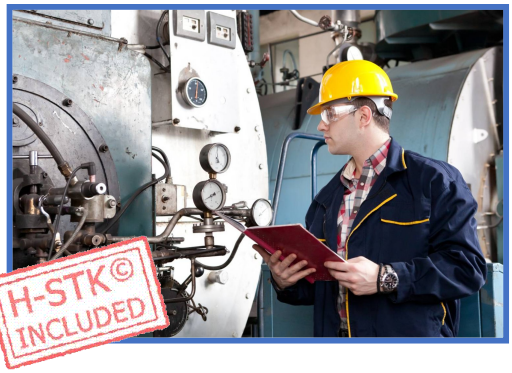
COURSE OVERVIEW PE0377(GA2)
Boiler Flame Supervision Control



Course Title
Boiler Flame Supervision Control

Course Date/Venue
Session 1: January 06-10, 2025/Fujairah Meeting Room, Grand Millennium Al Wahda Hotel, Abu Dhabi, UAE
Session 2: August 03-07, 2025/Boardroom 1, Elite Byblos Hotel Al Barsha, Sheikh Zayed Road, Dubai, UAE

Course Reference
PE0377(GA2)

Course Duration/Credits
Five days/3.0 CEUs/30 PDHs

Course Description

This hands-on, highly-interactive course includes real-life case studies and exercises where participants will be engaged in a series of interactive small groups and class workshops.

This course is designed to provide participants with a detailed and up-to-date overview of the fired process heater operation, control and troubleshooting. It is specifically designed to help plant operators better understand the function of direct-fired heaters, explaining the principles of combustion, the characteristics of different designs, and methods of operations, including important controls and guidelines to optimize and improve heater efficiency.

Further, this course will also cover the techniques to operate more safety and meet emission guidelines; the process fired heaters function; the applicable codes and standards for fired heaters; the operational systems, check-lists and procedures adopted for fired heater start up and shutdown; the risks associated with fired heater start up and shutdown and the applicable safety procedures to be followed; the skills to anticipate and avoid all problems associated with process fired heater operation; and the operation of heaters with safety as the prime consideration.

During this interactive course, participants will learn the control and safety issue; the key operating parameters; the typical problems and possible causes; the key inspection and turnaround items; the basic principles of combustion, process fired heaters and the types of fired heaters; the fired heater engineering and gas and oil fired heaters combustion techniques; the direct fire heater components, fired heater data sheet and fuel burning management system; the air flow (primary, secondary & excess air), types of draft and air preheating; the effective commissioning, start-up and shutdown of fired heaters; the revamping fired heaters, fired heater control and fire heater inspection; the efficiency of fired heaters and the application of fired heaters pre-commissioning and commissioning procedure; and the fired heater duty, fired heater safety, fired heater problems and troubleshooting.

Course Objectives

Upon the successful completion of this course, each participant will be able to:-

- Apply and gain an in-depth knowledge on fired process heater operation, control and troubleshooting
- Review techniques to operate more safety and meet emission guidelines
- Describe how process fired heater's function
- Identify and list the applicable codes and standards for fired heaters
- Carryout operational systems, check-lists and procedures adopted for fired heater start up and shutdown
- Identify the risks associated with fired heater start up and shutdown and the applicable safety procedures to be followed
- Gain enough skills to anticipate and avoid all problems associated with process fired heater operation
- Operate heaters with safety as the prime consideration
- Identify control and safety issues as well as explain key operating parameters
- Recognize typical problems and identify possible causes
- Discuss key inspection and turnaround items including the basic principles of combustion, process fired heaters and the types of fired heaters
- Explain fired heater engineering and carryout gas and oil-fired heaters combustion techniques
- Identify direct fire heater components, fired heater data sheet and fuel burning management system
- Recognize air flow (primary, secondary & excess air), types of draft and air preheating
- Carryout effective commissioning, start-up and shutdown of fired heaters
- Employ revamping fired heaters, fired heater control and fired heater inspection
- Improve the efficiency of fired heaters and apply fired heaters pre-commissioning and commissioning procedure
- Calculate fired heater duty, implement fired heater safety and identify fired heater problems and troubleshooting

Exclusive Smart Training Kit - H-STK®

*Participants of this course will receive the exclusive "Haward Smart Training Kit" (**H-STK®**). The **H-STK®** consists of a comprehensive set of technical content which includes **electronic version** of the course materials conveniently saved in a **Tablet PC**.*

Who Should Attend

This course provides an overview of all significant aspects and considerations of fired process heater operation, control and troubleshooting for engineers, specialists, supervisors, technicians and operators.

