

COURSES MODULE

For

INSTRUMENTATION DESIGN ENGINEERING



Course Outline

- ❖ Oil & Gas / Chemicals/ Energy & Power industries interaction and Scope.
- ❖ Knowing Client requirements and collection of specific data for projects
- ❖ Relevant Codes & Standards
- ❖ Basic Design requirement based on the type of plant e.g. Chemical
- ❖ Petrochemical, Pharmaceutical Industrial, Power plant etc
- ❖ Preliminary Project design requirements
- ❖ Selection of Instruments for Controlling Flow, Temperature, level and Pressure
- ❖ Preparation of Hookup drawings
- ❖ The various Process Conditions.
- ❖ Vendor's details and specification for all Instruments used to control Flow
- ❖ Level, Temperature and Pressure
- ❖ Installation and maintenance Tips of all Instruments.
- ❖ Preparation Ladder Diagram
- ❖ Detailed Design of Instrumentation systems including Layouts
- ❖ Procurement Requirements
- ❖ Inspection of Equipments/system

**CERTIFICATION & PG DIPLOMA COURSES FOR Oil &
Gas/Chemicals/Energy & Power industries.**

Introduction to Instrumentation Design

Introduction
Overview of an Engineering Organization
Role of a Instrumentation Engineer
Project Documentation

Basic Engineering Package:

Overview of Basic Engineering Package.
Relevant Codes & Standards.
Basic Design requirement based on the type of plant e.g. chemical, Petrochemical, Refinery, and Power Plant etc.

Process Parameters:

Selection of Instruments for Controlling:

- Flow
- Temperature
- Level
- Pressure.

Deliverable Documents:

Instrument Index
Process Data sheets and Specifications
Instrument Location Plan
Instrument Air Routing Layout
Level Sketch
I/O List
Instrument Wiring Layout
Loop Drawing
JB Layout
Cable Schedule
Cable Tray Layout
Torque Sheet
Hook-Up

Control Element, Process Data, Sizing and Specifications

Introduction to Process Data sheet
Selection of Control Valve
Performing Calculations and Sizing of Control Valve
Viewing and Editing Specification Sheets
Preparing multi tag data sheets

System Design

Introduction to wiring
Technology used for wiring operations
Junction box, Marshaling rack
DCS Panel
Cables
DCS wiring
Cross-Wiring the Signals in the Marshaling Rack
Adding a New Instrument to the Existing Wiring

Introduction to Packages & Analyzers

Introduction of Packages
Overview of Analyzers
Project Documentation & Case Studies
Review of vendor documents
Procurement details of Instruments and Specification

Assignments

To be submitted by Every Candidates

AutoCAD Practice Sheets for all Relevant Layouts
Submit Calculation Sheet for orifice, Thermowell, Control Valve
Submit Instrument Index & Data Sheet

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