# COURSE OVERVIEW PE0950
# Cryogenic Pumping

**Course Title**
Cryogenic Pumping

**Course Reference**
PE0950

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


**Course Date/Venue**

| Session(s) | Date | Venue |
|---|---|---|
| 1 | January 12- 16, 2025 | Oryx Meeting Room, Double Tree by Hilton Al Saad, Doha, Qatar |
| 2 | April 27- May 01, 2025 | Al Khobar Meeting Room, Hilton Garden Inn, Al Khobar, KSA |
| 3 | July 06- 10, 2025 | Boardroom 1, Elite Byblos Hotel Al Barsha, Sheikh Zayed Road, Dubai, UAE |
| 4 | October 06- 10- 2025 | Ajman Meeting Room, Grand Millennium Al Wahda Hotel, Abu Dhabi, UAE |

**Course Description**

***This practical and highly-interactive course includes real-life case studies 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 on the operation and maintenance of cryogenic pumping. It covers the applicable codes, construction material and installation of methods; the cryogenic operation, troubleshooting and maintenance; the liquefied gases; and the proper applications for submerged motor liquified gas pumps covering base loads plants, export terminals, import terminals, peak shaving and alternative fuels.

During this interactive course, participants will learn the submerged motor pump designs for liquified gas pumps; the material selection for liquified gas pumps; the installation and pre-start procedures for liquified gas pumps; the operation controls and instrumentation for in-tank pumps, vessel mounted pumps, marine pumps and mounted storage pumps; the troubleshooting cryogenic pumping; and the disassembly, maintenance procedure, cleanliness, assembly, re-installation and maintenance facilities.

## Course Objectives

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

- Apply a comprehensive knowledge on the operation and maintenance of cryogenic pumping
- Identify the different types of cryogenic pumps and the specific application of each types
- Recognize the applicable codes, construction material and installation of methods
- Gain working knowledge in cryogenic operation, troubleshooting and maintenance
- Define cryogenics and discuss liquefied gases
- Implement proper applications for submerged motor liquified gas pumps covering process systems, base loads plants, export terminals, import terminals, peak shaving and alternative fuels
- Perform submerged motor pump designs for liquified gas pumps
- Apply material selection for liquified gas pumps
- Employ installation and pre-start procedures for liquified gas pumps
- Carryout operation controls and instrumentation for in-tank pumps, vessel mounted pumps, marine pumps and mounted storage pumps
- Maintain and troubleshoot cryogenic pumping and employ proper disassembly, maintenance procedure, cleanliness, assembly, re-installation and maintenance facilities

## 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 cryogenic pumping (operation and maintenance) for engineers, specialists, supervisors, operators, maintenance technicians and technicians.

## 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 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: -

- 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.

- 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.

## Accommodation

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

**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. Attalla Ersan**, PEng, MSc, BSc, is a **Senior Engineer** with over **35 years** of extensive experience within the Project Safety **Oil & Gas**, **Hydrocarbon** and **Petrochemical** industries. His expertise widely covers the areas of **HAZOP** Facilitation, **Hazardous Materials**, **Material Safety Data Sheets** (**MSDS**), **Hazardous Wastes**, **Hazards of Chemical Incidents**, **Shipping Configurations**, **Respiratory Protection**, **Protective Clothing**, **Donning and Doffing Procedures**, **Boiler & Steam System** Management, **Waste Heat Recovery**, **Boiler Plant Safety**, **Boiler Controls**, **Steam Distribution** Systems, **Steam Traps**, Pollution Control, Cracked **Gas Compressor**, **Reboilers**, **Sulphur Unit Air Blower**, **Steam Turbine**, **Distillation Columns**, **Gas Treatment**, **Waste & Water Treatment Units**, **Process Plant** Operations, **Process Plant Startup & Operating Procedure**, **Ethylene & Vinyl Chloride**, **Ethane Cracking Furnaces** Operations, **Ethylene & Polyethylene** Operation, **Acid Gas Treatment**, **Sulphur Recovery**, **EDC & VCM**, Caustic Soda Storage, Debottle-necking, **Loss Prevention**, **Process Operation**, **Safety Audits**, **Process Engineering**, **Root Cause Investigations**, **Pyrolysis Cracking**, **Gas Plant Commissioning**, **Loss Prevention Techniques**, **Occupational Hazards**, Hot Tapping & Tie-Ins, Pre-Start-Up Safety Review (**PSSR**), Standard Operating Procedure (**SOP**), Emergency Operating Procedure (**EOP**), Permit to Work Systems (**PTW**), Hazard and Operability (**HAZOP**) Study, Process Hazards Analysis (**PHA**), Consequence Analysis Application, **Gas Detectors** Operation, **Accident/Incident Investigation (Why Tree Method)**, **Occupational Exposure Assessment**, **Fire Fighting & First Aid**, **Environmental Management**, **Basic Safety** Awareness, **Steam Cracking**, **Steam Generation**, **Binary Fractionators** Operations, **Tanks Farm & Metering Station Techniques**, **Gas Treatment**, **Sulphur Recovery Process Unit Operation**, **Permit to Work System** and **Emergency Response Planning**. Further, he is also well-versed in Project Management, Human Resources Consultancy, Manpower Planning, Job Design & Evaluation, Recruitment, Training & Development and Leadership, Creative Problem Solving Skills, Work Ethic, Job Analysis Evaluation, Training & Development Needs, Bidding & Tendering, Technical Report Writing, Supervisory Leadership, Effective Communication Skills and Total Quality Management (TQM). He is currently the **CEO** of **Ersan Petrokimya Teknoloji Company Limited** wherein he is responsible for the design and operation of Biogas Process Plants.

