



COURSE OVERVIEW IE0171 **REX Tank Gauging Technical Product**

Course Title

REX Tank Gauging Technical Product

Course Date/Venue

October 05-09, 2026/Delma Meeting Room,
Royal Rose Hotel Abu Dhabi, a Curio Collection
by Hilton Affiliated Hotel, Abu Dhabi, UAE

Course Reference

IE0171

Course Duration/Credits

Five days/2.75 CEUs/27.5 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 REX Tank Gauging Technical Product. It covers the tank gauging systems, principles of radar level measurement and Rosemount tank gauging product family; the system architecture, data flow, standards, compliance and safety and system familiarization; the site preparation, installation guidelines and electrical and communication connections; and the device configuration and parameterization, commissioning procedure and system components review.



During this interactive course, participants will learn the signal processing and echo interpretation, diagnostics and troubleshooting techniques and maintenance and calibration; the integration with ancillary devices, fault simulation and maintenance practice and advanced configuration features; the advanced configuration, data handling and optimization, system optimization techniques and data communication and networking; the custody transfer and inventory control, system redundancy and reliability and optimization and communication setup; and the REX tank gauging engineering, system integration and upgradation, end-to-end system testing including documentation, reports and compliance.





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 REX tank gauging technical product
- Discuss the tank gauging systems, principles of radar level measurement and Rosemount tank gauging product family
- Recognize system architecture, data flow, standards, compliance and safety and system familiarization
- Carryout site preparation and installation guidelines and describe electrical and communication connections
- Apply device configuration and parameterization, commissioning procedure and system components review
- Illustrate signal processing and echo interpretation, diagnostics and troubleshooting techniques and maintenance and calibration
- Carryout integration with ancillary devices, fault simulation and maintenance practice and advanced configuration features
- Employ advanced configuration, data handling and optimization, system optimization techniques and data communication and networking
- Apply custody transfer and inventory control, system redundancy and reliability and optimization and communication setup
- Discuss REX tank gauging engineering and apply system integration and upgradation, end-to-end system testing including documentation, reports and compliance

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 REX tank gauging technical product for service and maintenance engineers, project / instrumentation engineers, sales / application engineers, operators and other technical staff.

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.

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**.

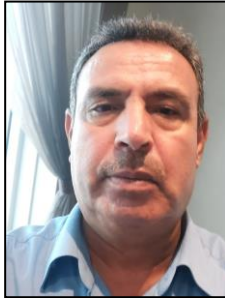
Haward Technology's courses meet the professional certification and continuing education requirements for participants seeking **Continuing Education Units** (CEUs) in accordance with the rules & regulations of the International Accreditors for Continuing Education & Training (IACET). IACET is an international 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 **2.75 CEUs** (Continuing Education Units) or **27.5 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. Aboud Obaida is a **Senior Electrical & Instrumentation Engineer** with over **30 years** of extensive experience within the **Power & Oil & Gas** industries. His expertise widely covers in the areas of **Megger Testing, Resistance Testing Application, AC & DC Testing, Electrostatic Discharges (ESD) Safeguarding System, Advanced Maintenance, Material & Management System (CMMS-MAXIMO), REX Tank Gauging Systems & Applications, Tank Gauging Systems, REX Tank Level Measurement & Control Systems, Electrical & Instrument Interface System, Electrical Safety Rules, Power Flow Utilization, Electrical Isolation & De-Isolation, Air Compressors, Circuit Breaker, HV Switchgear Maintenance, Motor Controllers, Electrical Switching Practices, HV Terminations, Cable Splicing, Electrical & Instrumentation Construction Installation, Transformer Substation, Diesel Generators, Distribution Control System (DCS), Process Instrumentation & Control, Control Loop & Valve Tuning, Controller Maintenance Procedures, High Integrity Protection Systems (HIPS), Instrument Calibration & Maintenance, Instrumented Safety Systems, Compressor Control & Protection, Control Systems, Programmable Logic Controllers (PLC), Safety Instrumented Systems (SIS), Safety Integrity Level (SIL) and SCADA System**. Further, he is also well-versed in **Gas Turbines, Centrifugal Compressor Operation & Maintenance, Heat Recovery Steam Generator (HRSG) & Steam Turbines, Heaters, Boilers Control System Operations & Maintenance, Emergency Response Plan, Incident Command & Control, Risk Management & Assessment, HAZOP, HAZID, Bow Tie, SIMOPS, HSEMS & MOC, Firefighting and Permit-to-Work**.

