



COURSE OVERVIEW PE0640 Troubleshooting Process Operations

Course Title

Troubleshooting Process Operations

Course Date/Venue

November 09-13, 2025/Meeting Plus 3, City Center
Rotana Doha, Doha, Qatar

Course Reference

PE0640

Course Duration/Credits

Five days/3.0 CEUs/30 PDHs



Course Description



This practical and 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.



Production processes consist of many complex apparatuses involving both moving and static parts as well as interconnecting pipes, control mechanisms and electronics, mechanical and thermal stages, heat exchangers, waste and side product processing units, power ducts and many others.



Bringing such a complicated unit online and ensuring its continued productivity requires substantial skill at anticipating, detecting and solving acute problems. Failure to identify and resolve these problems quickly can lead to lost production, off-spec product, equipment loss, and even catastrophic accidents. Therefore, the ability to troubleshoot process operations is one of the most valuable skills operations personnel can possess.

Troubleshooting is the process used to diagnose the fault safely and efficiently, decide on corrective action and prevent the fault from reoccurring. Process engineering, especially troubleshooting, is different from most other branches of technology in another respect: It is not advancing very quickly.



The principles of distillation, hydraulics, phase separation, and heat transfer, as they apply to process applications, have been well known for quite some time. The challenge in troubleshooting consists of untangling the influence that human error, mechanical failure, and corrosion have on these well-known principles. The aspect of the job that makes it so difficult is that most process problems are initiated by human error – a never-ending source of surprise.

This course is designed to provide instruction in the different types of troubleshooting techniques, procedures, and methods used to solve process problems. Participants will use existing knowledge of equipment, systems, and instrumentation to understand the troubleshooting process operations of an entire unit in a facility. Participants study concepts related to troubleshooting commissioning, normal startup, normal operations, normal shutdown, turnarounds, and abnormal situations, as well as the Process team role in performing tasks associated with these concepts within an operating unit.

Course Objectives

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

- Apply systematic techniques in troubleshooting process operations and carryout successful troubleshooting activities
- Follow a structured technique for problem solving and troubleshooting process operation, using the guide-words: engage – define – explore – plan – do – check
- Analyze the mental problem-solving process and demonstrate the use of the troubleshooter's worksheet
- Practice the rules-of-thumb techniques for trouble-shooting process equipment and enumerate the typical causes of problems with process equipment that covers an extensive range of process equipment
- Develop problem solving, data gathering & interpersonal skills and recognize the importance of these skills in troubleshooting process operations
- Practice the trouble-shooting skills by working in small workshops on a wide range of case studies drawn from the process industries

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 covers systematic techniques in troubleshooting process operations and carrying out successful troubleshooting activities. Process engineers, maintenance engineers, maintenance staff, plant engineers, team leaders, section heads, production engineers, operations engineers and field engineers will definitely benefit from the engineering problem solving approach of the course. Shift foremen, plant supervisors and other technical staff will gain an excellent knowledge from the practical aspects of this course.

Pre-Requisite: Participants must have a good understanding on the chemical engineering basic principles of operations and process equipment.




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

Haward's 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**. Haward's certificates are internationally recognized and accredited by the British Accreditation Council (BAC). 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:



Dr. Faysal Eliyan, PhD, MSc, BSc, is a **Senior Engineer** with extensive years of experience within the **Oil & Gas, Petroleum and Refinery** industries. His expertise widely covers in the areas of **De-Sulfurization Technology, Process Plant Equipment, Process Equipment Design, Sizing, Selection, Applications & Troubleshooting, Process Plant Optimization Technology & Continuous Improvement, Plant Operation, Troubleshooting & Optimization, Gas Conditioning & Processing, Plant Layout Optimization, Concrete Structural Design, Concrete Maintenance & Reliability Analysis, Civil Engineering Drawings, Standards & Codes, Civil Engineering Design, Petrochemical Plant Structure Design & Remediation, Elements of Applied Civil Engineering, Dynamic Analysis of Rotating Equipment Foundations & Structural Steel Piperacks, Concrete & Structural Steel Design, Steel Structure Design, Advanced Building Construction Technology, Structural Engineering Techniques, Structural Renovation of Buildings, Earthwork & Structural Maintenance, Surface Drainage, Drainage System, Building Envelopes & Finishes, Landscaping & Roofing System, Seismic Design for Buildings, AutoCAD, Advanced Seismic & Wind Design of Reinforced Concrete, Structural Systems & Components, Design of Concrete Columns & Beam Frames, Design of Foundations & Equipment Footings, Maintenance of Concrete Structures, Structural Reliability Assessment, Codes & Structural Reliability, Probabilistic Evaluation of Existing Structures, Structural Steel, Precast Concrete and Reinforced Polymer Layered Steel. Further, he is also well-versed in **Gas Turbines, Steam Turbines, Heat Exchangers** Inspection, Testing & Overhaul Cleaning, Heating, Ventilation & Air Conditioning (HVAC), **Fans & Blowers, Heaters & Boilers, Compressors, Maintenance Planning & Scheduling, Pumps & Compressors** Operation & Maintenance, **Valves Technology** Selection, Installation & Troubleshooting, **Cooling Towers, Rotating Equipment, Turbomachinery, Condition Monitoring & Diagnostics, Hydraulic & Pneumatic Systems** Maintenance & Troubleshooting, **Piping Systems, Corrosion Control & Materials Selection** in Oil and Gas and Water Systems, **Machinery Alignment & Balancing, Maintenance Management, Operational Problems & Failure Analysis, Energy Performance Assessment of Powerplants, Plant Operations, Project Management, Six Sigma** and **Health, Safety & Environment**.**

During his career life, Dr. Faysal has gained his practical and field experience through his various significant positions and dedication as the **Assistant Professor, Senior Consultant, Laboratory Instructor, Lecturer, Tutor, Mentor, Advisor, Trainer, Engineering Manager, Senior Engineer, Senior Project Engineer, Engineer** and **Adjudicator** from various institutions and universities such as the Community College of Qatar, American University of the Middle East, McMaster University, The University of British Columbia, The University of British Columbia, Qatar University and General Electric, just to name a few.

