



COURSE OVERVIEW PE0980 **Safety in Process Design**

Course Title

Safety in Process Design

Course Date/Venue

December 07-11, 2025/Club Rotana Meeting Room, City Center Rotana Doha, Doha, Qatar

Reference

PE0980

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.



This course is designed to provide participants with a detailed and up-to-date overview of safety in process design. It covers the implementation of safety concepts, methods and standards in process design including redesign of existing processes for safety considerations; managing process safety including risk and process hazard analysis; and minimizing the risk of process hazards in the design of oilfield processing equipment and facilities.



Further, the course will also discuss the various types of corrosion; the different types of health hazards including chemical hazards, noise, radiation, thermal stress; the evaluation of reactive chemical hazards by using experimental screening, reaction hazard index and hydroperoxide; the equipment design and operation; the strategies to prevent fires and explosions; and the issues associated with the process design of a facility and in developing "inherently safer" designs.



During this interactive course, participants will learn to eliminate hazards through process design; identify human error including unintentional errors, misleading information and poor design; improve the techniques used in the modification process used in process design; apply the various methods in the prevention of incidents; employ risk assessment as applied in process design and recognize its importance; and demonstrate how process design, management of change, and inadequate safeguards have all contributed to major accidents.

Course Objectives

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

- Apply and gain an in-depth knowledge on safety requirements in process design including process hazard evaluation, process equipment design and operation
- Implement the safety concepts, methods and standards in process design including redesign of existing processes for safety considerations
- Manage process safety including risk and process hazard analysis
- Minimize the risk of process hazards in the design of oilfield processing equipment and facilities
- Identify the various types of corrosion and discuss the different types of health hazards including chemical hazards, noise, radiation and thermal stress
- Evaluate reactive chemical hazards by using experimental screening, reaction hazard index and hydro-peroxide
- Review the equipment design and operation and improve the strategies to prevent fires and explosions
- Recognize issues associated with the process design of a facility and in developing “inherently safer” designs
- Eliminate hazards through process design and explain human error including unintentional errors, misleading information and poor design
- Improve the techniques used in the modification process used in process design and apply the various methods in the prevention of incidents
- Employ risk assessment as applied in process design and recognize its importance in the process industry
- Analyze case studies that discuss incidents in the process industry and demonstrate how process design, management of change, and inadequate safeguards have all contributed to major accidents

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 is intended for those who are managing and performing process design and process hazard evaluations or risk assessments for operating facilities or are coordinating project activities. Further, the course is suitable for new graduates who wish to gain an understanding of practical process design issues.

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:



Mr. Basem Al-Qarout is a **Senior Process & Chemical Engineer** with **30 years** of extensive experience in the **Power, Petrochemical, Oil & Gas** industries. His wide expertise covers in the areas of **Compression Systems** Operation, **Process Operations**, **Hydrocarbon Processing**, **Process Plant Start-Up & Commissioning**, **Crude Oil & Refinery Products**, **Sampling & Feed/Product Quality**, **Naphtha & Condensate** in **Petrochemicals**, **Feedstock Handling & Storage**, **Process Troubleshooting & Problem Solving**, **Separation of Oil/Gas/Water**, **Oil Field Operations**, **Gas Field Operations**, **Oil Production**, **Gas Processing**, **Plant & Equipment Integrity**, **Process Equipment Design**, **Operation of Process Equipment**, **Refinery & Process Industry**, **Refinery Optimization**, **Refinery Operations Troubleshooting**, **Refinery Production Operations**, **Refinery Process Safety**, **Process Safety Design**, **Petroleum Refinery Process**, **Asset Operational Integrity**, **Refinery Induction**, **Crude Distillation**, **Crude Oil Properties**, **Distillation Column Operation & Control**, **Oil Movement Storage & Troubleshooting**, **Process Equipment Design**, **Applied Process Engineering Elements**, **Process Plant Optimization**, **Revamping & Debottlenecking**, **Process Plant Troubleshooting & Engineering Problem Solving** and **Process Plant Monitoring**, **Hydro-Treating**, **Hydro-Forming**, **Hydro-Cracking** and **Catalyst Technology**. Furthermore, he is also well-versed in **P&ID** and **Wiring Schematics Rotating Equipment-Machinery (Pumps, Compressors, Turbines, Fans & Blowers, Electric Motors, Gears & Transmission Equipment)**, **Static Equipment-Stationary**, **(Heat Exchangers, Distillation Column, How Trays Work, Process Heaters/Furnaces, Reboilers, Condensers, Piping System, Valves)** and **Process Control & Instrumentation (Process Control, Instrumentation, Control Valves)**.

