

Energy Efficiency in Process Industries

COURSE OVERVIEW

This course provides a structured approach to evaluating and improving energy use in chemical process industries. It covers core principles and practical methods for identifying inefficiencies, quantifying energy losses, and applying cost-effective optimization strategies across unit operations and integrated plants. The curriculum emphasizes proven engineering tools for reducing energy consumption, lowering operating costs, and minimizing environmental impact. Participants will be able to perform energy audits, use pinch analysis to optimize heat exchanger networks, and develop strategic energy management plans that strengthen both profitability and sustainability.

WHO SHOULD ATTEND?

This course is essential for process engineers, plant engineers, and energy managers in chemical, petrochemical, refinery, and related process industries who are responsible for optimizing energy consumption, reducing operating costs, and improving sustainability performance in industrial operations.

COURSE OUTCOMES

Delegates will gain the skills and knowledge to:

- Perform systematic energy and exergy analyses of chemical processes to identify key inefficiencies.
- Apply pinch analysis methodology to design and optimize heat exchanger networks (HENs).
- Evaluate the energy performance of major unit operations such as distillation, reactors, and utility systems.
- Develop integrated energy management strategies incorporating heat integration, waste heat recovery, and improved process control.
- Conduct techno-economic analyses to justify energy efficiency projects and calculate key metrics like payback period and return on investment.
- Assess the role of modern instrumentation and process control in maintaining optimal energy performance.

KEY COURSE HIGHLIGHTS

At the end of the course, you will understand;

- Ways to identify major energy losses across unit operations and integrated process systems.
- Methods for conducting structured energy audits and quantifying inefficiencies using proven engineering tools.
- Approaches for applying pinch analysis to optimize heat exchanger networks and improve thermal efficiency.
- Techniques for evaluating energy-saving opportunities in pumping, compression, heating, and separation processes.
- Strategies for reducing fuel, steam, and electricity consumption in process plants.
- Options for integrating energy-efficient technologies and retrofits into existing industrial systems.
- Principles for assessing the economic and environmental benefits of energy-optimization projects.

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