



COURSE OVERVIEW FE0187

Pipeline Facilities: Design, Construction & Operations

Course Title

Pipeline Facilities: Design, Construction & Operations

Course Date/Venue

Session 1: October 11-15, 2026/Musandam
Meeting Room, Royal Tulip Hotel,
Muscat, Oman

Session 2: December 13-17, 2026/Musandam
Meeting Room, Royal Tulip Hotel,
Muscat, Oman



Course Reference

FE0187

Course Duration/Credits

Five days/3.0 CEUs/30 PDHs

Course Description



This practical and highly-interactive course includes various practical sessions and exercises. Theory learnt will be applied using our state-of-the-art simulators.



This comprehensive course provides participants with an in-depth understanding of pipeline facilities throughout their lifecycle—from conceptual design and engineering to construction, commissioning, operation, maintenance and integrity management. It emphasizes international standards, engineering best practices, safety, reliability, environmental protection and operational excellence.



Further, the course will also discuss the pipeline design principles, pipeline route selection and survey and pipeline materials and selection, pipeline components and facilities and hydraulic design and flow analysis; the pipeline engineering design, pipeline construction planning, welding and fabrication; the trenching and pipeline installation, coating and corrosion protection as well as inspection and quality control during construction; the pipeline commissioning and start-up, pipeline operations and pipeline monitoring systems; and the pumping and compression facilities.

During this interactive course, participants will learn the pipeline maintenance practices and pigging operations; the pipeline integrity management, corrosion management, pipeline defects and failure mechanisms and leak detection systems; the safety and emergency response, risk assessment, regulatory compliance and pipeline asset management; and the digital technologies in pipeline operations, advanced inspection technologies and future trends and sustainability in pipeline facilities.

Course Objectives/Outcomes & Benefits for the Participants

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

- Apply and gain an in-depth knowledge on the design, construction and operations of pipeline facilities
- Discuss pipeline design principles, pipeline route selection and survey and pipeline materials and selection
- Identify pipeline components and facilities and illustrate hydraulic design and flow analysis
- Describe pipeline engineering design and apply pipeline construction planning, welding and fabrication
- Carryout trenching and pipeline installation, coating and corrosion protection as well as inspection and quality control during construction
- Employ pipeline commissioning and start-up, pipeline operations and pipeline monitoring systems
- Describe pumping and compression facilities and apply pipeline maintenance practices and pigging operations
- Apply pipeline integrity management and corrosion management as well as recognize pipeline defects and failure mechanisms and leak detection systems
- Carryout safety and emergency response, risk assessment and regulatory compliance and pipeline asset management
- Discuss digital technologies in pipeline operations, advanced inspection technologies and future trends and sustainability in pipeline facilities

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 pipeline facilities covering design, construction and operations for pipeline engineers, mechanical engineers, civil engineers, project engineers, operations engineers, maintenance engineers, construction engineers, inspection engineers, integrity engineers, HSE professionals and supervisors involved in oil & gas, petrochemical, water and energy pipeline systems.

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:

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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**. 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.

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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 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:



Mr. Marian Copilet is a **Senior Pipeline Engineer** and an **International Expert** in **Process Piping Design** with almost **30 years** of experience within the **Oil & Gas, Petrochemical and Refinery** industries. His expertise widely covers in the areas of **Oil & Gas Pipelines, Piping & Pipeline Design, Piping Design & Layout Development, Piping & Instrumentation Diagrams (P&IDs), Stress Analysis, Piping Inspection & Fabrication, Piping Maintenance & Estimation, Piping Installation & Maintenance, Pipe & Fitting Techniques, Piping System & Process Equipment, Piping System Stress Analysis, Process Piping Design, Pipeline Repair, Hot-Tapping, In-line Inspection Technologies, Pipeline Pigging, Pipeline Design & Integrity Engineering, Pipeline Hydraulic Engineering, Pipeline Operation & Maintenance, Pipeline Design & Construction, Pipeline System Design, Onshore Pipeline Repair Methods & Equipment, Pipelines Defect Identification & Corrosion Risk Assessment, Basic Pipeline Engineering, Pipeline Inspection & Integrity Assessment, Risk Based Inspection & Integrity Management, Pressure & Leak Testing, Pipeline Integrity Management System (PIMS), Facility & Pipeline Integrity Assessment, Risk-Based-Inspection (RBI), Fitness-for-Service (FFS) & Repair Practices of Pipelines, Vessels & Tanks, Pigging Technology, Pigging Procedures, Subsea Umbilicals, Welding Technology, NDT Inspection, Upstream & Downstream Oil & Gas Industries, Evaluation & Repair of Process Plant Equipment, Onshore & Offshore Pipeline Systems and Pipeline & Piping Codes** including ISO 13628-5, DNV Series (OS-F101, OS-F201, RP-F109), ASME B series (B31.3, B31.4 & B31.8, B31.G, B31.8S), BS 8010 Part 3 and Pressure Vessel Codes (PD 5500, ASME VIII Div. 1 & Div. 2).

