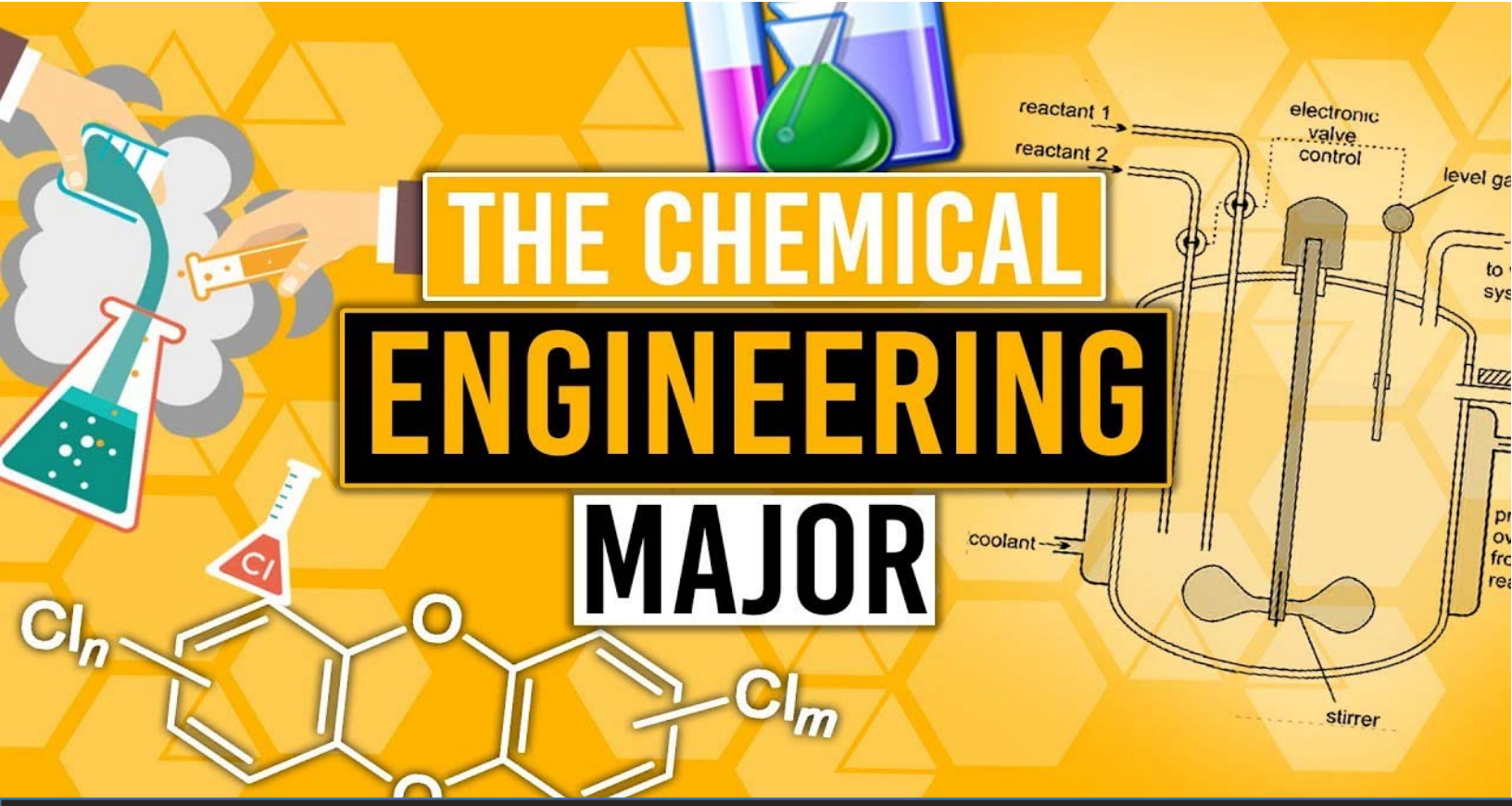

Enhancing Efficiency and Reliability in Refinery Process Heaters

BTS
Training & Consultancy

Enhancing Efficiency and Reliability in Refinery Process Heaters

Introduction

This BTS training course on Enhancing Efficiency and Reliability in Refinery Process Heaters training course will present an overview of refinery fired process heaters and will discuss most relevant routine inspection and operational evaluation aspects as well as a hands-on methodology for heater continuous assessment and improved efficiency and reliability.

