

Energy Optimisation of Oil Refineries

INTRODUCTION

- This Energy Optimisation of Oil Refineries training seminar is uniquely designed as a tool-box that provides an insight into the variety of energy optimisation topics - offers the knowledge of the Best Practices in energy and prepares the refinery energy managers, process engineers and technical staff involved in energy and the top management's energy sponsors for their important roles.
- Refinery energy efficiency is a multidisciplinary subject. It involves process operations, the utility system, the equipment, power generation, housekeeping, process control, retrofit design, advanced thermodynamic concepts such as Pinch Technology, and effective management. A comprehensive energy saving program that pushes a refinery to the forefront of energy efficiency and profitability must incorporate all these disciplines.

This training seminar will feature:

- Lectures, tutorials and group work in all areas of refinery energy efficiency
- Real-life Case Studies that illustrate technical solutions and obtainable benefits
- Transfer of instructor's extensive hands-on industrial experience
- Use of basic energy software tools that will be made available to participants
- Open discussion on actual problems in participant's own refinery

OBJECTIVES

By the end of this Energy Optimisation of Oil Refineries training seminar, the participants will be able to apply techniques which will enable them to conduct the following activities in their refineries:

- Assess energy efficiency of refinery and individual processes
- Calculate the potential for improvement
- Optimise refinery utility systems (steam and power)
- Apply energy saving techniques to develop energy saving projects
- Introduce effective Energy Management procedures

TRAINING METHODOLOGY

- The presenter will use a variety of proven learning techniques to ensure maximum understanding, comprehension and retention of the information presented. This includes a training seminar manual, suggested reading before and after the seminar, tutorials, group exercises and discussions, and where possible, problem-solving for the participant's own organisations.
- This Energy Optimisation of Oil Refineries training seminar will be interactive and will challenge delegates to think differently and comprehensively about energy practices.
- Much of the training seminar time is dedicated to (1) developing thorough understanding of refinery energy topics, particularly how much, where, why and at what efficiency the energy is consumed, and (2) introducing the practical application of energy saving techniques.
- Simulation examples are used throughout the training seminar to enhance the understanding. The participants will receive several basic energy software tools that they may find useful in their daily work.

WHO SHOULD ATTEND?

- Professionals working in the petroleum processing industry will benefit from this Energy Optimisation of Oil Refineries training seminar, especially those with a responsibility for refinery energy management and efficiency. The material presented is relevant to all engineers working in industrial processes, including operations, design and maintenance personnel.

Job titles / functions appropriate for this training seminar include:

- Plant Energy Managers / Coordinators
- Thermal and Stationary Equipment Engineers
- Personnel responsible for Inspection, Maintenance and Reliability
- Process Engineers
- Plant Engineers
- Project Engineers

Course Outline

Introduction to Energy Efficiency - The Effect of Energy on the Bottom Line

- Energy and its Effect on Refinery Profitability
- Refinery Energy Balance
- Energy Benchmarking - Site Efficiency Assessment
- Potential for Improvement
- Approach to Energy Saving
- Fuel, Power and Steam Costing Methodology

Energy Features of Refinery Key Process Units and How to Improve their Energy Efficiency

- Distillation: Crude Unit, Vacuum Unit
- Binary Distillation Columns
- Hydrotreating, Distillate and Naphtha
- Catalytic Reforming
- Fluid Catalytic Cracking
- Hydrocracking

Refinery Utility System

- Steam Systems
- Power Generation
- Steam Turbines, Cycles, Efficiencies
- Gas Turbines
- Cogeneration and its Benefits
- Optimisation of Steam & Power System

Process Heat Integration

- How Heat Integration Works
- Introduction to Pinch Technology
- Heat Availability Curves and Energy Targeting
- Pinch Technology for Refinery Operators
- Retrofitting Heat Exchange Networks for Improved Performance
- Intuitive vs. Systematic Network Revamp

Equipment Efficiency - Effective Energy Management

- Fired Heaters
- Rotating Equipment
- Heat Exchangers
- Energy Focused Organisation
- The Energy Team
- Developing Internal Competence in Energy