Mr. Copilet has worked with major international clients in UK, Europe, Middle East, North Africa and Asia with major international clients including **ADMA-OPCO, Aker Kvaerner, AMEC, Bechtel, BP, British Gas, China Petroleum, Chevron, EnQuest, ExxonMobil, ENPPI, Fluor Daniel, FMC, Foster Wheeler, Framo, Kala, Marathon Oil, National Iranian Gas, PD Oman, Petrojet, Petronas, Qatar Petroleum, QGPC, RasGas, Saudi Aramco, Shell, Single Buoy Moorings, Saipem, Snamprogetti, Sonatrach, Statoil, Subsea 7, TAQA, Technip, Total, Woodside, etc.**

Mr. Copilet is currently the **Technical Solutions Manager** at the **Oceaneering International Services** in Rosyth. Prior to joining Oceaneering, Mr. Copilet worked as **Technical Account Manager** for **STATS**, a specialist engineering company based in Aberdeen, Scotland, which provides a full-service capability for repair and shutdown services, reducing system or plant downtime and extending the operational life for **onshore, topsides and subsea locations**, including **piping and pipeline isolation and hot tap intervention**. Before joining STATS, Mr. Copilet was one of the **Directors** of **Durham Pipeline Technology (DPT)**, a British company developing innovative technical solutions for pipeline access, inspection and cleaning based on patented bristle tractor technology. He also worked in a variety of technical and managerial positions for **GD Engineering**, the **world leader in the supply of pipeline pigging equipment and technology**, including **Bandlock 2**, the world's safest quick opening closures, pig signallers, scraper launchers and receivers, automated pig and sphere launching and receiving systems. In addition, he also worked as a **University Lecturer, Proposals Engineer, Piping & Pipeline Engineer, Piping Designer, Mechanical Engineer, Pipeline Inspector, Piping Fabricator, Technical Solution Manager, QA/QC Engineer, Welding Engineer and Piping Maintenance Supervisor**.

Mr. Copilet has a **Bachelor's degree in Mechanical Engineer**. Further, he is a **Certified Instructor/Trainer**, a **Certified Internal Verifier/Assessor/Trainer** by the **Institute of Leadership & Management (ILM)** and has further delivered numerous trainings, courses, seminars, conferences and workshops globally.

Training Methodology

Our courses employ an interactive, learner-centred methodology that integrates theoretical knowledge with practical application. The training is delivered through a suitable combination of some or all of the following methods, selected according to the course content and learning objectives:

- Instructor-led presentations and facilitated discussions
- Practical workshops and participant presentations
- Hands-on exercises and real-world case studies
- Equipment demonstrations and technical drawings
- Hardware- and software-based simulations
- Gamification & Role Play in soft-skills courses only
- Virtual Reality (VR) and Augmented Reality (AR)
- Instructional videos and other relevant training resources

This blended approach encourages active participation, strengthens practical skills and supports the effective application of acquired knowledge in the workplace.

Learning Design & Customization

This course can be customized to the exact requirements of clients. Haward Technology is so proud of our huge capabilities in tailoring our courses to the training needs of our valued clients.

Accommodation

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

Course Program

The following program is planned for this course. However, the course instructor(s) may modify this program before or during the workshop 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	<i>PRE-TEST</i>
0830 – 0930	<i>Introduction to Pipeline Facilities</i> <i>Overview of Pipeline Transportation Systems • Types of Pipelines (Oil, Gas, Water, Multiphase, Slurry) • Components of Pipeline Facilities • Pipeline Lifecycle from Design to Decommissioning</i>
0930 – 0945	<i>Break</i>
0945 – 1030	<i>Pipeline Design Principles</i> <i>Design Basis and Engineering Philosophy • Hydraulic and Mechanical Design Considerations • Pressure, Temperature, and Flow Requirements • Design Codes and International Standards (ASME B31.4, B31.8, ISO, API)</i>
1030 – 1130	<i>Pipeline Route Selection & Survey</i> <i>Route Planning Methodologies • Topographical and Geotechnical Investigations • Environmental and Social Impact Assessments • Right-of-Way (ROW) Acquisition and Permitting</i>
1130 – 1215	<i>Pipeline Materials & Selection</i> <i>Carbon Steel and Alloy Steel Pipelines • Pipe Manufacturing Methods (Seamless and Welded) • Material Specifications and Grades • Material Selection for Corrosive and High-Pressure Service</i>

