



## COURSE OVERVIEW PE0485(OR1) Crude & Vacuum Process Technology

### Course Title

Crude & Vacuum Process Technology

### Course Date/Venue

Session 1: December 15-19, 2024/Boardroom 1,  
Elite Byblos Hotel Al Barsha, Sheikh Zayed Road,  
Dubai, UAE

### Course Reference

PE0485(OR1)



### 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.***



The Distillation Process is used in many industries to separate mixtures into components. It is defined as a process in which a liquid or vapor mixture of two or more substances is separated into its component fractions of desired purity by the application and removal of heat. The application and removal of heat makes the distillation process energy intensive as it is consuming up to 50 percent of a refinery's operating costs due to intense heating and cooling cycles. Having accurate measurements to feed the control system is critical for energy efficient, safe and reliable operation.



Improving distillation columns has always been challenging as problems can occur when operators and engineers have insufficient information about operating conditions. Failing to properly monitor and control process variables can result in decreased product quality and throughput, increased energy costs and unsafe operations that put employees and capital equipment at risk.



This course is designed to provide participants with a detailed and up-to-date overview of crude ATM and vacuum distillation unit process. It covers the refinery flow sheet, hydrocarbon chemistry, crude oil properties, tests, sources and assays; the fuel products specifications covering environmental regs, specifications and MTBE; the atmospheric and vacuum distillation and fluid catalytic cracking; the crude ATM and vacuum process; the distillations units products and its characteristics that include liquid petroleum gas (LPG), gasoline and naphtha; and the kerosene and related jet aircraft fuels, diesel fuel, fuel oils, lubricating oils, paraffin wax, asphalt & tar and petroleum coke.

### Course Objectives

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

- Apply and gain in-depth knowledge on crude ATM and distillation unit process
- Discuss refinery flow sheet and hydrocarbon chemistry
- Identify the crude oil properties, tests, sources and assays
- Recognize fuel products specifications covering environmental regs, specifications and MTBE
- Describe atmospheric and vacuum distillation and fluid catalytic cracking
- Illustrate crude ATM and vacuum process and identify distillations units products and its characteristics that include liquid petroleum gas (LPG), gasoline and naphtha
- Determine kerosene and related jet aircraft fuels, diesel fuel, fuel oils, lubricating oils, paraffin wax, asphalt & tar and petroleum coke

### 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, sample video clips of the instructor’s actual lectures & practical sessions during the course conveniently saved in a **Tablet PC**.*

### Who Should Attend

This course provides an overview of all significant aspects and considerations of crude and vacuum process technology for all engineering, operations and maintenance staff and management. Engineers, foremen and other technical staff will benefit from this important course that deals with their day-to-day problems and activities.

### 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: -


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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.

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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.

**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. Mohammad Hamami**, is a **Senior Process Engineer** with an extensive practical experience within the **Oil, Gas, Refinery, Petrochemical** and **Power** industries. His experience covers **Clean Fuel Technology & Standards, Clean Fuel Specification, Emission Regulation, Crude Oil Production, Desulphurization, Synthesis Gas Production, Naphtha Isomerization, Diesel Fuel Additives, Storage Tanks Filtration, Fuel Quality Inspection, Process Plant Troubleshooting & Engineering Problem Solving, Process Equipment Operation, Process Plant Operation, Process Plant**

**Start-up & Commissing, Process Plant Optimization, Oil & Gas Field Operation, Oil Movement, Storage & Troubleshooting, Petroleum Refinery Process, Process Reactor Operation & Troubleshooting, LPG Oil & Gas Operation & Troubleshooting, Crude Oil & LNG Storage, LNG & LPG Plants Gas Processing, Refinery Process Operations Technology, Liquid Bulk Cargo Handling, Gas Conditioning & Processing Technology, Distillation Column Design & Operation and Gasoline & Diesel Fuel Technology.** Further he is also well-versed in **Refinery Operational Economics & Profitability, Aromatics Manufacturing Process, Hydrogen Production Operation, Steam Reforming Technology, Gas Treating, Hydro-treating & Hydro-Cracking, Catalyst Material Handling, Gas Sweetening & Sulfur Recovery, Hydro Carbon Dew Point (HCDP) Control, Heat Exchangers & Fired Heaters, Amine Gas Sweetening, Plastic Additives Selection & Application, Crude & Vacuum Process Technology, Flare & Pressure Relief Systems, Stock Management & Tank Dipping Calculation, NGL Recovery & Fractionation, Refrigerant & NGL Extraction and Catalytic Cracking & Reforming.**

During his long professional career, Mr. Mohammad worked as a **Refinery Manager, Operations Manager, Section Head/Superintendent** and **Process Engineer** for **Process Units, Utilities & Oil Movement** in various companies. He has been responsible for a number of **technological-driven world-scale hydrocarbon processing projects from beginning to successful start-up.**