During his career life, Mr. Ersan has gained his practical and field experience through his various significant positions and dedication as the **Policy**, **Organization & Manpower Development Head**, **Training & Development**, **Head**, **Ethylene Plant – Pyrolysis Furnace Engineer**, **Production Engineer**, Process Training Coordinator, Ethylene Plant Shift Supervisor, Ethylene Plant Panel & Fit Operator, Process Training & Development Coordinator, **Technical Consultant**, and **Instructor/Trainer** for Qatar Vinyl Company Limited and Qatar Petroleum Company (QAPCO).

Mr. Ersan is a **Registered Professional Engineer** and has a **Master's degree** of **Education** in **Educational Training & Leadership** and a **Bachelor's degree** of **Petrochemical Engineering**. Further, he is a **Certified Instructor/Trainer** and has delivered numerous trainings, courses, workshops, conferences and seminars internationally.

## Course Fee

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| Doha | **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. |
| Al Khobar | **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. |
| Dubai | **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. |
| Abu Dhabi | **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. |

## 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***

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| *0730 – 0800* | *Registration & Coffee* |
| *0800 – 0815* | *Welcome & Introduction* |
| *0815 – 0830* | ***PRE-TEST*** |
| *0830 – 0930* | ***Definition of Cryogenics (Video)*** |
| *0930 – 0945* | *Break* |
| *0945 – 1100* | ***Liquefied Gases***<br>*LPG's Ammonia, CO. LN2, LNG ● Petrochemical Liquefied Gases, Ethane, Ethylene, Propylene, Butane etc.* |
| *1100 – 1230* | ***Liquefied Gases (cont'd)***<br>*Liquefied Natural Gases (Video) ● LPG's Ammonia, CO. LN2, LNG* |
| *1230 – 1245* | *Break* |
| *1245 – 1420* | ***Liquefied Gases (cont'd)***<br>*Petrochemical Liquefied Gases, Ethane, Ethylene, Propylene, Butane etc. ● Liquefied Natural Gases, Oxygen, Hydrogen, Helium* |
| *1420 – 1430* | ***Recap*** |
| *1430* | *Lunch & End of Day One* |

***Day 2***

| | |
|---|---|
| *0730 – 0900* | ***Applications for Submerged Motor Liquefied Gas Pumps***<br>*Process Systems etc.* |
| *0900 – 0915* | *Break* |
| *0915 – 1100* | ***Applications for Submerged Motor Liquefied Gas Pumps (cont'd)***<br>*Base Load Plants, Export Terminals, Import Terminals* |
| *1100 – 1230* | ***Applications for Submerged Motor Liquefied Gas Pumps (cont'd)***<br>*Peak Slaving, Alternative Fuels, etc.* |
| *1230 – 1245* | *Break* |
| *1245 – 1420* | ***Applications for Submerged Motor Liquefied Gas Pumps (cont'd)***<br>*LNG Video* |
| *1420 – 1430* | ***Recap*** |
| *1430* | *Lunch & End of Day Two* |

**Day 3**

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|---|---|
| 0730 – 0900 | ***Submerged Motor Pump Designs for Liquefied Gas Pumps***<br>*In-Tank Pumps ● Vessel Mounted Pumps ● Line Mounted Pumps* |
| 0900 – 0915 | *Break* |
| 0915 – 1100 | ***Submerged Motor Pump Designs for Liquefied Gas Pumps (cont'd)***<br>*Vehicle Loading Pumps ● Marine Pumps ● Misc. Applications ● Case Study (Pump Selection)* |
| 1100 – 1230 | ***Material Selection for Liquefied Gas Pumps*** |
| 1230 – 1245 | *Break* |
| 1245 – 1420 | ***Material Selection for Liquefied Gas Pumps (cont'd)***<br>*Case Study (Poor Performance)* |
| 1420 – 1430 | ***Recap*** |
| 1430 | *Lunch & End of Day Three* |

**Day 4**

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|---|---|
| 0730 – 0900 | ***Installation & Pre-Start Up Procedures for Liquefied Gas Pumps***<br>*Storage Prior to installation ● In-Tank Pumps ● Vessel Mounted Pumps* |
| 0900 – 0915 | *Break* |
| 0915 – 1100 | ***Installation & Pre-Start Up Procedures for Liquefied Gas Pumps (cont'd)***<br>*Marine Pumps ● Cool down Procedures ● Misc. Procedures ● Case Study (Root Cause of Failure)* |
| 1100 – 1230 | ***Operation Controls & Instrumentation***<br>*Instrumentation: Vibration Detection, Liquid Level OCR/UCR ● Start Up Procedures ● In-Tank Pumps* |
| 1230 – 1245 | *Break* |
| 1245 – 1420 | ***Operation Controls & Instrumentation (cont'd)***<br>*Vessel Mounted Pumps ● Marine Pumps ● Mounded Storage Pumps* |
| 1420 –1430 | ***Recap***<br>*Using this Course Overview, the instructor(s)will Brief Participants about the Topics That were Discussed Today and Advice Them of the topics To be Discussed Tomorrow* |
| 1430 | *Lunch & End of Day Four* |

**Day 5**

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|---|---|
| 0730 – 0900 | ***Maintenance & Troubleshooting***<br>*Disassembly ● Maintenance Procedures ● Cleanliness ● Case Study (Improve Performance)* |
| 0900 – 0915 | *Break* |
| 0915 – 1030 | ***Maintenance & Troubleshooting (cont'd)***<br>*Assembly ● Re-Installation ● Maintenance Facilities* |
| 1030 – 1200 | ***Question & Answer Session Workshop*** |
| 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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