During Mr. Aboud career life, he has gained his practical experience through several significant positions and dedication as the **Electrical Engineer, Instrument & Control Engineer, Instrument & Electrical Project Maintenance Department Head, Instrument & Electrical Supervisor, Project Coordinator, Trainee Engineer and Technical Instructor** for Weatherford/Kintec Global, Abu Dhabi National Oil Company (ADNOC Onshore), Al Furat Petroleum Company-Syria (Joint Venture with Shell) and Syrian Petroleum Company (SPC).

Mr. Aboud has a **Bachelor's degree in Electrical & Electronics Engineering**. Further, he is a **Certified Instructor/Trainer** and delivered numerous trainings, courses, workshops, seminars and conferences internationally.

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.

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: Monday, 05th of October 2026

0800 – 0830	Registration & Coffee
0830 – 0845	Welcome & Introduction
0845 – 0900	PRE-TEST
0900 – 0930	Introduction to Tank Gauging Systems Overview of Tank Gauging in the Oil, Gas, and Petrochemical Industries • Comparison of Level Measurement Methods (Float, Servo, Radar, Hydrostatic) • Custody Transfer Principles and Standards (API, OIML, ISO) • Importance of Radar Technology in Tank Inventory Accuracy
0930 – 0945	Break
0945 – 1030	Principles of Radar Level Measurement Fundamentals of Radar Signal Propagation and Reflection • Frequency Modulated Continuous Wave (FMCW) versus Pulsed Radar Principles • Time-of-Flight and Echo Signal Interpretation • Factors Affecting Radar Measurement Accuracy (Dielectric Constant, Turbulence, Vapor, etc.)
1030 – 1130	Overview of Rosemount Tank Gauging Product Family REX Tank Gauging System Architecture • Key Components: Radar Transmitters, Field Communication Units, and Control Terminals • Comparison Between Rosemount 5900S, 2410, and Legacy REX Systems • Supported Fieldbus Protocols (HART, FOUNDATION Fieldbus, Modbus, RS-485)
1130 – 1215	System Architecture & Data Flow System Topology: Single-Tank and Multi-Tank Configurations • Signal Routing and Communication Paths • Integration with DCS and Inventory Systems • Overview of TankMaster Software Interface
1215 – 1230	Break
1230 – 1300	Standards, Compliance & Safety API MPMS Chapter 3.1B and OIML R85 Compliance • Intrinsic Safety and Explosion Protection (ATEX, IECEx) • SIL (Safety Integrity Level) Considerations for Radar Gauges • Handling ESD, EMI, and Grounding Requirements
1300 – 1350	System Familiarization Identification of Components on REX Setup • Hands-On Demonstration of Transmitter Connections • TankMaster System Overview and Navigation • Q&A Session and Review of Fundamentals
1350 – 1400	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
1400	Lunch & End of Day One

Day 2: Tuesday, 06th of October 2026

0800 – 0830	Site Preparation & Installation Guidelines Mounting Requirements for Radar Level Transmitters • Antenna Types (Parabolic, Horn, Still-Pipe) and Installation Angles • Cable Routing, Grounding, and Lightning Protection • Typical Installation Errors and Their Prevention
0830 - 0930	Electrical & Communication Connections Power Supply Requirements and Redundancy Options • Communication Wiring and Shielding Practices • Fieldbus Addressing and Node Assignment • Connection of 2410 Tank Hub and 5900S Gauge to Host System
0930 – 0945	Break
0945 – 1100	TankMaster Software Installation & Setup Overview of TankMaster Components and Licensing • System Tree Creation and Tag Configuration • Communication Setup via HART/Modbus • Establishing Online Connection and Data Verification
1100 – 1215	Device Configuration & Parameterization Radar Configuration Parameters (Distance, Reference Height, Dielectric) • Product and Reference Calibration Setup • Setting Alarms, Limits, and Diagnostics • Saving and Restoring Device Configurations
1215 – 1230	Break
1230 – 1300	Commissioning Procedure Step-by-Step Commissioning Checklist • Initial Verification and Calibration of REX Radar • Signal Optimization Using Echo Curve Analysis • Validation Against Reference Measurements
1300 – 1350	Commissioning Simulation Configuring a Live System Using Demo Units • Calibrating Level Readings and Verifying Accuracy • Troubleshooting Communication and Calibration Issues • Instructor Feedback and Documentation Review
1350 – 1400	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
1400	Lunch & End of Day Two

