

Advanced Power Plant Operations and Performance Management

COURSE OVERVIEW

This course offers a comprehensive understanding of the systems, technologies, and operational strategies that drive power plant efficiency, reliability, and safety. It covers advanced thermodynamics, equipment performance evaluation, operational diagnostics, maintenance optimization, and energy efficiency improvement methods. Through practical sessions, case studies, and system simulations, participants will learn how performance monitoring, condition-based maintenance, and reliability-centered management enhance plant availability, extend asset life, and reduce operational costs.

WHO SHOULD ATTEND?

This course is designed for power plant engineers, operators, mechanical, electrical, and instrumentation engineers, maintenance and reliability engineers, plant supervisors, control room technicians, energy managers, efficiency specialists, power utility and IPP managers. It is equally valuable for project and operations managers in energy sector, asset performance and optimization specialists, industrial engineers, policy and regulatory officials overseeing energy and power generation efficiency.

COURSE OUTCOMES

Delegates will gain the skills and knowledge to:

- Understand the principles of advanced power plant operations and performance evaluation.
- Analyze thermodynamic cycles, energy balances, and system efficiencies for improved output.
- Apply performance monitoring tools and KPIs for continuous plant optimization.
- Optimize fuel utilization, emissions, and energy costs through process improvements.
- Develop data-driven maintenance and operations dashboards for informed decision-making.
- Strengthen leadership and strategic decision-making for high-performance plant management.

KEY COURSE HIGHLIGHTS

At the end of the course, you will understand;

- How to perform detailed performance evaluations using heat rate analysis, efficiency ratios, and benchmarking.
- How digital twins, IoT sensors, and AI algorithms enhance predictive diagnostics and asset reliability.
- The application of condition-based monitoring (CBM) and reliability-centered maintenance frameworks.
- Techniques for optimizing start-up, shutdown, and load-following operations to minimize losses.
- The integration of renewable energy and hybrid configurations within existing power plant infrastructure.
- The importance of safety culture, process discipline, and risk management in plant operations.
- Emerging trends in decarbonization, waste-heat recovery, and next-generation plant automation technologies.

All our courses are dual-certificate courses. At the end of the training, the delegates will receive two certificates.

1. A GTC end-of-course certificate.
2. Continuing Professional Development (CPD) Certificate of completion with earned credits awarded.