During Mr. Al-Qarout's career life, he has handled challenging positions wherein he has acquired his thorough practical and academic experience as the **Technical Instructor**, **Process Engineer**, **Senior Production Foreman**, **Panel Operator** at **Hydro Cracking Plant** and **Plant Foreman** of various companies such as Mellitah Oil & Gas B.V., **KNPC**, **Chevron**, **Jordan Refinery Company** and **Libya Oil Center**.

Mr. Al-Qarout has a **Diploma in Chemical Engineering** from the **Polytechnic University**. Further, he is **Certified** by **City & Guilds** as **Level 2 & 3 NVQ Processing Operations: Hydrocarbons Assessor**, a **Certified Instructor/Trainer**, a **Certified Internal Verifier/Trainer/Assessor** by the **Institute of Leadership & Management (ILM)**, a **Certified Instructor/Trainer** and has delivered numerous trainings, courses, workshops, conferences and seminars 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® (Howard 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, 07th of December 2025

0730 – 0800	Registration & Coffee
0800 – 0815	Welcome & Introduction
0815 – 0830	PRE-TEST
0830 – 0930	Process Safety Management Risk • Process Safety Management Systems • Process Hazard Analyses
0930 – 0945	Break
0945 – 1030	Flammability Sources of Ignition • Fire • Explosion • Flammability • Codes
1030 – 1230	Materials of Construction Material Selection Process • Metal Structure • Properties • Brittle Fracture
1230 – 1245	Break
1245 – 1420	Materials of Construction (cont'd) Creep • Thermal Expansion • Fatigue • Codes
1420 – 1430	Recap
1430	Lunch & End of Day One

Day 2: Monday, 08th of December 2025

0730 – 0930	Corrosion General Corrosion • Hydrogen Effects • Galvanic Corrosion • Stress Related Corrosion • Selective Attack • Stray Current Corrosion
0930 – 0945	Break



0945 – 1100	Corrosion (cont'd) Microbial Corrosion • Intergranular Corrosion • Fretting Corrosion • Corrosion Fatigue • Pitting/Crevice Corrosion
1100 – 1230	Health Hazards Awareness Industrial Health Concepts • Industrial Toxicology • Chemical Hazards/Effects • Occupational Exposure Limits • Noise, Radiation • Thermal Stress • Ergonomics
1230 – 1245	Break
1245 – 1420	Class Exercise - Process Hazard Analyses
1420 – 1430	Recap Using this Course Overview, the Instructor(s) will Brief Participants about that were Discussed Today and Advise Them of the Topics to be Discussed tomorrow
1430	Lunch & End of Day Two

Day 3: Tuesday, 09th of December 2025

0730 – 0930	Evaluating Reactive Chemical Hazards Managing Reactive Chemical Hazards • Experimental Screening • Reaction Hazard Index • Hydro-peroxides
0930 – 0945	Break
0945 – 1100	Equipment Design & Operation Inherent Safer Process Design • Strategies to Prevent Fires and Explosions
1100 – 1230	Equipment Design & Operation (cont'd) Piping Systems • Relief Systems
1230 – 1245	Break
1245 – 1420	Class Exercise - Equipment Design
1420 – 1430	Recap Using this Course Overview, the Instructor(s) will Brief Participants about that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow
1430	Lunch & End of Day Three

Day 4: Wednesday, 10th of December 2025

0730 – 0930	Plant Design & Operation Elimination of Hazards Through Process Design
0930 – 0945	Break
0945 – 1100	Plant Design & Operation (cont'd) The Human Error
1100 – 1230	Modifications Hardware Modifications • Other Modifications Affecting Plant Integrity: Case Studies • Prevention of Incidents
1230 – 1245	Break
1245 – 1420	Overview of Risk Assessment Risk Identification • Risk Classification/Tolerance Criteria
1420 – 1430	Recap
1430	Lunch & End of Day Four



Day 5: Thursday, 11th of December 2025

0730 – 0930	Supplementary Workshops Case Study 1 Fire & Explosions at Formosa • Case Study 2 Fire at Prixair
0930 – 0945	Break
0945 – 1100	Supplementary Workshops (cont'd) Case Study 3 Bhopal • Case Study 4 Flixborough
1100 – 1200	Supplementary Workshops (cont'd) Case Study 5 Explosion at BP Refinery • Case Study 6 Acetylene Explosion at ASCO
1200 – 1215	Break
1215 – 1345	Summary, Open Forum & Closure
1345 – 1400	Course Conclusion
1400 – 1415	POST-TEST
1415 – 1430	Presentation of Course Certificates
1430	Lunch & End of Course

Practical Sessions

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



Course Coordinator

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