

COURSE OVERVIEW PE0158
Delayed Coker and coke Calcination Design

Course Title

Delayed Coker and coke Calcination Design

Course Date/Venue

Session 1: June 23-27, 2025/ Fujairah Meeting Room, Grand Millennium Al Wahda Hotel, Abu Dhabi, UAE

Session 2: October 19-23, 2025/ Boardroom 1, Elite Byblos Hotel Al Barsha, Sheikh Zayed Road, Dubai, UAE



Course Reference

PE0158

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.



This course is designed to provide participants with a detailed and up-to-date overview of delayed coker processing. It covers the heavy oil chemistry and coker feed systems; the coker preheat furnace covering past and current design strategies, effect of geometry, feed properties, contaminants and operating conditions on run length; and the decoking options.



During this interactive course, participants will learn the coker drum operations, coker process variable effect and petroleum coke quality issues; the decoking operations, fractionator and gas plant operations; the commercial considerations for delayed coking; and the trends in delayed coking.

Course Objectives

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

- Apply and gain an in-depth knowledge on delayed coker processing
- Recognize heavy oil chemistry and coker feed systems
- Identify coker preheat furnace covering past and current design strategies, effect of geometry, feed properties, contaminants and operating conditions on run length as well as decoking options
- Carryout coker drum operations, recognize coker process variable effect and identify petroleum coke quality issues
- Illustrate decoking operations, fractionator and gas plant operations
- Determine commercial considerations for delayed coking and trends in delayed coking

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 delayed coker processing for refinery engineers, inspectors, maintenance and other technical staff in delayed coking, chemical or mechanical engineers who are assigned to support a DCU and to those who wants to learn more about the details of the equipment design and improve their troubleshooting skills.

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

US\$ 5,500 per Delegate + **VAT**. The rate includes H-STK® (Haward Smart Training Kit), buffet lunch, coffee/tea on arrival, morning & afternoon of each day

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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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.

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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.

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. Robert Harvey, MSc (Cum Laude), BSc is a **Senior Chemical Engineer** with over **45 years** of in-depth industrial experience within the **Oil & Gas, Refinery, Petrochemical, Mining** and **Power** industries. His expertise widely covers in the areas of **Fertilizer Manufacturing** Process Technology, **Fertilizer Storage** Management (Ammonia & Urea), **Petrochemical & Fertilizer Plants, Nitrogen Fertilizer** Production, **Petroleum Industry Process** Engineering, **Process Equipment** Design & Troubleshooting, **Process Equipment & Piping Systems, Fertilizer Manufacturing** Process Technology, **Production** Management, **Process Plant** Optimization & Continuous Improvement, **Revamping & Debottlenecking, Pressure Vessel** Operation, **Heat Mass Balance, Distillation-Column** Operation, & Troubleshooting, **Production Process** Optimization, **Debottlenecking, Unit Performance** Optimization, **Process Analyzers, Real Time Online** Optimization, **Operations Planning** Optimization, **Engineering Problem Solving, Bag Filters** Operation & Maintenance, **Process Equipment** Design, Chemical Reaction Engineering Application, **Phosphatic Industry, Diammonium Phosphate, Monoammonium Phosphate, NPK,** Troubleshooting Improvement, **Production** Management, **Distillation-Column** Operation & Troubleshooting, Vinyl Chloride Monomer (**VCM**) Manufacturing & Process Troubleshooting, **Monomer Handling** Safety, **Cement** Manufacturing Process Technology & Standards, Complex Operational Troubleshooting, Incident **Root Cause Analysis** & Corrective Action, **Process Equipment & Piping** System, **Fertilizer Manufacturing, Process Plant** Optimization & Continuous Improvement, **Process Plant** Performance & Efficiency, Continuous Improvement & Benchmarking, **Energy Efficiency** for Process Plants, **Pressure Vessel** Operation, **Reactors & Storage Tanks,** Dehydrating Columns, Heat & Material Balance, **Troubleshooting Process Operations,** Modern **Aluminium Production Processes, Cement Kiln Process, Process Engineer Calculations,** Steel Making Process, **P&ID** Reading & Interpretation, **Detailed Engineering Design, Process Diagrams** Review, Process Hazard Analysis (**PHA**), **HAZOP** Leadership, Project HSE Review (**PHSER**), Safe Handling of **Propylene Oxide & Ethylene Oxide,** Safety in **Process & Industrial Plants,** Environmental Impact Assessment (**EIA**) and Effective **Risk Assessment & HAZOP** Studies. Further, he is also well versed in Feasibility Studies Analysis & Evaluation, Project Gate System Procedures, Process Mapping, Change Management Skills, Change Management Strategy, Strategic Process Control in Process Industry, Developing Commercial Contracts, Project Management Skills, Project Scheduling & Cost Control, FIDIC & Other Model Contracts, EPC & EPCM Contracts, Knowledge Management, Job Evaluation, Creative Problems Solving & Innovation Skills, Problem Solving & Decision Making, Strategic Planning & Creative Thinking and Mind Mapping.

