Fired Heater Operation And Safety

Training Program

Who Should Attend?

Unit contact engineers, design engineers, unit supervisors, and unit operators who must understand how to operate a fired heater safely and/or respond to fired heater operating problems.

Methodolgy:

This interactive Training will be highly interactive, with opportunities to advance your opinions and ideas and will include:

- Lectures
- Workshop & Work Presentation
- Case Studies and Practical Exercise
- Videos and General Discussions

Certificate:

BTS attendance certificate will be issued to all attendees completing minimum of 80% of the total course duration.

Course objectives:

Upon completion of this course, participants will recognize and be able to respond to typical fired heater problems that may occur during operation. They will have an understanding of major fired heater components, fired heater safety hazards, and concerns. Participants will also have a better understanding of fired heater operations and the methods that can be applied to improve operating efficiency.

Course outline:

This course is divided into four sections.

Section 1 - Troubleshooting Fired Heater Operations

- Air leaks
- Flame impingement
- Irregular flames
- Burner problems
- Hot spots
- Coke buildup
- Loss in flow
- Flameout
- Feed valve failure
- Fuel gas valve failure
- Tube problems
- Tube support problems
- Instrumentation problems

Section 2 - Safe Operation of a Fired Heater

- Major fired heater components
    - ✓ Radiant section
    - ✓ Convection section
    - ✓ Stack
    - ✓ Tubes
    - ✓ Burners
- Fired heater safety hazards
    - ✓ Emergency shutdown (ESD) systems
    - ✓ Startup/shutdown procedures
    - ✓ High tube metal temperatures (TMTs)
    - ✓ Loss of flow
    - ✓ Flame out protection
- Other fired heater safety concerns

Section 3 - Optimizing Fired Heater Operation

- Define and describe the term "fired heater efficiency"
- Control of excess oxygen
- Control of fired heater draft
- Monitoring fired heater parameters (e.g., draft, excess air, inlet and outlet temperatures, pass flows, fuel gas pressures)
- Performing visual surveillance of the firebox
- Responding to abnormal operating conditions

- Operation in a turndown mode
- Flow balancing in a multi-pass fired heater

Section 4 - Operating a Fired Heater

- Inspecting the heater
- Proper purging of the heater
- Properly lighting off the pilot
- Properly lighting off the main gas burners
- Making natural draft O2 and draft adjustments