

COURSE OVERVIEW PE0987 De-Sulfurization Technology

Course Title

De-Sulfurization Technology

Course Date/Venue

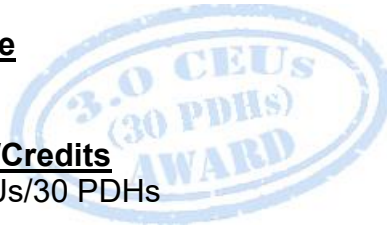
October 12-16, 2025/Barcelona Meeting Room,
Midtown Hotel Istanbul, Istanbul, Turkey

Course Reference

PE0987

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.



Atmospheric residue desulfurization (ARDS) process is extensively used in upgrading of heavy petroleum oils and residues to more valuable clean environmentally friendly transportation fuels and to partially convert the residues to produce low-sulfur fuel oil and hydrotreated feedstocks. Graded catalyst systems in multiple reactors are used in the process in order to achieve hydrodesulfurization (HDS), hydrodemetallization (HDM), hydrodenitrogenation (HDN), and conversion of residues to distillates at desired levels. The characteristics of the feedstocks processed in different reactors are significantly different. The quality of the feed entering the second reactor is strongly dependent on the operating severity in the first reactor and can have an important impact on the performance of the catalysts in the following reactor with regard to various conversions and deactivation rate.



Atmospheric Residue Desulfurization (ARDS) is a well-established hydro treating process, operated primarily to desulfurize atmospheric residues from Crude units and to prepare feed stocks for downstream conversion units like Hydrocrackers and Delayed Coker units. The product, desulfurized residue, is not only low in sulfur but has improved pour points and lower viscosities as well.

This course is designed to provide participants with a detailed and up-to-date overview of atmospheric residue desulfurization unit. It covers the hydrotreating chemistry, thermodynamics, hydrodesulfurization, hydrodenitrogenation and hydrodeasphalting; the aromatic hydrogenation, the effects of feedstock and non-catalytic residue upgrading processes; the solvent deasphalting and correlations for solvent deasphalting; the thermal process, catalysis, catalysts supports, catalytic processes and residue-fluidized catalytic cracking; the hydroprocessing, fixed bed process, moving bed process, ebullated bed process and slurry bed process; and the aquaconversion, HDM catalysis and catalysts deactivation.

During this interactive course, participants will learn to employ catalyst regeneration, metals recovery and the transportation fuels from the bottom of the barrel of Chevron lummus global RDS/VRDS hydrotreating; apply selective hydrogen processes, UOP unionfining technology, UOP RCD unionfining process and catalytic dewaxing processes; identify the UOP unisar process for saturation of aromatics; apply start-up and shutdown, isocracking-hydrocracking for superior fuels and lubes and UOP unicracking process for hydrocracking; recycle H₂ purification process and hydrocracking consumption; and carryout H₂S removal, reactor internals and FCC FEED hydrotreating.

Course Objectives

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

- Apply and gain an in-depth knowledge on de-sulfurization technology
- Discuss hydrotreating chemistry, thermodynamics, hydrodesulfurization, hydrodenitrogenation and hydrodeasphalting
- Identify aromatic hydrogenation, the effects of feedstock and non-catalytic residue upgrading processes
- Recognize solvent deasphalting and correlations for solvent deasphalting
- Illustrate thermal process, catalysis, catalysts supports, catalytic processes and residue-fluidized catalytic cracking
- Carryout hydroprocessing, fixed bed process, moving bed process, ebullated bed process and slurry bed process
- Apply aquaconversion, HDM catalysis and catalysts deactivation
- Employ catalyst regeneration, metals recovery and the transportation fuels from the bottom of the barrel of Chevron lummus global RDS/VRDS hydrotreating
- Apply selective hydrogen processes, UOP unionfining technology, UOP RCD unionfining process and catalytic dewaxing processes
- Identify UOP unisar process for saturation of aromatics
- Describe Chervon lummus global ebullated bed bottom -of-the barrel hydroconversion (LC-fining) process
- Employ start-up and shutdown, isocracking-hydrocracking for superior fuels and lubes and UOP unicracking process for hydrocracking
- Recycle H₂ purification process and hydrocracking consumption
- Carryout H₂S removal, reactor internals and FCC FEED hydrotreating

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 desulfurization technology for refinery and process engineers, operations and production staff, chemical engineers, process development team and those who involved with hydrodesulfurization (HDS) units, catalytic reactors, or fuel treatment processes and other 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.

