AMERICAN GLOBAL INSTITUTE FOR PRIVATE TRAINING

External Training Course

Enhancing Efficiency and Reliability in Refinery Process Heaters

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From 21 Apr. To 25 Apr. 2025
From 21 Jul. To 25 Jul. 2025
From 20 Oct. To 24 Oct. 2025

Bentley Hotel Bosphorus
Istanbul, Turkey

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External Training Course:

Enhancing Efficiency and Reliability in Refinery Process Heaters

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INTRODUCTION

This 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. This 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 seminar sessions to gradually unveil a practical methodology for heater evaluation. Working examples illustrating practical means to attain efficiency improvements will also be discussed. This 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

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OBJECTIVES

At the end of this Enhancing Efficiency and Reliability in Refinery Process Heaters training course, you 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.

TRAINING METHODOLOGY

This 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 training course you will:

- Improve your theoretical and practical understanding of process heaters.
- Be exposed to a systematic approach to heater assessment and evaluation.
- Understand troubleshooting issues which impact on heater integrity.
- Gain empowerment to apply operational cost reduction measures.
- Increase your awareness on the impact of heater operation on global warming.
- Increase self-confidence, personal motivation and company rapport.

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Course Outline

DAY 1: Fossil Fuels, Emissions and Combustion Reactions

- Overview.
- Fossil fuels.
- Emissions and climate change.
- Combustion reactions, stoichiometry and excess air.

DAY 2: Refinery Process Heaters

- Introduction.
- Heater Types and Common Service Applications.
- Heat Transfer and Process Coil Design Fundamentals.
- Burners.

DAY 3: Proactive Heater Operational Assessment

- Introduction.
- Heater performance assessments.
- Periodic heater inspections.
- Draft and excess air continuous control.

DAY 4: Heater Performance Evaluation

- Introduction.
- Operational monitoring trends and adjustments.
- Energy balance and thermal efficiency.
- Reporting and setting short term operating targets.

DAY 5: Troubleshooting and Energy Performance

- Introduction.
- Troubleshooting.
- Fuels savings and carbon footprint reduction.
- Upgrading and revamping heaters.

Course Details & Agenda:

1st Day Agenda

8.30	9.00	Opening Remarks (30 Min.). Mr. Fadi Salfeti (Coordinator) with DR. EL HADY ENNAHOUI.
9.00	11.30	DISCUSS COURSE TOBICS: • Fossil Fuels, Emissions and Combustion Reactions. • Refinery Process Heaters. • Proactive Heater Operational Assessment. • Heater Performance Evaluation. • Troubleshooting and Energy Performance.
11.30	12.00	Coffee Break
12.00	15.00	Fossil Fuels, Emissions and Combustion Reactions: • Overview. • Fossil fuels. • Emissions and climate change. • Combustion reactions, stoichiometry and excess air.
15.00	15.30	Questions and Discussion
15.30		Buffet Lunch

2nd Day Agenda

9.00	11.30	Refinery Process Heaters: • Introduction. • Heater Types and Common Service Applications.
11.30	12.00	Coffee Break
12.00	15.00	Refinery Process Heaters: • Heat Transfer and Process Coil Design Fundamentals. • Burners.
15.00	15.30	Questions and Discussion
15.30		Buffet Lunch

3rd Day Agenda

9.00	11.30	Proactive Heater Operational Assessment: • Introduction. • Heater performance assessments.
11.30	12.00	Coffee Break
12.00	15.00	Proactive Heater Operational Assessment: • Periodic heater inspections. • Draft and excess air continuous control.
15.00	15.30	Questions and Discussion
15.30		Buffet Lunch

4th Day Agenda

9.00	11.30	Heater Performance Evaluation: • Introduction. • Operational monitoring trends and adjustments.
11.30	12.00	Coffee Break
12.00	15.00	Heater Performance Evaluation: • Energy balance and thermal efficiency. • Reporting and setting short term operating targets.
15.00	15.30	Questions and Discussion
15.30		Buffet Lunch

5th Day Agenda

9.00	11.30	Troubleshooting and Energy Performance: • Introduction. • Troubleshooting.
11.30	12.00	Coffee Break
12.00	15.00	Troubleshooting and Energy Performance: • Fuels savings and carbon footprint reduction. • Upgrading and revamping heaters.
15.00	15.30	Questions, Discussion & Conclusion Training Course.
15.30		Buffet Lunch