COURSE OVERVIEW PE1042-4D
Continuous Catalyst Regeneration (CCR) Platforming - Process Standard

Course Title
Continuous Catalyst Regeneration (CCR) Platforming - Process Standard

Course Reference
PE1042-4D

Course Duration/Credits
Four days/2.4 CEUs/24 PDHs

Course Date/Venue

Session(s)	Date	Venue
1	June 16-19, 2025	Glasshouse Meeting Room, Grand Millennium Al Wahda Hotel, Abu Dhabi, UAE
2	August 03-06, 2025	Tamra Meeting Room, Al Bandar Rotana Creek, Dubai, UAE
3	November 23-26, 2025	Tamra Meeting Room, Al Bandar Rotana Creek, Dubai, UAE
4	December 08-11, 2025	Glasshouse Meeting Room, Grand Millennium Al Wahda Hotel, Abu Dhabi, 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 Continuous Catalyst Regeneration (CCR) Platforming - Process Standard. It covers the platforming process, basic principles of catalytic reforming, continuous catalyst regeneration (CCR) system and catalyst deactivation mechanisms; the catalyst performance and regeneration, process flow diagram (PFD) for CCR platforming and design of the CCR reactor; the reactor operating conditions, regeneration process and catalyst bed management; the heat and mass balance in CCR and troubleshooting reactor issues; and the control systems in CCR platforming, automation of CCR operations, advanced process control (APC) for CCR and instrumentation for monitoring and control.

During this interactive course, participants will learn the CCR process optimization, safety and environmental considerations; advanced catalyst regeneration techniques, signs of catalyst failure and handling deactivation issues; analyzing catalyst behavior over time, catalyst reactivation methods and reducing energy consumption in the reactor; the energy recovery methods, heat integration in the platforming process and energy balance in CCR operations; diagnosing operational issues in reactors and regenerators; the common faults in heat exchangers and reactors, cooling and heating issues and managing off-spec product quality; controlling octane numbers and managing aromatics and hydrogen content; and identifying impurities in platforming products and the product specification monitoring.

Course Objectives

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

- Apply and gain an in-depth knowledge on continuous catalyst regeneration (CCR) platforming - process standard
- Discuss platforming process, basic principles of catalytic reforming, continuous catalyst regeneration (CCR) system and catalyst deactivation mechanisms
- Illustrate catalyst performance and regeneration, process flow diagram (PFD) for CCR platforming and design of the CCR reactor
- Recognize reactor operating conditions and the regeneration process as well as apply catalyst bed management
- Identify heat and mass balance in CCR, troubleshoot reactor issues and discuss control systems in CCR platforming
- Employ automation of CCR operations, advanced process control (APC) for CCR and instrumentation for monitoring and control
- Carryout CCR process optimization, safety and environmental considerations and advanced catalyst regeneration techniques
- Identify signs of catalyst failure, handle deactivation issues, analyze catalyst behavior over time and implement catalyst reactivation methods
- Reduce energy consumption in the reactor and apply energy recovery methods, heat integration in the platforming process and energy balance in CCR operations
- Diagnose operational issues in reactors and regenerators, identify common faults in heat exchangers and reactors, address cooling and heating issues and manage off-spec product quality
- Control octane numbers, manage aromatics and hydrogen content, identify impurities in platforming products and apply product specification monitoring

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 continuous catalyst regeneration (CCR) platforming - process standard for process engineers, CCR unit operators, shift supervisors & operations supervisors, maintenance and reliability engineers, technical services & support staff, HSE personnel and project engineers.

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: -

- 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.

- 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.

Accommodation

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

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:

Dr. John Petrus, PhD, MSc, BSc, is a **Senior Process Engineer** with over **30 years** of **onshore & offshore** experience within the **Oil & Gas**, **Refinery** and **Petroleum** industries. His wide experience covers in the areas of **De-Sulfurization** Technology, **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**), Advanced Operational & Troubleshooting Skills, Principles of Operations Planning, **Rotating Equipment** Maintenance & Troubleshooting. Further he is also well versed in **Rotating Machinery** Principles & Applications, **Rotating Equipment** Selection, Operation, Maintenance, Inspection & Troubleshooting, **Rotating Machine/Equipment** in Industry, **Control Valves & Actuators**, **PSV** Maintenance & Testing, **Pump Selection**, Installation, Performance & Control, **Screw Compressor** Theory and Troubleshooting, **Reliability-Centered Maintenance** (**RCM**), **Preventive & Predictive Maintenance**, **Spare Parts Planning & Inventory** Management, Computerized Maintenance Management Systems (**CMMS**), **Process Plant Shutdown & Turnaround**, **Maintenance Optimization** & Best Practices, **Reliability Centered Maintenance** Principles & Application, Efficient Shutdowns, Turnaround & Outages, Effective Reliability Maintenance & Superior Maintenance Strategies, **Integrity & Asset** Management, **Total Plant Reliability** Maintenance, **Vibration** Measurement, **Advanced Analytics** in Oil & Gas, **Business Intelligence Data Analytics**, Audit Analytics & Computer-Assisted Audit Techniques (**CAATs**), **Basic Database** Concepts & Data Formats, **Data Analysis** Cycle & Best Practices, **Data Importing & Integrity** Verification, **Advanced Analytics Tools** in **Auditing**, Leveraging **AI & Machine Learning** in **Audits**, **Data Mining Techniques** for Auditors, **Data Analytics** for Managerial Decision Making, **Business Process Analysis**, Mapping & Modeling, **Research Methods & Analysis**, **Statistical Data Needs Analysis**, Oil & Gas Industry **Business Environment & Competitive Intelligence Gathering & Analysis**, Petroleum **Economics & Risk Analysis**, Certified **Data Analysis**, **Risk Management** & SWIFT Analysis, Best Practices Management System (**BPMS**), **GIS System** Management, **Database** Management, Strategic Planning, Best Practices and Workflow, **Quality** Management, **Project** Management and **Risk Assessment** & Uncertainty Evaluation. Further, he is also well-versed in **seismic interpretation**, **mapping** & **reservoir modelling tools** like **Petrel** software, **LandMark**, **Seisworks**, **Geoframe**, **Zmap** and has extensive knowledge in MSDos, Unix, **AutoCAD**, MAP, Overlay, Quicksurf, 3DStudio, **Esri ArcGIS**, Visual Lisp, Fortran-77 and Clipper. Moreover, he is a world **expert** in **analysis** and **modelling** of **fractured prospects** and **reservoirs** and a **specialist** and **developer** of **fracture modelling software tools** such as FPDM, FMX and DMX Protocols.

During his career life, Dr. Petrus held significant positions and dedication as the **Executive Director**, **Senior Geoscience Advisor**, **Exploration Manager**, **Project Manager**, **Manager**, **Process Engineer**, **Mechanical Engineer**, **Maintenance Engineer**, **Chief Geologist**, **Chief** of **Exploration**, **Chief** of **Geoscience**, **Senior Geosciences Engineer**, **Senior Explorationist**, **Senior Geologist**, **Geologist**, **Senior Geoscientist**, **Geomodeller**, **Geoscientist**, **CPR Editor**, **Resources Auditor**, **Project Leader**, **Technical Leader**, **Team Leader**, **Scientific Researcher** and **Senior Instructor/Trainer** from various international companies and universities such as the Dragon Oil Holding Plc., ENOC, MENA, ENI Group of Companies, Ocre Geoscience Services (OGS), Burren RPL, Ministry of Oil-Iraq, Eni Corporate University, Standford University, European Universities, European Research Institutes, NorskHydro Oil Company, Oil E&P Companies, just to name a few.

Dr. Petrus has a **PhD** in **Geology** and **Tectonophysics** and **Master** and **Bachelor** degrees in **Earth Sciences** from the **Utrecht University**, **The Netherlands**. Further, he is a **Certified Instructor/Trainer**, a **Certified Trainer/Assessor/Internal Verifier** by the **Institute of Leadership & Management** (**ILM**), a Secretary and Treasurer of Board of Directors of Multicultural Centre, Association Steunfonds SSH/SSR and Founding Member of Sfera Association. He has further published several scientific publications, journals, research papers and books and delivered numerous trainings, workshops, courses, seminars and conferences 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 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 – 0930	***Overview of the Platforming Process*** *History and Development of Platforming Processes • Importance in the Refining Industry • Key Chemical Reactions Involved • Types of Platforming Processes*
0930 - 0945	*Break*
0945 – 1045	***Basic Principles of Catalytic Reforming*** *Definition and Purpose • Catalyst Roles and Functions • Types of Reforming Catalysts • Reaction Kinetics and Thermodynamics*
1045 - 1145	***Understanding the Continuous Catalyst Regeneration (CCR) System*** *Definition of CCR Platforming • Benefits of Continuous Regeneration • Components of a CCR System • Comparison Between Semi-Regenerative and Continuous Systems*
1145 - 1230	***Catalyst Deactivation Mechanisms*** *Poisoning • Sintering • Coking • Leaching*
1230 – 1245	*Break*
1245 – 1330	***Basics of Catalyst Performance & Regeneration*** *Catalyst Life Cycle • Regeneration Methods • Importance of Regular Catalyst Monitoring • Impact of Deactivation on Performance*
1330 - 1420	***Process Flow Diagram (PFD) for CCR Platforming*** *Layout and Components of a CCR Unit • Key Equipment in the PFD • Stream and Flow Directions • Understanding Utility Systems Integration*
1420 – 1430	***Recap*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow*
1430	*Lunch & End of Day One*