1215 – 1230	<i>Break</i>
1230 – 1330	Pipeline Components & Facilities <i>Valves and Valve Stations • Pig Launcher and Receiver Stations • Pump and Compressor Stations • Metering and Pressure Regulating Stations</i>
1330 – 1420	Hydraulic Design & Flow Analysis <i>Fluid Properties and Flow Regimes • Pressure Loss Calculations • Pipeline Sizing and Capacity Determination • Surge and Transient Flow Analysis</i>
1420 – 1430	Recap <i>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</i>
1430	<i>Lunch & End of Day One</i>

Day 2

0730 – 0830	Pipeline Engineering Design <i>Pipeline Alignment Sheets and Drawings • Stress Analysis and Flexibility Design • Wall Thickness Calculations • Expansion and Thermal Stress Considerations</i>
0830 – 0930	Pipeline Construction Planning <i>Construction Sequencing and Scheduling • Site Preparation and Logistics • Resource Planning and Equipment Selection • Construction Quality Planning</i>
0930 – 0945	<i>Break</i>
0945 – 1100	Welding & Fabrication <i>Welding Processes (SMAW, GTAW, GMAW, FCAW) • Welding Procedure Specifications (WPS) • Welder Qualification Requirements • Heat Treatment and Weld Quality Assurance</i>
1100 – 1215	Trenching & Pipeline Installation <i>Excavation Methods • Bedding and Backfilling Requirements • Pipeline Lowering Techniques • River, Road, and Railway Crossings</i>
1215 – 1230	<i>Break</i>
1230 – 1330	Coating & Corrosion Protection <i>External Coating Systems • Internal Lining Technologies • Cathodic Protection Systems • Coating Inspection and Testing</i>
1330 – 1420	Inspection & Quality Control During Construction <i>Non-Destructive Testing (NDT) Methods • Dimensional Inspection • Hydrostatic Testing Preparation • Construction Documentation and Quality Records</i>
1420 – 1430	Recap <i>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</i>
1430	<i>Lunch & End of Day Two</i>

Day 3

0730 – 0830	Pipeline Commissioning & Start-Up <i>Cleaning and Pigging Operations • Hydrostatic Pressure Testing • Drying and Dewatering • Commissioning Procedures and Acceptance</i>
0830 – 0930	Pipeline Operations <i>Normal Operating Procedures • Pressure and Flow Management • Control Room Operations • Operational Performance Monitoring</i>

0930 – 0945	Break
0945 – 1100	Pipeline Monitoring Systems SCADA System Architecture • Remote Terminal Units (RTUs) • Instrumentation and Field Devices • Data Acquisition and Real-Time Monitoring
1100 – 1215	Pumping & Compression Facilities Pump Station Operations • Compressor Station Fundamentals • Equipment Performance Optimization • Energy Efficiency Improvement
1215 – 1230	Break
1230 – 1330	Pipeline Maintenance Practices Preventive Maintenance Strategies • Predictive and Condition-Based Maintenance • Corrective Maintenance Planning • Spare Parts and Asset Management
1330 – 1420	Pigging Operations Types of Pipeline Pigs • Cleaning and Batching Operations • Intelligent Pigging (ILI) • Pig Tracking and Operational Safety
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

