MERCURY

Power Plant Operations & Control Training Course

8 – 12 March 2027
Madrid (Spain)



Dubai - UAE: +971 4 450 5697
Istanbul - Türkiye: +90 539 599 1206
Amman - Jordan: +962 79 712 3347

Power Plant Operations & Control Training Course

Ref: 6064_278411 **Date:** 8 – 12 March 2027 **Location:** Madrid (Spain) **Fees:** 6200 Euro

Introduction

This power plant operations and control training course provides an intermediate to advanced level of knowledge about the operation and control of power plant operations, ensuring a comprehensive understanding of power plant fundamentals, operation, and maintenance.

The power plant operations and control course extensively covers the construction, assemblies, and configuration of the most common types of fossil-fueled power plants, such as thermal, gas, and diesel power stations. The power plant operations and control course delves into electrical and mechanical engineering concepts, including electrical machines and drives, thermodynamics, and much more, to thoroughly prepare the participants for success in the field of power plant operations.

Participants in the power plant operations and control course will gain insight into control variables, instrumentation techniques, monitoring and controlling processes, and operation of control devices, valves, sensors, actuators, heat exchangers, compressors, and other critical components in ensuring efficient power plant operation.

For those interested in professional certification, this power plant operations and control course can be an essential step toward obtaining a power plant operator certification. The power plant operations and control course prepares attendees with the necessary knowledge and skills required to meet power plant operator requirements. The power plant operations and control course aims to place them firmly on the path toward career advancement in the field of power plant operation and maintenance.

Targeted Groups

- Power Station Operators, Technicians, Engineers, and Managers are seeking power plant operator training and certification programs.
- Electrical and Mechanical Engineers are seeking to expand their competencies in power plant training programs.
- Project Engineers, Project Managers, and Power Station Maintenance crew aiming for professional development in plant operations.
- University Graduates, Site Engineers, and Technical Crew are interested in a power plant technology certificate or a power plant operator degree.

Course Objectives

By the end of this power plant course, the participants will be able to:

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- Comprehend the intricate operation and maintenance of power plants.
- Analyze process and control diagrams within the power plant context.
- Gain familiarity with preventive and corrective maintenance, troubleshooting, and control strategies in power plants.
- Understand power plant parameters, disturbances, and control techniques for sustained operation.
- Appreciate distinctive power plant features, selection criteria, and optimization for maximum efficiency.

Targeted Competencies

At the end of this power plant operations and control course, the target competencies will be able to:

- Overview of in-depth knowledge of power generation theory.
- Understand the different power plant types and their features.
- Learn about proficiency in recognizing and applying industrial plant processes and control measures.
- Master in operating thermal, gas, and diesel generator power plants and understanding their selection criteria.
- Overview: a strong foundation in the fundamentals of electric machines, drives, and control devices.

Course Content

Unit 1: Fundamentals of Mechanical and Electrical Engineering

- Exploration of sensors and actuators.
- Understand the examination of pumps, compressors, turbines, fans, and blowers.
- Understand pneumatics and hydraulics essentials.
- Discuss control valves and cylinders and electrical actuation.
- Theory of heat transfer analysis.
- Delve into electric generators, motors, and drives.

Unit 2: Gas Power Station

- Overview of gas power stations and plant operation courses.
- Explore fundamentals and thermodynamics in power plant operation.
- Learn about the breakdown of gas turbine components and their functionalities.
- Study of construction, lubrication system, fuel system, and auxiliary systems.
- Understand protection, control, and instrumentation.
- Learn about installation, optimal plant operations, and maintenance.

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Unit 3: Thermal Power Station

- Learn about a detailed overview of thermal power stations.
- Investigate fuel combustion and steam generation process.
- Overview of boiler auxiliary plant operations and controls.
- Understand insight into boilers and power generation.
- Waste heat recovery.
- Understand techniques for boiler emission control, maintenance, and troubleshooting.

Unit 4: Diesel Generator DG Power Station

- Learn about the Identification of power plant types, components, and engine types.
- Learn about the analysis of engine technology and classifications.
- Understand the characteristics of DG types, protection, insulation, earthing, and construction.
- DG set assemblies and components essentials.
- DG plant layout optimization.
- Learn about best practices for DG operation and maintenance.

Unit 5: Process Instrumentation and Control

- Build the foundation of process control fundamentals.
- Understand techniques for the measurement and control of pressure, level, flow, and heat.
- Explore electronic controllers for power plant operation and maintenance.
- Learn to interpret Process Flow Diagram PFD, Piping and Instrumentation Diagram P&ID, and transfer function.
- Learn about the management of open and closed-loop controllers.
- Understand introduction to operational amplifiers, analog, and digital controllers.