Day 2

0730 – 0830	***Design of the CCR Reactor*** *Types of CCR Reactors • Reactor Internals Design • Catalyst Bed Design • Heat Management in the Reactor*
0830 – 0930	***Reactor Operating Conditions*** *Temperature, Pressure, and Flow Rate Specifications • Effect of Operating Conditions on Catalyst Life • Control of Reaction Parameters • Optimization Strategies for Reactor Conditions*
0930 - 0945	*Break*
0945 – 1130	***The Regeneration Process*** *Regeneration Cycle Design • Oxygenation of Catalyst • Regeneration Reaction Kinetics • Catalyst Regeneration Conditions*
1130 - 1230	***Catalyst Bed Management*** *Bed Height and Catalyst Loading • Fluidization and Flow Distribution • In-Situ Catalyst Activity Monitoring • Handling Catalyst During Shutdowns*
1230 - 1245	*Break*
1245 - 1330	***Heat & Mass Balance in CCR*** *Calculation of Heat Generation and Removal • Balancing Mass Flow in Reactor and Regenerator • Effects of Heat Imbalance on Catalyst Activity • Understanding Thermal Management in CCR*
1330 - 1420	***Troubleshooting Reactor Issues*** *Common Problems in Reactor Performance • Catalyst Poisoning Signs and Solutions • Addressing Pressure Drop Issues • Managing Fouling in Reactors*
1420 – 1430	***Recap*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow*
1430	*Lunch & End of Day Two*

Day 3

0730 – 0830	***Control Systems in CCR Platforming*** *Basic Control Systems Overview • Role of Distributed Control System (DCS) • Temperature, Pressure, and Flow Control • Reactor and Regenerator Control Schemes*
0830 – 0930	***Automation of CCR Operations*** *Benefits of Automation in CCR Operations • Automation Strategies for Catalyst Regeneration • Real-Time Data Analysis and Decision Making • Automation Troubleshooting*
0930 - 0945	*Break*
0945 – 1130	***Advanced Process Control (APC) for CCR*** *Principles of APC in Platforming Units • Feedback and Feedforward Control Loops • Optimization Algorithms • Case Studies on APC Success*
1130 - 1230	***Instrumentation for Monitoring & Control*** *Key Instruments Used in CCR Systems • Pressure, Temperature, and Flow Measurement Devices • Catalyst Activity Monitoring Instruments • Online Analyzers and Diagnostics*
1230 - 1245	*Break*

1245 - 1330	***CCR Process Optimization*** *Optimizing Catalyst Regeneration Cycles • Optimizing Product Yield and Quality • Minimizing Downtime and Maintenance • Improving Overall Process Efficiency*
1330 - 1420	***Safety & Environmental Considerations*** *Safety Hazards in CCR Platforming • Environmental Regulations and Compliance • Managing Emissions and Waste Products • Safety Features in CCR Operations*
1420 – 1430	***Recap*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow*
1430	*Lunch & End of Day Three*

Day 4

0730 – 0830	***Advanced Catalyst Regeneration Techniques*** *High-Temperature Regeneration • Advanced Coke Removal Methods • Use of Additives in Regeneration • Regeneration Cycle Extensions*
0830 – 0930	***Troubleshooting Catalyst Issues*** *Identifying Signs of Catalyst Failure • Techniques to Handle Deactivation Issues • Analyzing Catalyst Behavior Over Time • Implementing Catalyst Reactivation Methods*
0930 - 0945	*Break*
0945 – 1045	***Energy Efficiency in CCR Platforming*** *Reducing Energy Consumption in the Reactor • Energy Recovery Methods • Heat Integration in the Platforming Process • Energy Balance in CCR Operations*
1045 – 1130	***Advanced Process Troubleshooting*** *Diagnosing Operational Issues in Reactors and Regenerators • Common Faults in Heat Exchangers and Reactors • Strategies to Address Cooling and Heating Issues • Managing Off-Spec Product Quality*
1130 – 1230	***Quality Control & Product Specifications*** *Controlling Octane Numbers • Managing Aromatics and Hydrogen Content • Impurities in Platforming Products • Product Specification Monitoring*
1230 - 1245	*Break*
1245 – 1345	***Future Trends in CCR Platforming*** *Innovations in Catalyst Technology • Emerging Trends in Process Automation • Future Developments in Energy Efficiency • Sustainability in CCR Operations*
1345 – 1400	***Course Conclusion*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Course Topics that were Covered During the Course*
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

Mari Nakintu, Tel: +971 2 30 91 714, Email: mari1@haward.org