Dr. Faysal has **PhD, Master** and **Bachelor** degrees in **Engineering** from the **University of British Columbia (Canada)**. He is a **Certified Instructor/Trainer**, a member of the **Chamber of Civil Engineers, Structural Stability Research Council, American Institute of Steel Construction** and **American Society of Civil Engineers (ASCE), USA**. He also **published numerous books, researches and scientific papers** and received several awards and recognitions for **Journal of Materials Engineering and Performance** and has further delivered numerous trainings, courses, seminars, workshops and conferences internationally.



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\$ 6,000 per Delegate. 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 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: Sunday, 09th of November 2025

0730 – 0800	Registration & Coffee
0800 – 0815	Welcome & Introduction
0815 – 0830	PRE-TEST
0830 – 0930	What is Troubleshooting? Characteristics of a Trouble-Shooting Problem • Characteristics of the Process Used to Solve Trouble-Shooting Problems
0930 – 0945	Break
0945 – 1100	Self-Assessment & Case Studies
1100 – 1230	The Mental Problem-Solving Process Problem Solving • Troubleshooting • Overall Summary of Major Skills & a Worksheet • Example Use of the Trouble-Shooter's Worksheet
1230 – 1245	Break
1245 – 1420	Video
1420 – 1430	Recap
1430	Lunch & End of Day One

Day 2: Monday, 10th of November 2025

0730 – 0930	Rules of Thumb for Troubleshooting Overall • Transportation Problems • Energy Exchange • Homogenous Separation • Heterogenous Separations • Reactor Problems • Mixing Problems • Size-Decrease Problems • Size Enlargement • Vessels, Bins, Hoppers & Storage Tanks • "Systems" Thinking • Health, Fire & Stability
0930 – 0945	Break
0945 – 1100	Case Study Observation



1100 – 1230	Problem Solving Skills <i>Developing Awareness of the Problem-Solving Process • Strategies • Exploring the “Context”: What is the Real Problem?</i>
1230 – 1245	<i>Break</i>
1245 – 1420	Video
1420 – 1430	Recap
1430	<i>Lunch & End of Day Two</i>

Day 3: Tuesday, 11th of November 2025

0730 – 0930	Problem Solving Skills (cont’d) <i>Creativity • Self-Assessment</i>
0930 – 0945	<i>Break</i>
0945 – 1100	Data Gathering Skills <i>How to Select Valid Diagnostic Actions • Consistency: Definitions, Cause-Effect & Fundamentals • Classification • Recognizing Patterns • Reasoning</i>
1100 – 1230	Interpersonal Skills <i>Interpersonal Skills • Factors that Affect Personal Performance • The Environment</i>
1230 – 1245	<i>Break</i>
1245 – 1420	Video
1420 – 1430	Recap
1430	<i>Lunch & End of Day Three</i>

Day 4: Wednesday, 12th of November 2025

0730 – 0930	Case Studies - Working in Groups <i>Case Study chosen from a list by the class</i>
0930 – 0945	<i>Break</i>
0945 – 1145	Case Studies - Working in Groups (cont’d) <i>Case Study Chosen from a List by the Class (cont’d)</i>
1145 – 1230	Case Studies - Working in Groups (cont’d) <i>Case Study Chosen from a List by the Class (cont’d)</i>
1230 – 1245	<i>Break</i>
1245 – 1420	Video
1420 – 1430	Recap
1430	<i>Lunch & End of Day Four</i>

Day 5: Thursday, 13th of November 2025

0730 – 0930	Case Studies - Working in Groups (cont’d) <i>Case Study Chosen from a List by the Class (cont’d)</i>
0930 – 0945	<i>Break</i>
0945 – 1145	Case Studies - Working in Groups (cont’d) <i>Case Study Chosen from a List by the Class (cont’d)</i>
1145 – 1230	Case Studies - Working in Groups (cont’d) <i>Case Study Chosen from a List by the Class (cont’d)</i>
1230 – 1245	<i>Break</i>
1245 – 1345	Case Studies - Working in Groups (cont’d) <i>Case Study Chosen from a List by the Class (cont’d)</i>
1345 – 1400	Course Conclusion
1400 – 1415	POST-TEST
1415 – 1430	<i>Presentation of Course Certificates</i>
1430	<i>Lunch & End of Course</i>



Practical Sessions

This practical and highly-interactive course includes real-life case studies and exercises:-



- The Case of the Cycling Column
- The Sulfuric Acid Pump Problem
- The Case of the Reluctant Crystallizer
- The Lousy Control System
- The Case of the Flashy Flare
- The Drooping Temperatures
- The Case of the Platformer Fires
- The Case of the Utility Dryer
- The Lazy Twin
- The Case of the Dirty Vacuum Gas Oil
- The Case of the Delinquent Exchangers
- The Boiler Feed Heater

Course Coordinator

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