Neglected for years, high-energy consuming process heaters have been gradually obtaining increased attention in the Middle East due to higher natural gas prices and the shortage of domestic supply. These facts have prompted an urgent need to accommodate effective measures to increase process heater efficiency into day-to-day refinery operations and in conjunction with it, to reduce greenhouse gas emissions. Refinery engineers and managers are progressively being exposed to combustion and heat transfer issues and their implications to the concepts of energy conservation and equipment reliability.

The training course is focused on providing the essential combustion and heat transfer technical background needed to examine and apprehend a variety of practical ideas by which plant personnel involved in process heater performance could improve equipment efficiency and capacity in an economical and environmentally friendly fashion. Example calculations will be interleaved into the training course sessions to gradually unveil a practical methodology for heater evaluation. Working examples illustrating practical means to attain efficiency improvements will also be discussed.

This BTS training course will highlight:

- Typical process heater fuels and major polluting emissions
- Process heater types, major components, burners and service applications
- Routine inspection and operational evaluation methodology
- Heater integrity and troubleshooting
- Practical means to increase heater duty, process flow and efficiency

Training Objectives

What are the Goals?

At the end of this training course, attendees will learn to:

- Identify heater main components and functions
- Calculate heater carbon footprint and other pollutants
- Develop a heater monitoring and evaluation methodology
- Optimize daily heater operation and thermal efficiency
- Advise on efficiency improvement projects

Target Audience

Who is this Training Course for?

This BTS training course will greatly benefit those professionals who need a thorough understanding of hands-on aspects of process heater operation such as Operations, Reliability and Process engineers.

It will be as well of great value and interest to:

- Process plant supervisors and team leaders
- Process heater maintenance and technical service engineers
- Refinery inspection, materials, environmental and safety engineers
- Experienced operators applicant to handle heater console operation
- Members of refinery energy optimizations groups
- Professionals dealing with risk assessment and integrity analysis

Training Methods

How will this Training Course be Presented?

This BTS training course on Enhancing Efficiency and Reliability in Refinery Process Heaters training course is intended to be a dynamic and interactive learning experience for delegates whose questions and comments will be welcome by the instructor. It uses theory, hands-on working exercises and guided discussions to provide thorough coverage of concepts and methodologies and to gain access to essential skills leading to enhanced process heater operation.

Organisational Impact

The organization will benefit from this training course by:

- Systematic and more proficient management of process heaters
- Improved equipment reliability and mechanical integrity
- Fuel savings and extended heater runs
- Increased plant and staff safety
- Motivated personnel by their individual impact on plant and process gains
- Staff advancement and preparedness into environmental compliance

Personal Impact

By attending this BTS training course, you will:

- Improving their theoretical and practical understanding of process heaters
- Being exposed to a systematic approach to heater assessment and evaluation
- Understanding troubleshooting issues which impact on heater integrity
- Gaining empowerment to apply operational cost reduction measures
- Increasing their awareness on the impact of heater operation on global warming
- Increasing self-confidence, personal motivation and company rapport

Daily Agenda

Day One: Fossil Fuels, Emissions and Combustion Reactions

- Course Overview
- Fossil Fuels
- Emissions and Climate Change
- Combustion Reactions, Stoichiometry and Excess Air

Day Two: Refinery Process Heaters

- Heater Types and Common Service Applications
- Heater Duty and Heat Flux Rate
- Process Coils and Tube Skin Thermocouples
- Burners
- Refractories

Day Three: Proactive Heater Operational Assessment

- Heater Operation Control and Safe Practices
- Heater Performance Assessment
- Periodic Heater Inspections (Burners, Flame Patterns, Coils, Refractories)
- Draft and excess Air Continuous Control

Day Four: Heater Performance Evaluation

- Operational Monitoring Trends and Adjustments
- Energy Balance and Thermal Efficiency
- Reporting and Setting Short Term Operating Targets

Day Five: Heater Troubleshooting and Efficiency Improvements

- Troubleshooting
- Calculating Fuels Savings and Carbon Footprint
- Upgrading or Revamping Heaters