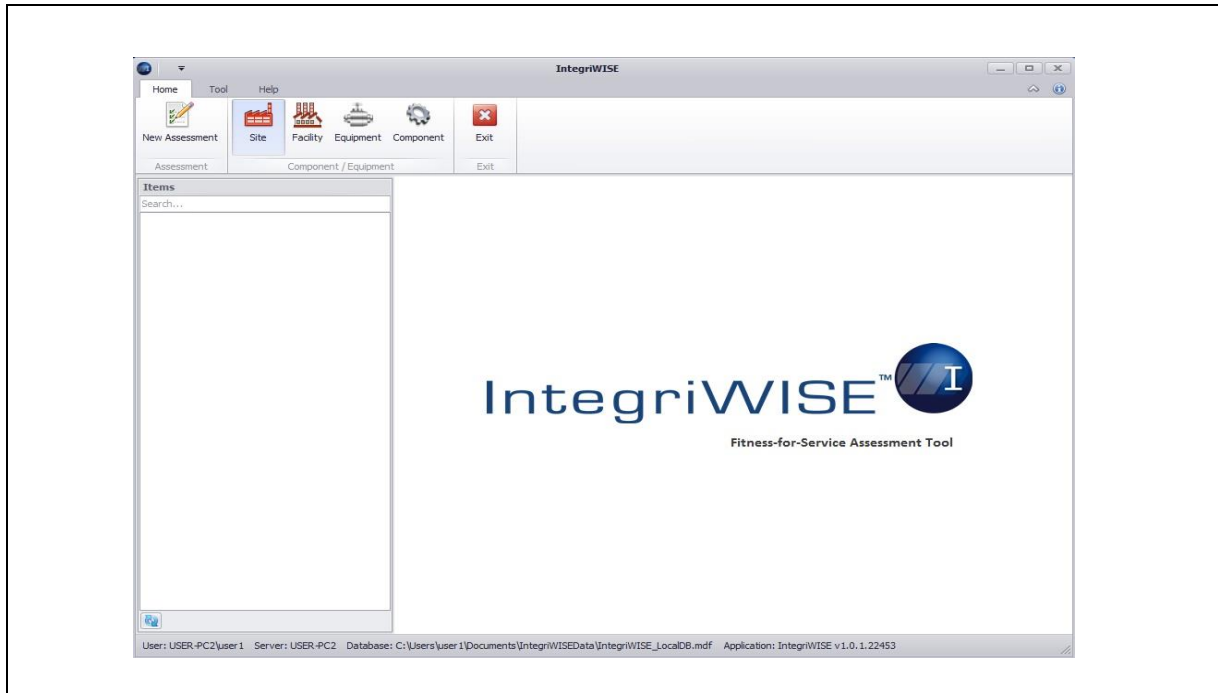
0730 – 0830	Pipeline Integrity Management Integrity Management Systems (IMS) • Threat Identification and Risk Assessment • Fitness-for-Service Evaluations • Integrity Performance Indicators
0830 – 0930	Corrosion Management Internal Corrosion Mechanisms • External Corrosion Control • Corrosion Monitoring Techniques • Corrosion Inhibitor Programs
0930 – 0945	Break
0945 – 1100	Pipeline Defects & Failure Mechanisms Corrosion Defects • Cracks and Fracture Mechanisms • Mechanical Damage • Manufacturing and Construction Defects
1100 – 1215	Leak Detection Systems Computational Pipeline Monitoring (CPM) • Mass Balance Techniques • Pressure Wave Analysis • Fiber Optic and Acoustic Monitoring Technologies
1215 – 1230	Break
1230 – 1330	Safety & Emergency Response Pipeline Hazard Identification • Emergency Shutdown Systems • Spill Response Planning • Incident Investigation and Reporting
1330 – 1420	Risk Assessment & Regulatory Compliance Quantitative Risk Assessment (QRA) • Hazard and Operability Studies (HAZOP) • Environmental Regulations • Compliance with API, ASME, and ISO Standards
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 Four

Day 5

0730 – 0830	Pipeline Asset Management <i>Asset Lifecycle Management • Reliability and Availability Analysis • Maintenance Optimization • Capital and Operational Expenditure Planning</i>
0830 – 0930	Digital Technologies in Pipeline Operations <i>Digital Twins for Pipeline Systems • Artificial Intelligence and Machine Learning Applications • Internet of Things (IoT) Sensors • Predictive Analytics and Decision Support Systems</i>
0930 – 0945	Break
0945 – 1100	Advanced Inspection Technologies <i>In-Line Inspection (ILI) Tools • Unmanned Aerial Vehicles (UAVs) for Inspection • Remote Sensing Technologies • Robotics for Internal and External Inspections</i>
1100 – 1215	Pipeline Repair & Rehabilitation <i>Composite Repair Systems • Sleeve and Clamp Repair Methods • Hot Tapping and Line Stopping • Pipeline Replacement and Rerouting</i>
1215 – 1230	Break
1230 – 1315	Case Studies & Operational Excellence <i>Analysis of Major Pipeline Failures • Lessons Learned from Construction Projects • Best Practices in Pipeline Operations • Continuous Improvement and Performance Benchmarking</i>
1315 – 1345	Future Trends & Sustainability in Pipeline Facilities <i>Hydrogen and Carbon Dioxide (CO₂) Pipeline Transportation • Carbon Capture, Utilization and Storage (CCUS) Infrastructure • Environmental Sustainability and ESG Considerations • Future Developments in Pipeline Design, Construction, and Operations</i>
1345 – 1400	Course Conclusion <i>Using this Course Overview, the Instructor(s) will Brief Participants about the Course Topics that were Covered During the Course</i>
1400 – 1415	POST-TEST
1415 – 1430	Presentation of Course Certificates
1430	Lunch & End of Course

Practical session will be organized during the course for delegates to practice the theory learnt. Delegates will be provided with an opportunity to carryout various exercises using the state-of-the-art simulators. “RiskWISE”, “PV-Elite” and “IntegriWISE™”.





Course Coordinator

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