€TRAINING

Modern Power Generation Technologies

9 - 13 March 2025
Online

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REF: E396 DATE: 9 - 13 March 2025 Venue: Online - Fee: 2500 Euro

Introduction:

Modern power generation technologies focus on innovative methods for producing electricity efficiently and sustainably. This training program provides a detailed understanding of steam power plants, gas turbines, co-generation, combined-cycle plants, wind and solar power generating plants. Through it, participants will be equipped with the skills needed to address the complexities of modern power generation and contribute to sustainable energy solutions.

Program Objectives:

At the end of this program, participants will be able to:

- Explore the principles and operation of gas turbines and their components.
- Evaluate the advantages and design considerations of co-generation systems.
- Optimize the performance of combined cycle plants and analyze their environmental benefits.
- Apply knowledge of wind power generation, including turbine types, site selection, and integration with the electrical grid.
- Assess the design, installation, and performance of solar power systems, considering economic and regulatory factors.

Targeted Audience:

- Power station operators, technicians, engineers, and managers.
- Electrical and mechanical engineers of different competency levels.
- Project engineers and project managers.
- Power station maintenance crew.

Program Outlines:

Unit 1:

Gas Turbines:

- Introduction to gas turbine technology and principles of operation.
- Components of a gas turbine system: compressor, combustion chamber, turbine.

- Understanding performance characteristics and efficiency metrics of gas turbines.
- Maintenance and troubleshooting techniques for gas turbine systems.

Unit 2:

Co-Generation:

- Overview of co-generation systems and their advantages in energy efficiency.
- Types of co-generation systems: combined heat and power CHP, trigeneration.
- Design considerations and optimization strategies for co-generation plants.
- Integration of co-generation systems with existing infrastructure and processes.
- Economic and environmental benefits of co-generation compared to traditional power generation methods.

Unit 3:

Combined Cycle Plants:

- Principles of combined cycle power generation and operation.
- Configuration and components of combined cycle plants: gas turbines, steam turbines, heat recovery steam generators HRSG.
- Performance optimization techniques for combined cycle plants.
- Analysis of efficiency gains and environmental benefits of combined cycle technology.

Unit 4:

Wind Power Generation:

- Introduction to wind energy and wind turbine technology.
- Types of wind turbines: horizontal-axis and vertical-axis.
- Site selection and wind resource assessment for wind power projects.
- Design considerations and engineering challenges in wind turbine installation.
- Integration of wind power into the electrical grid and energy storage solutions.

Unit 5:

Solar Power:

- Overview of solar energy and photovoltaic PV technology.
- Types of solar power systems: grid-connected, off-grid, hybrid.
- Design and installation considerations for solar PV systems.
- Performance monitoring and maintenance of solar power installations.
- Economic viability and regulatory aspects of solar power generation.