

COURSE OVERVIEW PE0320
Refrigerant and NGL Extraction

Course Title

Refrigerant and NGL Extraction

Course Date/Venue

Session 1: April 06-10, 2025/Boardroom 1,
Elite Byblos Hotel Al Barsha,
Sheikh Zayed Road, Dubai, UAE

Session 2: September 08-12, 2025/Fujairah
Meeting Room, Grand Millennium
Al Wahda Hotel, Abu Dhabi, UAE



**H-STK[©]
INCLUDED**

Course Reference

PE0320



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 introductory course presents an overview of various technologies of gas processing for NGL recovery. The flow diagram for a typical gas processing plant will be used to illustrate how the various operations are integrated into plants capable of handling diverse feeds from gas fields around the world. The advantages, limitations, and range of applicability of each process will be discussed so that its selection and integration into the overall plant is fully understood and appreciated. The key processes of gas conditioning, NGL extraction, stabilization and product treating will be emphasized.



Upon completing this course, you will have an overview of NGL Recovery and Fractionation, including product specifications and the processes available to meet these requirements. You will understand the nature and purpose of key gas processing operations, and how the individual operations are integrated into plants to process diverse feed streams received from gas fields around the world.

You will gain a working knowledge of the major processes for NGL Recovery (including adsorption processes, absorption processes and condensation processes) as well as how to fractionate the NGL recovered into the various commercial products. You will also learn the basic vocabulary unique to the industry.

Course Objectives

The course should serve the following overall learning objectives:-

- Apply and gain a good working knowledge on various technologies of gas processing for NGL recovery
- Understand knowledge of various gas processing technologies
- Discuss overall production system and explain adsorption
- Analyze the processes of condensation and the operating process of turboexpander
- Define fractionation and identify the different types of fractionators including design consideration, columns, and explain liquid HC treating and storage

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 various technologies of gas processing for NGL recovery for those directly involved in gas processing operations. However, the course is specifically designed to be of substantial benefit to both technical and non-technical personnel employed in the activities that support the industry. Managers, engineers, marketing staff, and manufacturer’s representatives, as well as individuals involved in sales and services to the natural gas industry will receive considerable benefit from the broad overview.

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:-

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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.

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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 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.

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. Mustafa Fadel is a **Senior HVAC Engineer** with over **25 years** of industrial experience in the field. His specialization widely covers **Aspen HYSYS, HVAC System, HVAC Equipment Terminology, HVAC System Block Load Calculation, HVAC System Development of Drawings, Air Distribution System, Basic Chiller Water System Design & Selection, Pump Design & Selection, Rotating & Static Equipment, Cooling Tower Design, Boiler Design & Selection, Energy Management & Value Engineering for Mechanical System, Mechanical Ventilation, Smoke Ventilation, Staircase Pressurization, System Design & Development of Drawings, Data Center Design, Precision AC Equipment Selection, Refrigeration Systems, Air Cooler Design, Chillers, Mass & Heat Transfer, Electromechanical, Rotating & Static Equipment** including **Heat Exchangers, Piping & Pipeline, Pressure Vessels, Valves, Tanks Turbines, Compressors, Motors, Pumps, Evaporators, Condensers, Blowers and Fans, Maintenance Planning & Scheduling, Root Cause Failure Analysis, Performance Calculations, Reliability Maintenance and Corrective & Preventive Maintenance**. Further, he is also well-versed in **HSE Management, KPI's, CMMS and AutoCAD** as well as in various international standards such as the **ASHRAE, API, ASTM, ASME, AMCA, NFPA and SMACNA**. Currently, he is the **HVAC&R Specialist** in **SEGAS LNG Plant** wherein he is responsible for the implementation, construction and maintenance strategy for industrial HVAC&R equipment.

During his career life, Mr. Fadel has gained his practical and field experience through his various significant positions and dedication as the **Section Head, Project Manager, HVAC System Consultant Engineer, Mechanical Engineer, HVAC&R Instructor** and **Senior Technical Consultant** for international companies and universities like the **Foster Wheeler, Technip-Italy, Bormer Company, Union FENOSA Gas, Asphalt Bitumen, King Khalid University, Alexandria Petroleum Company, FAWAZ Company, Marium Corporation** and many more.

Mr. Fadel has a **Bachelor** degree in **Power Mechanical Engineering**. Further, he is a **Certified Instructor/Trainer, a Certified Internal Verifier/Assessor/Trainer** by the **Institute of Leadership & Management (ILM)** and an active member of the **American Society of Heating Refrigerating and Air Conditioning Engineers (ASHRAE), USA**. He has further delivered and participated numerous engineering and inspection projects, trainings, courses, seminars and conferences globally.