Training Methodology

All our Courses are including **Hands-on Practical Sessions** using equipment, State-of-the-Art Simulators, Drawings, Case Studies, Videos and Exercises. The courses include the following training methodologies as a percentage of the total tuition hours:-

30% Lectures
20% Practical Workshops & Work Presentations
30% Hands-on Practical Exercises & Case Studies
20% Simulators (Hardware & Software) & Videos

In an unlikely event, the course instructor may modify the above training methodology before or during the course for technical reasons.

Course Fee

US$ 5,500 per Delegate + **VAT**. This rate includes H-STK® (Haward Smart Training Kit), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

Accommodation

Accommodation is not included in the course fees. However, any accommodation required can be arranged at the time of booking.

Course Certificate(s)

Internationally recognized certificates will be issued to all participants of the course who completed a minimum of 80% of the total tuition hours.

Certificate Accreditations

Certificates are accredited by the following international accreditation organizations: -

- British Accreditation Council (BAC)

  Haward Technology is accredited by the **British Accreditation Council** for **Independent Further and Higher Education** as an **International Centre**. BAC is the British accrediting body responsible for setting standards within independent further and higher education sector in the UK and overseas. As a BAC-accredited international centre, Haward Technology meets all of the international higher education criteria and standards set by BAC.

- The International Accreditors for Continuing Education and Training (IACET - USA)

Haward Technology is an Authorized Training Provider by the International Accreditors for Continuing Education and Training (IACET), 2201 Cooperative Way, Suite 600, Herndon, VA 20171, USA. In obtaining this authority, Haward Technology has demonstrated that it complies with the **ANSI/IACET 2018-1 Standard** which is widely recognized as the standard of good practice internationally. As a result of our Authorized Provider membership status, Haward Technology is authorized to offer IACET CEUs for its programs that qualify under the **ANSI/IACET 2018-1 Standard**.

Haward Technology's courses meet the professional certification and continuing education requirements for participants seeking **Continuing Education Units** (CEUs) in accordance with the rules & regulations of the International Accreditors for Continuing Education & Training (IACET). IACET is an international authority that evaluates programs according to strict, research-based criteria and guidelines. The CEU is an internationally accepted uniform unit of measurement in qualified courses of continuing education.

Haward Technology Middle East will award **3.0 CEUs** (Continuing Education Units) or **30 PDHs** (Professional Development Hours) for participants who completed the total tuition hours of this program. One CEU is equivalent to ten Professional Development Hours (PDHs) or ten contact hours of the participation in and completion of Haward Technology programs. A permanent record of a participant's involvement and awarding of CEU will be maintained by Haward Technology. Haward Technology will provide a copy of the participant's CEU and PDH Transcript of Records upon request.

Course Instructor(s)

This course will be conducted by the following instructor(s). However, we have the right to change the course instructor(s) prior to the course date and inform participants accordingly:

Mr. Yasser Almasood is a **Senior Process & Petroleum Engineer** with almost **20 years** of industrial experience within the, **Oil & Gas**, **Refinery** and **Petrochemical** industries. His wide expertise covers in the areas of **Gas Processing** Calculation, **Process Reactor** Operation & Troubleshooting, **Catalytic Reactors**, **Heat Exchanger**, **Distillation Columns**, **Pumps**, Distributed Control System (**DCS**), **Catalytic Reformer Unit**, **Polymerization**, **Dehydrogenation**, **Gas Processing Plant** Operations & Control, **Gas Processing** Monitoring & Troubleshooting, **Process Plant Start-up** Commissioning & Troubleshooting, **Process Plant** Optimization & Energy Conservation, **Process Equipment** Design & Troubleshooting, **Advanced Operation Skills**, **Refinery Process Yield Optimization**, **Oil & Gas Processing**, Troubleshooting Oil & Gas Processing Facilities, **Polymers & Polymerization**, Applied **Process Engineering**, **Process Plant** Troubleshooting & Engineering Problem Solving, **Process** Plant Performance & Efficiency, **Flare Blowdown & Pressure Relief Systems**, **Polypropylene** Manufacturing, **Polyethylene** & Process Troubleshooting, **Ammonia**, **Ethylene**, **Solvents**, **Gas Feed**, **EDC**, **VCM**, **PP**, **PVC**, **Chlorine**, **Fluidized Bed Reactor**, **Oil Movement & Storage**, **Power Plant Chemistry**, **Catalyst** Manufacturing Techniques, **Fuel Systems** Management, **Process Design & Optimization**, **Desalination Processes**, **Reverse Osmosis** and **Molecular Sieves**. Further, he is also well-versed in **HAZOP**, Advanced **Process Hazard Analysis**, **Safety** Management, **Environmental Safety** Management, **LOPA & SIL**, Process Safety Management (**PSM**), **Incident investigation & Root Cause Analysis**, **Emergency & Crisis Management**, **Safety Audit & Site**, Inspection, Inspection of Fire Equipment & Tools, **Fire Protection & Prevention**, Worker Protection from Radiation Work Permits, IGC International General Certificate in Occupational Safety & Health, **Risk Assessment**, **Risk Associated** with Low Level Radiation Exposure, Hydrogen Sulfide (**H2S**) Safety, **Personal Protective Equipment**, **Lock-Out & Tag-Out**, **OSHA** Occupational Safety & Health, Radiation & Contamination, Scientific Notation, Exposure Rate & Shielding Calculations, **Excavations & Trenching**, **Permit-to-Work**, Aspentech, Aspen HYSYS, Pro II, exSILentia, OLGA, Flare System Analyzer, Aspen PIMS, DYNSIM, RiskWISE, MS Office and IBM Maximo.

During his career life, Mr. Yasser has gained his practical and field experience through his various significant positions and dedication as the **Senior Process Engineer**, **Process Engineer**, **Oil & Gas Process & Safety Instructor**, **On-Job Instructor**, **Process Senior Operator**, **Acting DCS Operator** and **Shift Controller** for various multi-national companies such as the ADNOC Gas Processing (**GASCO**), Conoco Phillips Gas Plant and Syrian Gas Company (SGC).

Mr. Yasser has a **Bachelor** degree in **Petroleum Engineering**. Further, he is a **Certified Instructor/Trainer** and has further delivered numerous training, courses, workshops, seminars and conferences worldwide.

Course Program

The following program is planned for this course. However, the course Instructor(s) may modify this program before or during the course for technical reasons with no prior notice to participants. Nevertheless, the course objectives will always be met:

Day 1

0730 – 0800	*Registration & Coffee*
0800 – 0815	*Welcome & Introduction*
0815 – 0830	***PRE-TEST***
0830 – 0930	***Basic Principles of Combustion*** *Combustion Chemistry • Stoichiometric Combustion • Types of Fuels*
0930 – 0945	*Break*
0945 – 1100	***Basic Principles of Combustion (cont'd)*** *Gross & Net Heating Values • Flue Gas Analysis • Emissions Level*
1100 – 1230	***Introduction to Process Fired Heaters*** *Fire Box • Convection • Stack • Burners*
1230 – 1245	*Break*
1245 – 1420	***Types of Fired Heaters*** *Indirect • Direct*
1420 – 1430	***Recap***
1430	*Lunch & End of Day One*

Day 2

0730 – 0900	***Fired Heater Engineering*** *Fluid Flow • Heat Transfer • Fuels • Design Guidelines*
0900 – 0915	*Break*
0915 – 1200	***Gas & Oil Fired Heaters Combustion Techniques***
1200 – 1215	*Break*
1215 – 1300	***Direct Fire Heater Components*** *Radiant Section • Shield Section • Convection Section • Flue Gas Stack • Fans & Blowers • Dampers, Louvers & Diverters*
1300 – 1420	***Fired Heater Data Sheet Understanding***
1420 – 1430	***Recap***
1430	*Lunch & End of Day Two*