During his career life, Mr. Harvey has gained his practical and field experience through his various significant positions and dedication as the **Commercial Director, Manufacturing Director, Chief Operating Officer, Head Projects Division, Project Leader, Lead Technical Advisor/Consultant** and **Project Consultant** to various international companies such as the Trade and Industrial Policy Strategies (TIPS), PGBI Johannesburg, IDC Green Industries SBU/Arengo 316 Pty Ltd, Ferrum Crescent Limited, CEF Limited, Rio Tinto Alcan, Industrial Development Corporation of SA (IDC) and AECI Limited.

Mr. Harvey has **Master's (Cum Laude)** and **Bachelor's** degrees in **Chemical Engineering.** Further, he is a **Certified Instructor/Trainer,** a **Certified Internal Verifier/Assessor/Trainer** by the **Institute of Leadership & Management (ILM)** and has delivered various trainings, seminars, conferences, workshops and courses globally.

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 – 0945	Process Background <i>History • Typical Flow Plan Yields • Comparison with Fluid Coking</i>
0945 – 1000	<i>Break</i>
1000 – 1100	Heavy Oil Chemistry <i>Composition of Heavy Oils • Thermal Cracking Reactions • Compatibility</i>
1100 – 1200	Coker Feed Systems <i>Crude/Coker Interactions • Tankage Considerations</i>
1200 - 1215	<i>Break</i>
1215 – 1420	Coker Feed Systems (cont'd) <i>Non-Conventional Feeds • Coker Preheat Options</i>
1420 – 1430	Recap
1430	<i>Lunch & End of Day One</i>

Day 2

0730 – 0915	Coker Preheat Furnace <i>Past Design/Current Design Strategies • Effect of Geometry on Run Length • Effect of Feed Properties on Run Length</i>
0915 – 0930	<i>Break</i>
0930 – 1100	Coker Preheat Furnace (cont'd) <i>Effect of Contaminants on Run Length • Effect of Operating Conditions on Run Length • Decoking Options</i>
1100 – 1200	Coker Drum Operations <i>Mechanical Details • Dynamic Coking Model</i>
1200 - 1215	<i>Break</i>
1215 – 1420	Coker Drum Operations (cont'd) <i>Foam Formation / Use of Anti-Foam • Overhead Line Quenching Options • Pressure Relief Systems</i>
1420 – 1430	Recap
1430	<i>Lunch & End of Day Two</i>

Day 3

0730 – 0915	Coker Process Variable Effect <i>Key Operating Variables • Key Feedstock Parameters</i>
0915 – 0930	<i>Break</i>
0930 – 1100	Coker Process Variable Effect (cont'd) <i>Effect on Product Yields • Effect on Product Qualities • Upgrading/Processing Options for Coker Products</i>
1100 – 1200	Petroleum Coke Quality Issues <i>Types of Petroleum Coke • Dispositions for Petroleum Coke • Current Market Trends</i>
1200 - 1215	<i>Break</i>

1215- 1420	Petroleum Coke Quality Issues (cont'd) Feedstock Effect on Coke Quality • Operating Variable Effects • Coke Calcining Operations
1420 - 1430	Recap
1430	Lunch & End of Day Three

Day 4

0730 - 0915	Decoking Operations Sequence of Events • Blowdown Systems • Automatic Deheading Devices • Details of Coke Cutting System
0915 - 0930	Break
0930 - 1045	Decoking Operations (cont'd) Options for Green Coke Handling • Coke Dewatering/Cutting Water Systems • Heatup Condensate Processing Options
1045 - 1200	Fractionator and Gas Plant Operations Gas Oil Wash Zone Options • Heat Removal Options
1200 - 1215	Break
1215 - 1420	Fractionator and Gas Plant Operations (cont'd) Naphtha End Point Control During Switches • Lean Oil/Sponge Oil Options
1420 - 1430	Recap
1430	Lunch & End of Day Four

Day 5

0730 - 0915	Commercial Considerations for Delayed Coking Troubleshooting of Delayed Cokers • Optimization of Delayed Coking Systems
0915 - 0930	Break
0930 - 1100	Commercial Considerations for Delayed Coking (cont'd) Debottlenecking Options • Unit Monitoring and Test Runs • Process Economics
1100 - 1200	Trends in Delayed Coking Cogeneration • Low Pressure/Ultra-Low Recycle Coking
1200 - 1215	Break
1215- 1345	Trends in Delayed Coking (cont'd) Strategies for Improved Furnace Run Length • Strategies for Shortening Decoking Cycle • Refinery Sludge and Slop Oil Disposition
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 real-life case studies and exercises:-



Course Coordinator

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