Accommodation

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

Course Fee

US\$ 6,000 per Delegate + **VAT**. This rate includes H-STK® (Haward Smart Training Kit), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

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. Yasser Almasood is a **Senior Process & Petroleum Engineer** with almost **20 years** of industrial experience within the, **Oil & Gas, Refinery** and **Petrochemical** industries. His wide expertise covers in the areas of **Gas Processing** Calculation, **Process Reactor** Operation & Troubleshooting, **Catalytic Reactors**, **Heat Exchanger**, **Distillation Columns**, **Pumps**, Distributed Control System (DCS), **Catalytic Reformer Unit**, **Polymerization**, **Dehydrogenation**, **Gas Processing Plant** Operations & Control, **Gas Processing** Monitoring & Troubleshooting, **Process Plant Start-up** Commissioning & Troubleshooting, **Process Plant** Optimization & Energy Conservation, **Process Equipment** Design & Troubleshooting, **Advanced Operation Skills**, **Refinery Process Yield Optimization**, **Oil & Gas Processing**, Troubleshooting Oil & Gas Processing Facilities, **Polymers & Polymerization**, Applied **Process Engineering**, **Process Plant** Troubleshooting & Engineering Problem Solving, **Process Plant** Performance & Efficiency, **Flare Blowdown & Pressure Relief Systems**, **Polypropylene** Manufacturing, **Polyethylene** & Process Troubleshooting, **Ammonia**, **Ethylene**, **Solvents**, **Gas Feed**, **EDC**, **VCM**, **PP**, **PVC**, **Chlorine**, **Fluidized Bed Reactor**, **Oil Movement & Storage**, **Power Plant Chemistry**, **Catalyst** Manufacturing Techniques, **Fuel Systems** Management, **Process Design & Optimization**, **Desalination Processes**, **Reverse Osmosis** and **Molecular Sieves**. Further, he is also well-versed in **HAZOP**, Advanced **Process Hazard Analysis**, **Safety** Management, **Environmental Safety** Management, **LOPA & SIL**, **Process Safety** Management (PSM), **Incident investigation & Root Cause Analysis**, **Emergency & Crisis Management**, **Safety Audit & Site**, Inspection, Inspection of Fire Equipment & Tools, **Fire Protection & Prevention**, Worker Protection from Radiation Work Permits, IGC International General Certificate in Occupational Safety & Health, **Risk Assessment**, **Risk Associated** with Low Level Radiation Exposure, Hydrogen Sulfide (H₂S) Safety, **Personal Protective Equipment**, **Lock-Out & Tag-Out**, **OSHA** Occupational Safety & Health, Radiation & Contamination, Scientific Notation, Exposure Rate & Shielding Calculations, **Excavations & Trenching**, **Permit-to-Work**, AspenTech, Aspen HYSYS, Pro II, exSILentia, OLGA, Flare System Analyzer, Aspen PIMS, DYN SIM, RiskWISE, MS Office and IBM Maximo.

During his career life, Mr. Yasser has gained his practical and field experience through his various significant positions and dedication as the **Senior Process Engineer**, **Process Engineer**, **Oil & Gas Process & Safety Instructor**, **On-Job Instructor**, **Process Senior Operator**, **Acting DCS Operator** and **Shift Controller** for various multi-national companies such as the ADNOC Gas Processing (**GASCO**), Conoco Phillips Gas Plant and Syrian Gas Company (SGC).

