

COURSE OVERVIEW PE0348(KP4)
Hydro-Treating Technology

Course Title

Hydro-Treating Technology

Course Reference

PE0348(KP4)

Course Duration/Credits

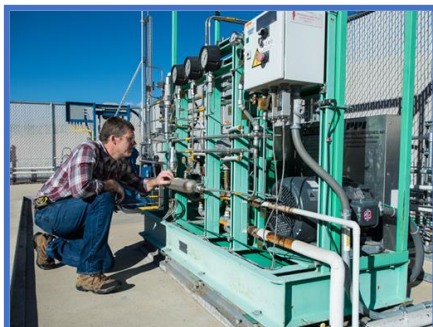
Five days/3.0 CEUs/30 PDHs

Course Date/Venue

Session(s)	Date	Venue
1	January 28-February 01, 2024	Oryx Meeting Room, Doubletree By Hilton Doha-Al Sadd, Doha, Qatar
2	February 25-29, 2024	Kizkulesi, Crown Plaza Istanbul Asia Hotels & Convention Center, Istanbul, Turkey
3	March 03-07, 2024	The Mouna Meeting Room, The H Dubai Hotel, Sheikh Zayed Rd - Trade Centre, Dubai, UAE



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 hydro-treating technology. It covers the performance of the large panel of the existing hydro-treatment process in the refining industry; the hydro-treatment units and hydrogen balance; the potential disturbances and their remedies; the impurities content in the petroleum cuts and products; the various treatments with hydrogen and integration in the refining scheme; and the characteristics of chemical reactions and catalysts for hydropurification and for hydrogenation.

During this interactive course, participants will learn the loading of the catalyst and the internals in the reactor; the presulfiding procedures; the operating conditions and compositions of the main streams; the significance of the operating variables and their influence on the process; and the advanced process control, optimization process and management of the hydrogen network in refinery.

Course Objectives

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

- Apply and gain an in-depth knowledge and skills on hydro-treating technology
- Discuss the performance of the large panel of the existing hydro-treatment process in the refining industry
- Operate hydro-treatment units and manage hydrogen balance
- Identify the potential disturbances and their remedies as well as the impurities content in the petroleum cuts and products
- Illustrate various treatments with hydrogen and integration in the refining scheme
- Enumerate the characteristics of chemical reactions and catalysts for hydropurification and for hydrogenation
- Perform loading of the catalyst and recognize the internals in the reactor
- Carryout presulfiding procedures as well as identify operating conditions and compositions of the main streams
- Define the significance of the operating variables and their influence on the process
- Employ advanced process control, optimization process and management of the hydrogen network in refinery

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 hydro-treating technology for process supervisors and other process, instrument and mechanical technical staff.

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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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.

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:



Dr. Hesham Abdou, PhD, MSc, BSc, is a Senior Mechanical & Petroleum Engineer with over 35 years of integrated industrial and academic experience as a University Professor. His specialization widely covers in the areas of Crude Oil Testing & Water Analysis, Crude Oil & Water Sampling Procedures, Equipment Handling Procedures, Crude & Vacuum Process Technology, Gas Conditioning & Processing, Cooling Towers Operation & Troubleshooting, Sucker Rod Pumping, ESP & Gas Lift, PCP & Jet Pump, Pigging Operations, Electric Submersible Pumps (ESP), Progressive Cavity Pumps (PCP), Natural & Artificial Flow Well Completion, Well Testing Procedures & Evaluation, Well Performance, Coiled Tubing Technology, Oil Recovery Methods Enhancement, Well Integrity Management, Well Casing & Cementing, Acid Gas Removal, Heavy Oil Production & Treatment Techniques, Water Flooding, Water Lift Pumps Troubleshooting, Water System Design & Installation, Water Networks Design Procedures, Water Pumping Process, Pipelines, Pumps, Turbines, Heat Exchangers, Separators, Heaters, Compressors, Storage Tanks, Valves Selection, Compressors, Tank & Tank Farms Operations & Performance, Oil & Gas Transportation, Oil & Gas Production Strategies, Artificial Lift Methods, Piping & Pumping Operations, Oil & Water Source Wells Restoration, Pump Performance Monitoring, Rotor Bearing Modelling, Hydraulic Repairs & Cylinders, Root Cause Analysis, Vibration & Condition Monitoring, Piping Stress Analysis, Amine Gas Sweetening & Sulfur Recovery, Heat & Mass Transfer and Fluid Mechanics.

