Haward Technology Middle East

COURSE OVERVIEW PE0095
Catalyst Material Handling
Loading, Unloading, Oxidation, Reduction & Techniques

Course Title
Catalyst Material Handling: *Loading, Unloading, Oxidation, Reduction & Techniques*

Course Reference
PE0095

Course Duration/Credits
Five days/3.0 CEUs/30 PDHS

Course Date/Venue

Session(s)	Date	Venue
1	February 25-29, 2024	Kizkulesi, Crown Plaza Istanbul Asia Hotels & Convention Center, Istanbul, Turkey
2	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 various practical sessions and exercises. Theory learnt will be applied using one of our state-of-the-art simulators.

This course is designed to provide participants with a detailed and up-to-date overview on catalyst material handling, loading, unloading, oxidation, reduction and technique. It covers the preparation of catalyst change plan; executing the catalyst project efficiently and safely; the catalyst change operation main requirement; the work in inert and toxic atmospheres plus hot and hostile environments; the reactor cooling utilizing a proprietary liquid nitrogen system; the unloading and loading of catalyst under inert or normal atmospheres; the dense phase loading systems; and the innovative, purpose built-equipment ensuring low catalyst attrition rate.

Further, the course also covers the catalyst sampling and particle measurement; the vacuum unloading with closed loop nitrogen re-circulation; the catalyst transportation, storage & containment (un approved); the tubular reformer loadings using unidense® loading and conventional techniques; the pre-sulphiding (DMDS injection); the metals reclamation and disposal of materials; the shutdown planning, coordination and execution; the edge equipment; the modifications for catalytic reactors, vessels on a blinds to blinds' basis; and the confined space and inert/toxic entry operations.

During this interactive course, participants will learn the unloading of catalyst under inert/toxic atmosphere; the screening of catalyst under continuous nitrogen purging; the loading by conventional and licensed loading technologies; the HSE requirement; the environment requirement; the catalyst change/replacement report; and the catalyst change learned lessons and case studies.

Course Objectives

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

- Apply systematic techniques in handling, loading, unloading, oxidation and reduction of catalyst material handling
- Prepare catalyst change plan and execute catalyst projects efficiently and safety with minimal delays from fusing, minimal catalyst attrition and dust control systems
- Identify catalyst change operation main requirement including pre-commissioning of reactors and vessels
- Determine work in inert and toxic atmospheres in hot and hostile environments as well as reactor cooling utilizing a proprietary liquid nitrogen system
- Unload and load catalyst under inert or normal atmospheres and dense phase loading systems
- Use dense phase loading system in transferring catalyst directly from grade to reactor man way without using cranes and hoppers
- Describe innovative and purpose build-equipment ensuring low catalyst attrition rate and perform catalyst sampling and particle measurement
- Employ vacuum unloading with closed loop nitrogen re-circulation and catalyst transportation, storage and containment
- Use tubular reformer loadings using unidense loading and conventional techniques
- Perform pre-sulphiding, metals reclamation, disposal of materials, shutdown planning, coordination and execution
- Describe edge equipment, modification for catalyst reactors, vessels on a blinds to blinds basis, confined space and inert toxic entry operations
- Unload catalyst under inert/toxic atmosphere, screen catalyst under continuous nitrogen purging and apply loading by convention and licensed loading technologies
- Enumerate HSE requirement, environment requirement, catalyst change/replacement report and lesson learned

Who Should Attend

This course covers systematic techniques of catalyst material handling for those who are involved in loading, unloading, oxidation and reduction. This includes refinery, chemicals and petrochemical engineers, supervisors and operations staff.

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. Mervyn Frampton is a **Senior Process Engineer** with over **30 years** of industrial experience within the **Oil & Gas**, **Refinery**, **Petrochemical** and **Utilities** industries. His expertise lies extensively in the areas of **Process Troubleshooting**, **Distillation Towers**, **Fundamentals of Distillation** for Engineers, **Distillation** Operation and Troubleshooting, **Advanced Distillation** Troubleshooting, **Distillation** Technology, Vacuum **Distillation**, **Distillation Column** Operation & Control, **Oil Movement** Storage & Troubleshooting, **Process Equipment** Design, Applied **Process Engineering** Elements, **Process Plant** Optimization, **Revamping & Debottlenecking**, **Process Plant** Troubleshooting & Engineering Problem Solving, **Process Plant** Monitoring, **Catalyst** Selection & Production Optimization, Operations Abnormalities & Plant Upset, **Process Plant** Start-up & Commissioning, **Clean Fuel** Technology & Standards, Flare, Blowdown & Pressure Relief Systems, **Oil & Gas Field Commissioning** Techniques, **Pressure Vessel** Operation, **Gas Processing**, **Chemical** Engineering, **Process Reactors** Start-Up & Shutdown, **Gasoline Blending** for Refineries, **Urea Manufacturing** Process Technology, Continuous Catalytic Reformer (**CCR**), **De-Sulfurization** Technology, Advanced Operational & Troubleshooting Skills, Principles of Operations Planning, **Rotating Equipment** Maintenance & Troubleshooting, **Hazardous Waste Management & Pollution Prevention**, **Heat Exchangers & Fired Heaters** Operation & Troubleshooting, **Energy Conservation** Skills, **Catalyst Technology**, **Refinery & Process Industry**, **Chemical Analysis**, **Process Plant**, **Commissioning & Start-Up**, **Alkylation**, **Hydrogenation**, **Dehydrogenation**, **Isomerization**, **Hydrocracking & De-Alkylation**, **Fluidized Catalytic Cracking**, **Catalytic Hydrodesulphuriser**, **Kerosene Hydrotreater**, **Thermal Cracker**, **Catalytic Reforming**, **Polymerization**, **Polyethylene**, **Polypropylene**, Pilot Water Treatment Plant, **Gas Cooling**, **Cooling Water Systems**, Effluent Systems, Material Handling Systems, **Gasifier**, **Gasification**, Coal Feeder System, **Sulphur Extraction Plant**, **Crude Distillation Unit**, **Acid Plant Revamp** and **Crude Pumping**. Further, he is also well-versed in HSE Leadership, Project and Programme Management, Project Coordination, Project Cost & Schedule Monitoring, Control & Analysis, Team Building, Relationship Management, Quality Management, Performance Reporting, Project Change Control, Commercial Awareness and Risk Management.