Mr. Yasser has a **Bachelor** degree in **Petroleum Engineering**. Further, he is a **Certified Instructor/Trainer** and has further delivered numerous training, courses, workshops, seminars and conferences worldwide.



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, 12th of October 2025

0730 – 0800	Registration & Coffee
0800 – 0815	Welcome & Introduction
0815 – 0830	PRE-TEST
0830 – 0900	Introduction to Atmospheric Residue Desulfurization Unit (ARDS)
0900 – 0930	Hydrotreating Chemistry
0930 – 0945	Break
0945 – 1045	Thermodynamics
1045 – 1130	Hydrodesulfurization
1130 – 1200	Hydrodenitrogenation
1200 – 1245	Hydrodeasphalting
1245 – 1300	Break
1300 – 1330	Aromatic Hydrogenation
1330 – 1420	Feedstock Effects
1420 – 1430	Recap
1430	Lunch & End of Day One

Day 2: Monday, 13th of October 2025

0730 – 0830	Non-Catalytic Residue Upgrading Processes
0830 – 0930	Solvent Deasphalting
0930 – 0945	Break
0945 – 1030	Correlations for Solvent Deasphalting
1030 – 1100	Thermal Processes
1100 – 1130	Catalysis
1130 – 1215	Catalyst Supports
1215 – 1230	Break
1230 – 1330	Catalytic Processes
1330 – 1420	Residue-Fluidized Catalytic Cracking
1420 – 1430	Recap
1430	Lunch & End of Day Two

Day 3: Tuesday, 14th of October 2025

0730 – 0830	Hydroprocessing
0830 – 0930	Fixed Bed Process
0930 – 0945	Break
0945 – 1030	Moving Bed Process
1030 – 1100	Ebullated Bed Process
1100 – 1130	Slurry Bed Process
1130 – 1215	Aquaconversion
1215 – 1230	Break
1230 – 1315	HDM Catalysis
1315 – 1420	Catalysts Deactivation
1420 – 1430	Recap
1430	Lunch & End of Day Three



Day 4: Wednesday, 15th of October 2025

0730 – 0800	<i>Catalyst Regeneration & Metals Recovery</i>
0800 – 0900	<i>Chevron Lummus Global RDS/VRDS Hydrotreating – Transportation Fuels from the Bottom of the Barrel</i>
0900 – 0915	<i>Break</i>
0915 – 1000	<i>Selective Hydrogen Processes</i>
1000 – 1030	<i>UOP Unionfining Technology</i>
1030 – 1115	<i>UOP RCD Unionfining Process</i>
1115 – 1200	<i>UOP Catalytic Dewaxing Process</i>
1200 – 1215	<i>Break</i>
1215 – 1315	<i>UOP Unisar Process for Saturation of Aromatics</i>
1315 – 1420	<i>Chervon Lummus Global Ebullated Bed Bottom-of-the-Barrel Hydroconversion (LC-Fining) Process</i>
1420 – 1430	<i>Recap</i>
1430	<i>Lunch & End of Day Four</i>

Day 5: Thursday, 16th of October 2025

0730 – 0830	<i>Start-up & Shutdown</i>
0830 – 0930	<i>Isocracking-Hydrocracking for Superior Fuels & Lubes</i>
0930 – 0945	<i>Break</i>
0945 – 1015	<i>UOP Unicracking Process for Hydrocracking</i>
1015 – 1045	<i>Recycle H₂ Purification Processes</i>
1045 – 1115	<i>Hydrogen Consumption</i>
1115 – 1200	<i>H₂s Removal</i>
1200 – 1215	<i>Break</i>
1215 – 1300	<i>Reactor Internals</i>
1300 – 1345	<i>FCC FEED Hydrotreating</i>
1345 – 1400	<i>Course Conclusion</i>
1400 – 1415	<i>POST-TEST</i>
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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