TRAINING TITLE

PLANT FACILITIES CONTROL SYSTEMS FOR PROCESS EQUIPMENT – OPERATIONS

Training Duration

5 day

Training Venue and Dates

Ref. No. PE258	Plant Facilities Control Systems for Process Equipment - Operations	5	08-12 Sep. 2025	$5,500	DUBAI, UAE

In any of the 4 or 5-star hotels. The exact venue will be informed later.

Training Fees

- **$5,500 per participant for Public Training includes Materials/Handouts, tea/coffee breaks, refreshments & Lunch**

Training Certificate

Define Management Consultants Certificate of course completion will be issued to all attendees.

TRAINING DESCRIPTION

This comprehensive 5-day training is designed for professionals working in the oil and gas industry who are involved in the operation, maintenance, and optimization of plant facilities control systems. Control systems are the backbone of modern oil and gas operations, ensuring that critical process equipment runs efficiently, safely, and in compliance with industry standards. From automated controllers to advanced monitoring systems, control systems play a crucial role in enhancing operational performance, reducing downtime, and improving overall productivity.

TRAINING OBJECTIVES

By the end of the course, participants will be able to understand

- **Understand Control Systems Fundamentals: Learn the key components and operational principles of control systems used in oil and gas plant facilities.**
- **Gain Practical Skills: Develop the skills to operate, configure, and troubleshoot control systems for various types of process equipment.**

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- **Master Advanced Control Techniques: Explore advanced control strategies, including model predictive control (MPC) and digital control systems, for optimizing plant operations.**
- **Ensure Safety and Reliability: Understand how to apply safety protocols, reliability practices, and maintenance strategies to ensure continuous and safe operation.**
- **Optimize Operations: Learn how to optimize plant equipment performance and energy usage through effective process control and system integration.**

WHO SHOULD ATTEND?

- **Process Engineers**
- **Control System Engineers**
- **Plant Operators and Technicians**
- **Maintenance Personnel**
- **Process Control Technicians**
- **Safety and Compliance Officers**

TRAINING METHODOLOGY

A highly interactive combination of lectures and discussion sessions will be managed to maximize the amount and quality of information and knowledge transfer. The sessions will start by raising the most relevant questions and motivating everybody to find the right answers. You will also be encouraged to raise your own questions and to share in the development of the right answers using your own analysis and experiences. Tests of multiple-choice type will be made available on daily basis to examine the effectiveness of delivering the course.
Very useful Course Materials will be given.

- 30% Lectures
- 30% Workshops and work presentation
- 20% Group Work& Practical Exercises
- 20% Videos& General Discussions

COURSE PROGRAM:

Day 1: Introduction to Control Systems in Oil and Gas Plant Facilities

- **Session 1: Overview of Process Control Systems in Oil and Gas**
  - Importance of process control systems in oil and gas facilities
  - Key components of control systems: sensors, transmitters, controllers, and actuators

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  - Types of control systems: Distributed Control Systems (DCS), Programmable Logic Controllers (PLC), and SCADA systems
- **Process Equipment and Operations in Oil and Gas Plants**
  - Overview of key process equipment in oil and gas (e.g., pumps, compressors, heat exchangers, reactors)
  - Role of control systems in managing equipment performance
  - Interactions between process equipment and control systems in various plant operations
- **Control System Architecture and Design**
  - Basic architecture of control systems in plant facilities
  - Functions of DCS and PLCs in plant operations
  - System integration and communication between equipment and control systems

Day 2: Instrumentation and Process Control Fundamentals

- **Session 1: Process Instrumentation and Control Devices**
  - Types of instruments: pressure, temperature, flow, and level measurement devices
  - Calibration and maintenance of process instruments
  - Key performance indicators (KPIs) for monitoring equipment performance
- **Control Strategies and Techniques**
  - Open-loop vs. closed-loop control systems
  - Proportional-Integral-Derivative (PID) control theory and its application in process equipment control
  - Control system tuning for optimal performance
- **Control System Configuration**
  - Configuring controllers for different process equipment
  - Loop design and system configuration for typical oil and gas processes
  - Integration of alarms, interlocks, and safety systems into control strategies

Day 3: Advanced Process Control and Optimization

- **Session 1: Advanced Control Systems and Techniques**
  - Model Predictive Control (MPC) and other advanced control strategies
  - Digital control and process optimization in complex plant environments
  - Implementing control systems for energy efficiency and cost reduction

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- **Control System Troubleshooting and Diagnostics**
  - Identifying and diagnosing issues in control systems
  - Common failures and fault detection techniques for process equipment control
  - Using diagnostics tools and software for system troubleshooting
- **Process Control System Simulation and Testing**
  - Simulation software for process control systems
  - Conducting virtual tests and simulations to validate control system performance
  - Testing equipment response to control signals and system changes

Day 4: Safety, Reliability, and Maintenance in Control Systems

- **Session 1: Control System Safety Protocols**
  - Safety standards and protocols for process control in oil and gas facilities (e.g., SIL, IEC 61508)
  - Safety Instrumented Systems (SIS) and their role in plant operations
  - Functional safety and risk management in control systems
- **Reliability of Control Systems and Process Equipment**
  - Reliability engineering in control systems and process equipment
  - Strategies for improving control system uptime and equipment reliability
  - Predictive maintenance using control system data
- **Control System Maintenance and Upgrades**
  - Routine maintenance practices for control systems and process equipment
  - Upgrading control systems to meet evolving process requirements
  - Managing system obsolescence and ensuring ongoing system performance

Day 5: Applications, Case Studies, and Future Trends

- **Session 1: Applications of Control Systems in Oil and Gas Facilities**
  - Case studies of successful control system implementations in oil and gas operations
  - Application of control systems in upstream, midstream, and downstream processes
  - Best practices for integrating process equipment with control systems in a real-world setting
- **Emerging Technologies and Future Trends in Control Systems**

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- The role of artificial intelligence (AI), machine learning, and big data in process control
- The future of digitalization and automation in the oil and gas industry
- Opportunities for process control systems to improve operational efficiency and sustainability
- Group discussions on the challenges of implementing and maintaining control systems in oil and gas facilities
- Final Q&A and wrap-up

NOTE:
Pre-& Post Tests will be conducted.
Case Studies, Group Exercises, Group Discussions, Last Day reviews, and assessments will be carried out.

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