excluding time for practice sessions which depends on learner's assimilation).

Course Developer:

Dr. U.K. Dutta is a consultant in the Hydrocarbon Process Industry, focusing on specialist consultancy services and training. Graduate in Chemical Engineering from IIT and Doctorate from Loughborough University of Technology (U.K), he has over 50 years of experience in Hydrocarbon Industry (upstream, midstream and downstream) in the areas of process and technology, engineering consultancy, project development, marketing and organizational development. He had work experience and association with major Indian and International companies like EIL, Union Carbide, CE Natco, Lummus Crest, Triune and Rotary Engineering. He has presented papers on Technology Development and Technology Transfer in major International Conferences such as ASCOPE and CHEMTECH.

He has conducted customized training programs for executives of major companies like **Petronas (Malaysia), Petrosin (Singapore), Vopak (Singapore), PTT (Thailand), Aker Kvaerner (Singapore), The Yokogawa Group, Technip (India), Ernst & Young, Triune Projects (India), Indian Chamber of Commerce, Solar Turbines (Singapore), Solar Turbines Inc. (San Diego, Brussels) and others.**

He has conducted several programs for executives in Singapore as **a faculty with National University of Singapore's industry training programs.**