Day 3

0730 – 0900	***Fuel Burning Management System***
0900 – 0915	*Break*
0915 – 1030	***Air Flow (Primary, Secondary & Excess Air)***
1030 – 1200	***Types of Draft*** *Natural • Forced •Induced •Balanced Drafts*
1200 – 1215	*Break*
1215 – 1300	***Air Preheating***
1300 – 1330	***Safe & Effective Commissioning, Start-Up & Shutdown of Fired Heaters*** *Preparations for Start Up • Start Up Sequence • Operating Parameters Follow Up • Operation Optimization*
1330 – 1420	***Revamping Fired Heaters*** *Upgrade Convection Section • Upgrade Instrumentation & Controls • Maximizing Furnace Life*
1420 – 1430	***Recap***
1430	*Lunch & End of Day Three*

Day 4

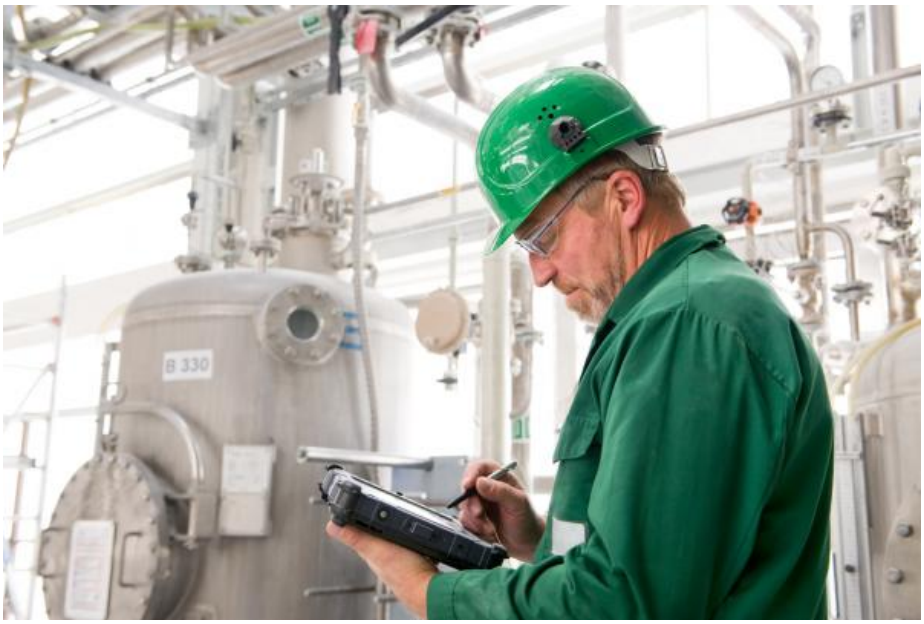
0730 – 0900	***Fired Heater Control*** *Instrument Components • Flow, Temperature & Pressure Control Loops*
0900 – 0915	*Break*
0915 – 1030	***Fired Heater Control (cont'd)*** *Alarms & Interlocks • P&ID Description*
1030 – 1200	***Fired Heater Inspection*** *Types of Tests*
1200 – 1215	*Break*
1215 – 1420	***Fired Heater Inspection (cont'd)*** *Inspection Procedure • Inspection Results Evaluation*
1420 – 1430	***Recap***
1430	*Lunch & End of Day Four*

Day 5

0730 – 0800	***Improve the Efficiency of Fired Heaters*** *Excess Air • Burner Types • Flame Types*
0800 – 0900	***Fired Heaters Pre-Commissioning & Commissioning Procedure***
0900 – 0915	*Break*
0915 – 1030	***Calculation of Fired Heater Duty***
1030 – 1200	***Fired Heater Safety***
1200 – 1215	*Break*
1215 – 1345	***Fired Heater Problems & Troubleshooting***
1345 – 1400	***Course Conclusion***
1400 – 1415	***POST-TEST***
1415 – 1430	*Presentation of Course Certificates*
1430	*Lunch & End of Course*

Practical Sessions

This hands-on, highly-interactive course includes real-life case studies and exercises:-



Course Coordinator

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