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

0730 - 0800	<i>Registration & Coffee</i>
0800 - 0815	<i>Welcome & Introduction</i>
0815 - 0830	PRE-TEST
0830 - 0930	Overall Production System <i>Gas Processing Module</i>
0930 - 0945	<i>Break</i>
0945 - 1100	Adsorption <i>Short Cycle Hydrocarbon Recovery Units (HRU's)</i>
1100 - 1230	Adsorption (cont'd) <i>Refrigerated Lean Oil • Modified Refrigerated Lean Oil</i>
1230 - 1245	<i>Break</i>
1245 - 1420	Case Studies <i>Adsorption • Absorption vs Turbo Expander</i>
1420 - 1430	Recap
1430	<i>Lunch & End of Day One</i>

Day 2

0730 - 0930	Condensation <i>Valve Type (JT Refrigeration) • Refrigeration • Twister</i>
0930 - 0945	<i>Break</i>
0945 - 1100	Turboexpander <i>Solid Desiccant Dehydrator • Compression • Gas/Gas Exchangers</i>
1100 - 1230	Turboexpander (cont'd) <i>Expander • Re-Compressor • De-Methanizer</i>
1230 - 1245	<i>Break</i>
1245 - 1420	Case Studies
1420 - 1430	Recap
1430	<i>Lunch & End of Day Two</i>

Day 3

0730 - 0930	Fractionation <i>Types of Fractionators • Design Consideration • Trayed Columns</i>
0930 - 0945	<i>Break</i>
0945 - 1100	Fractionation (cont'd) <i>Packed Columns • Reboiler Arrangements • Internals</i>
1100 - 1230.	Liquid HC Treating <i>Amines • Regenerated Caustic</i>
1230 - 1245	<i>Break</i>
1245 - 1420	Case Studies
1420 - 1430	Recap
1430	<i>Lunch & End of Day Three</i>

Day 4

0730 – 0930	Liquid HC Treating (cont'd) Perco Solid Copper • Batch Caustic Wash
0930 – 0945	Break
0945 – 1100	Liquid HC Treating (cont'd) Solid Potassium Hydroxide • Molecular Sieve
1100 – 1230	Liquid HC Treating (cont'd) Mercox • Merichem
1230 – 1245	Break
1245 – 1420	Case Studies
1420 - 1430	Recap
1430	Lunch & End of Day Four

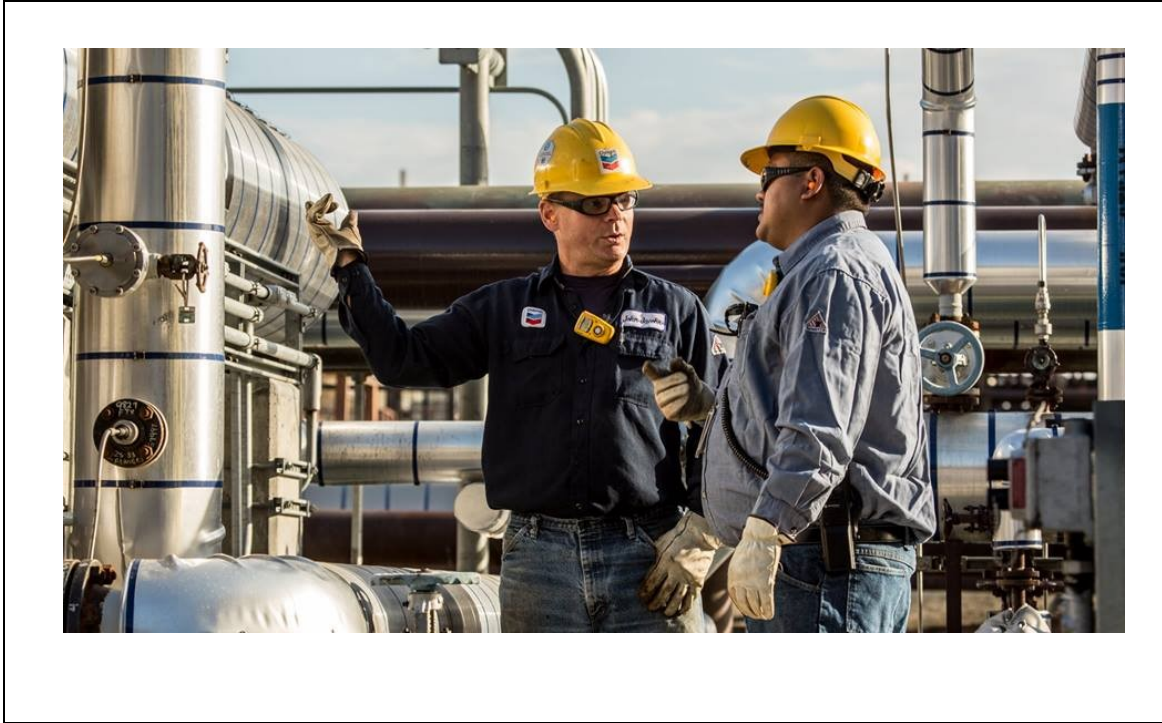
Day 5

0730 – 0930	Storage Above Ground • Underground
0930 – 0945	Break
0945 – 1100	Storage (cont'd) Refrigerated
1100 – 1230	Case Studies
1230 – 1245	Break
1245 - 1345	Q & A Discussions
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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