Mr. Mohammad has a **Bachelor's degree in Chemical Engineering.** He is an **active member** of the **American Institute of Chemical Engineers (AIChE)** and has presented **technical papers** at its **several national meetings.** He has largely participated in the **start-up of seven world-scale process plants** which made him an **International Expert in Process Plant Start-Up and Oil Movement** and a **Certified Instructor/Trainer.**

### 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 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, 15<sup>th</sup> of December 2024**

|             |  |
|-------------|--|
| 0730 – 0800 | <i>Registration &amp; Coffee</i>               |
| 0800 – 0815 | <i>Welcome &amp; Introduction</i>              |
| 0815 – 0830 | <b>PRE-TEST</b>                                |
| 0830 – 0930 | <i>Introduction to the Refinery Flow Sheet</i> |
| 0930 – 0945 | <i>Break</i>                                   |
| 0945 – 1130 | <b>Hydrocarbon Chemistry</b>                   |
| 1130 – 1245 | <b>Hydrocarbon Chemistry (cont'd)</b>          |
| 1245 – 1300 | <i>Break</i>                                   |
| 1300 – 1420 | <b>Hydrocarbon Chemistry (cont'd)</b>          |
| 1420 – 1430 | <b>Recap</b>                                   |
| 1430        | <i>Lunch &amp; End of Day One</i>              |

#### **Day 2: Monday, 16<sup>th</sup> of December 2024**

|             |   |
|-------------|---|
| 0730 – 0930 | <b>Crude Oil</b><br><i>Properties • Tests</i>                 |
| 0930 – 0945 | <i>Break</i>  |
| 0945 – 1100 | <b>Crude Oil (cont'd)</b><br><i>Sources • Assays</i>          |
| 1100 – 1215 | <b>Fuel Products</b><br><i>Environmental Regs</i>             |
| 1215 – 1230 | <i>Break</i>  |
| 1230 – 1420 | <b>Fuel Products (cont'd)</b><br><i>Specifications • MTBE</i> |
| 1420 – 1430 | <b>Recap</b>  |
| 1430        | <i>Lunch &amp; End of Day Two</i>                             |

#### **Day 3: Tuesday, 17<sup>th</sup> of December 2024**

|             |   |
|-------------|---|
| 0730 – 0930 | <b>Atmospheric &amp; Vacuum Distillation</b>          |
| 0930 – 0945 | <i>Break</i>  |
| 0945 – 1100 | <b>Atmospheric &amp; Vacuum Distillation (cont'd)</b> |
| 1100 – 1215 | <b>Fluid Catalytic Cracking</b>                       |
| 1215 – 1230 | <i>Break</i>  |
| 1230 – 1420 | <b>Fluid Catalytic Cracking (cont'd)</b>              |
| 1420 – 1430 | <b>Recap</b>  |
| 1430        | <i>Lunch &amp; End of Day Three</i>                   |

#### **Day 4: Wednesday, 18<sup>th</sup> of December 2024**

|             |   |
|-------------|---|
| 0730 – 0900 | <b>Process of Crude ATM &amp; Vacuum</b>  |
| 0900 – 0915 | <i>Break</i>  |
| 0915 – 1030 | <b>Process of Crude ATM &amp; Vacuum (cont'd)</b>   |
| 1030 – 1200 | <b>Distillation Units Products &amp; Characteristics</b><br><i>Liquid Petroleum Gas (LPG)</i> |
| 1200 – 1215 | <i>Break</i>  |



|             |   |
|-------------|---|
| 1215 – 1420 | <b>Distillation Units Products &amp; Characteristics (cont'd)</b><br>Gasoline • Naphtha |
| 1420 – 1430 | <b>Recap</b>  |
| 1430        | Lunch & End of Day Four   |

**Day 5: Thursday, 18<sup>th</sup> of December 2024**

|             |  |
|-------------|--|
| 0730 – 0930 | <b>Distillation Units Products &amp; Characteristics (cont'd)</b><br>Kerosene & Related Jet Aircraft Fuels |
| 0930 – 0945 | Break  |
| 0945 – 1045 | <b>Distillation Units Products &amp; Characteristics (cont'd)</b><br>Diesel Fuel • Fuel Oils               |
| 1045 – 1200 | <b>Distillation Units Products &amp; Characteristics (cont'd)</b><br>Lubricating Oils • Paraffin Wax       |
| 1200 – 1215 | Break  |
| 1215 – 1300 | <b>Distillation Units Products &amp; Characteristics (cont'd)</b><br>Asphalt & Tar • Petroleum Coke        |
| 1300 – 1400 | <b>Course Conclusion</b>   |
| 1400 – 1415 | <b>POST-TEST</b>   |
| 1415 – 1430 | Presentation of Course Certificates  |
| 1430        | Lunch & End of Course  |

**Practical Sessions**

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



**Course Coordinator**

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