

Basic Instrumentation and Control

Program Description

This course covers the fundamentals of instrument devices: types, selection, installation and operation. The course will equip the participants with the knowledge of automatic control systems, their design and application. At the conclusion of the course, participants will be capable of working and communicating with instrument and control engineers.

Who should attend:

The aim of the course is to provide background information for process instrumentation & control engineers and technicians with some experience in industry who are involved in design, maintenance or development, and who possibly need to specify or commission instruments for measurement and control of processes in refineries, petrochemicals, power plants and other industries. It will be beneficial to all plant operating personal.

Course Outline:

The Process of Measurement: An Overview

- The Significance of Measurement
- Fundamental Methods of Measurement
- The Generalized Measuring System
- Importance of Measurement

Instrument Classification and Characteristics

- Instrument Classification
- Static Characteristics of Instruments
- Dynamic Characteristics of Instruments
- Calibration
- Choice of Instrument

Introduction to Process Instruments

- Pressure
- Temperature
- Flow
- Level
- Analytical
- Symbols and Diagrams
- Process Diagrams
- Interlocks and Permissives
- P&ID Components

Primary Sensing Elements

- Pressure Instruments
- Temperature Instruments
- Level Instruments
- Flow Instruments

Fundamentals of Control

- Fundamental Components of Control Loop
- Open-Loop and Closed-Loop Control
- Piping and Instrument Diagrams
- Control Schemes

Controllers

- Types of Controllers
- Controller Response
- Functional Components of Controllers
- Local Controllers
- Controller Maintenance

Control Valves

- Concepts of Control Valves
- Linear Valve Features
- Actuator Operating Modes
- Positioner and Controller Operating Modes
- Valve Positioners
- How Positioners Work
- Control Valve Flow Characteristics
- Troubleshooting Final Control Devices
- Control Valve Selection and Sizing

Process Safety and Process Control

- Overview of Process Safety
- The Role of the Basic Process Control System
- Process Alarms
- Safety Interlock Systems (SIS)
- Interlocks and Automatic Shutdown Systems

Industrial Applications of Control Techniques

- Cascade Control
- Ratio Control
- Override and Selective Control
- Feed forward Control

For any further information please contact us at:

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