During his career life, Dr. Hesham held significant positions and dedication as the **General Manager, Petroleum Engineering Assistant General Manager, Workover Assistant General Manager, Workover Department Manager, Artificial Section Head, Oil & Gas Production Engineer and Senior Instructor/Lecturer** from various companies and universities such as the Cairo University, Helwan University, British University in Egypt, Banha University and Agiba Petroleum Company.

Dr. Hesham has a **PhD and Master** degree in **Mechanical Power Engineering** and a **Bachelor** degree in **Petroleum Engineering**. Further, he is a **Certified Instructor/Trainer** and a **Peer Reviewer**. Dr. Hesham is a member of Egyptian Engineering Syndicate and the Society of Petroleum Engineering. Moreover, he has published technical papers and journals and has delivered numerous trainings, workshops, courses, seminars and conferences internationally.

Course Fee

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.
Istanbul	US\$ 6,000 per Delegate + VAT . This rate includes Participants Pack (Folder, Manual, Hand-outs, etc.), 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.

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	<i>Comprehensive Understanding of the Aim and the Performance of the Large Panel of the Existing Hydro-treatment Process in the Refining Industry</i>
0930 – 0945	<i>Break</i>
0945 – 1100	<i>Knowledge of the Operation of the Hydro-treatment Units and the Management of the Hydrogen Balance</i>
1100 – 1230	<i>Understanding of the Potential Disturbances and their Remedies</i>
1230 – 1245	<i>Break</i>
1245 – 1420	<i>Impurities Content in the Petroleum Cuts and Products</i> <i>Impacts on the Health, the Environment and on the other Refining Processes</i> • <i>Highly Refractory Compounds</i>
1420 – 1430	Recap
1430	<i>Lunch & End of Day One</i>

Day 2

0730 – 0930	<i>Aim of the Various Treatments with Hydrogen and Integration in the Refining Scheme</i> <i>Hydropurifications of Straight Run Cuts</i> • <i>Stabilization or Saturation of Cracked Cuts</i>
0930 – 0945	<i>Break</i>
0945 – 1100	<i>Characteristics of the Chemical Reactions</i> <i>Thermodynamic and Kinetic Aspects</i> • <i>Consequences on the Operation of the Units</i> • <i>Side Reactions and Optimum Operating Conditions to Deplete their Evolution</i> • <i>Special Features of Reversion Reactions</i>
1100 – 1230	<i>Characteristics of the Catalysts for Hydropurification and for Hydrogenation</i> <i>Effects of Molybdenum</i> • <i>Cobalt and Nickel Importance of the Substrate</i>

1230 - 1245	Break
1245 - 1420	Characteristics of the Catalysts for Hydropurification and for Hydrogenation (cont'd) Criteria for the Best Choice Facing a Hydrotreatment Problem • Top Gradings
1420 - 1430	Recap
1430	Lunch & End of Day Two

Day 3

0730 - 0930	Loading of the Catalyst
0930 - 0945	Break
0945 - 1100	Internals in the Reactor
1100 - 1215	Presulfiding Procedures Role
1215 - 1230	Break
1230 - 1420	Presulfiding Procedures (cont'd) Steps and Details of the Different Methods
1420 - 1430	Recap
1430	Lunch & End of Day Three

Day 4

0730 - 0930	Operating Conditions and Compositions of the Main Streams Mass Balance and Yields
0930 - 0945	Break
0945 - 1100	Operating Conditions and Compositions of the Main Streams (cont'd) Sulfur Balance
1100 - 1215	Operating Conditions and Compositions of the Main Streams (cont'd) Hydrogen Balance
1215 - 1230	Break
1230 - 1420	Operating Conditions and Compositions of the Main Streams (cont'd) Consumption
1420 - 1430	Recap
1430	Lunch & End of Day Four

Day 5: Thursday, 05th of November 2020

0730 - 0930	Definition, Significance of the Operating Variables and their Influence on the Process Mean Temperatures and Profile • Pressures • Partial Pressure of Hydrogen • Recycle Rate
0930 - 0945	Break
0945 - 1100	Definition, Significance of the Operating Variables and their Influence on the Process (cont'd) Quench Ratio • Feed Flow Rate • Space Velocity
1100 - 1215	Advanced Process Control and Optimization of the Process
1215 - 1230	Break

1230 - 1345	<i>Management of the Hydrogen Network in the Refinery Effect of Feed Composition and Origin</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:-



Course Coordinator

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