During his career life, Mr. Frampton held significant positions as the **Site Engineering Manager**, **Senior Project Manager**, **Process Engineering Manager**, **Project Engineering Manager**, **Construction Manager**, **Site Manager**, **Area Manager**, **Procurement Manager**, **Factory Manager**, **Technical Services Manager**, **Senior Project Engineer**, **Process Engineer**, **Project Engineer**, **Assistant Project Manager**, **Handover Coordinator** and **Engineering Coordinator** from various international companies such as the **Fluor Daniel**, **KBR** South Africa, **ESKOM**, MEGAWATT PARK, CHEMEPIC, PDPS, CAKASA, **Worley Parsons**, Lurgi South Africa, **Sasol**, **Foster Wheeler**, **Bosch** & **Associates**, **BCG** Engineering Contractors, Fina Refinery, Sapref Refinery, Secunda Engine Refinery just to name a few.

Mr. Frampton has a **Bachelor's degree** in **Industrial Chemistry** from **The City University** in **London**. Further, he is a **Certified Instructor/Trainer**, a **Certified Internal Verifier/Trainer/Assessor** by the **Institute of Leadership & Management** (**ILM**) and has delivered numerous trainings, courses, workshops, conferences and seminars internationally.

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 Fee

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	*Registration & Coffee*
0800 – 0815	*Welcome & Introduction*
0815 – 0830	***PRE-TEST***
0830 – 0900	***Preparing Catalyst Change Plan***
0900 – 0915	*Break*
0915 – 1030	***Execute Catalyst Project Efficiently & Safely*** *Minimal Delays from Fusing ● Minimal Catalyst Attrition ● Dust Control Systems*
1030 – 1200	***Catalyst Change Operation Main Requirement*** *Pre-Commissioning of Reactors & Vessels*
1200 – 1215	*Break*
1215 – 1330	***Work in Inert & Toxic Atmospheres Plus Hot & Hostile Environments***
1330 – 1420	***Case Study & Related Video***
1420 – 1430	***Recap***
1430	*Lunch & End of Day One*

Day 2

0730 – 0900	***Reactor Cooling Utilizing a Proprietary Liquid Nitrogen System***
0900 – 0915	*Break*
0915 – 1030	***Unloading & Loading of Catalyst Under Inert or Normal Atmospheres***
1030 – 1200	***Dense Phase Loading Systems*** *Transfer of Catalyst Directly from Grade to Reactor Man Way, Without the Use of Cranes & Hoppers*
1200 – 1215	*Break*
1215 – 1330	***Innovative, Purpose Built-Equipment Ensuring Low Catalyst Attrition Rate***
1330 – 1420	***Case Studies & Related Video***
1420 – 1430	***Recap***
1430	*Lunch & End of Day Two*

Day 3

0730 – 0900	***Catalyst Sampling & Particle Measurement***
0900 – 0915	*Break*
0915 – 1000	***Vacuum Unloading with Closed Loop Nitrogen Re-Circulation***
1000 – 1100	***Catalyst Transportation, Storage & Containment (UN approved)*** *Catalyst Loading of Reactors Using UOP® Dense Loading & Conventional Techniques*
1100 – 1200	***Tubular Reformer Loadings using Unidense® Loading & Conventional Techniques***
1200 – 1215	*Break*
1215 – 1330	***Pre-Sulphiding (DMDS Injection)***
1330 – 1420	***Case Studies & Related Video***
1420 – 1430	***Recap***
1430	*Lunch & End of Day Three*

Day 4

0730 – 0900	***Metals Reclamation & Disposal of Materials***
0900 – 0915	*Break*
0915 – 1000	***Shutdown Planning, Coordination & Execution***
1000 – 1100	***Edge Equipment*** *Life Support Systems • Vacuum Unloading • Screening Equipment • Modular Equipment*
1100 – 1200	***Modifications for Catalytic Reactors, Vessels Etc. on a Blinds to Blinds' Basis***
1200 – 1215	*Break*
1215 – 1330	***Confined Space & Inert/Toxic Entry Operations***
1330 – 1420	***Case Studies & Related Video***
1420 – 1430	***Recap***
1430	*Lunch & End of Day Four*

Day 5

0730 – 0900	***Unloading of Catalyst Under Inert/Toxic Atmosphere***
0900 – 0915	*Break*
0915 – 1000	***Screening of Catalyst Under Continuous Nitrogen Purging*** ***Loading by Conventional & Licensed Loading Technologies***
1000 – 1100	***HSE Requirement***
1100 – 1200	***Environment Requirement*** ***Catalyst Change/Replacement Report***
1200 – 1215	*Break*
1215 – 1345	***Catalyst Change Learned Lessons***
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 the following real-life case studies:-

Course Coordinator

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