Day 3: Wednesday, 07th of October 2026

0800 – 0830	Detailed Review of System Components Radar Transmitters (5900S, REX, 5400, 5300) Overview • Field Communication Units (2410, 2230, 2240S, 566) Functions • Fieldbus Barriers and Junction Boxes • Redundant Communication Architecture
0830 - 0930	Signal Processing & Echo Interpretation Echo Curve Fundamentals and Multiple Reflection Analysis • Distinguishing Between Valid and False Echoes • Adaptive Signal Filtering Techniques • TankMaster Echo Curve Viewer Practical Use
0930 – 0945	Break
0945 – 1100	Diagnostics & Troubleshooting Techniques Common Installation and Configuration Faults • Diagnostic Parameters (Signal Quality, SNR, Deviation Trend) • Built-In Self-Test Features and Alarm Logs • Using TankMaster Diagnostic Viewer

1100 – 1215	Maintenance & Calibration <i>Routine Preventive Maintenance Activities • Calibration Verification Without Tank Entry • Firmware Update and Device Replacement Procedures • Maintenance Record Documentation</i>
1215 – 1230	Break
1230 – 1300	Integration with Ancillary Devices <i>Integration With Temperature Elements (2240S Multi-Spot) • Pressure Transmitters and Volume Correction • Water Interface and Density Measurement Configuration • Connection with Overfill Prevention Systems (API 2350)</i>
1300 – 1350	Fault Simulation & Maintenance Practice <i>Simulating Sensor Faults and Communication Errors • Performing Field Diagnostics via TankMaster • Executing Calibration Checks and Restoring Configuration • Reviewing Maintenance and Calibration Reports</i>
1350 – 1400	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>
1400	Lunch & End of Day Three

Day 4: Thursday, 08th of October 2026

0800 – 0830	Advanced Configuration Features <i>Tank Strapping Table Setup and Volume Calculation • Configuration of Inventory Parameters (Temperature, Density Correction) • Alarm and Event Handling Logic • Advanced User Management and Security Control</i>
0830 - 0930	System Optimization Techniques <i>Improving Signal Stability Under Process Variations • Correcting Measurement Drift and Offset Errors • Reducing Maintenance Through Predictive Diagnostics • Optimizing Measurement for LNG, Crude and Refined Products</i>
0930 – 0945	Break
0945 – 1100	Data Communication & Networking <i>Modbus and OPC Communication with Control Systems • Ethernet and Serial Network Topologies • Integration With DCS, SCADA, and PLCs • Data Logging and Trending Options</i>
1100 – 1215	Custody Transfer & Inventory Control <i>Mass and Volume Computation Algorithms • Tank Volume Correction for Temperature and Density • Tank Strapping Validation and Calibration • Audit and Reporting Requirements for Custody Transfer</i>
1215 – 1230	Break
1230 – 1300	System Redundancy & Reliability <i>Dual Radar and Hub Redundancy • Power Supply Backup and Failover Handling • Diagnostic Redundancy and Alarm Response • Reliability Metrics and SIL Considerations</i>

1300 – 1350	Optimization & Communication Setup Creating and Linking Strapping Tables • Configuring Modbus Mapping and OPC Output • Performing a Communication Test Between Radar and Control System • Analyzing Data Performance and Trend Curves
1350 – 1400	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
1400	Lunch & End of Day Four

Day 5: Friday, 09th of October 2026

0800 – 0830	Application Engineering for REX Tank Gauging Use in Storage Terminals, Refineries and Petrochemical Plants • Cryogenic, LNG, and Pressurized Tank Applications • Floating Roof and Fixed Roof Tank Considerations • Integration with Legacy Rosemount and Third-Party Systems
0830 - 0930	System Integration & Upgradation Replacing Older Servo or Float Systems with REX Radar • Hybrid System Integration Strategy • Data Conversion, Wiring Reuse and Interface Mapping • Software and Firmware Compatibility Checks
0930 – 0945	Break
0945 – 1100	Case Studies & Best Practices Troubleshooting Common Field Issues • Tank Measurement Accuracy Improvement • Data Validation and Reporting • Lessons Learned from Global Installations
1100 – 1215	End-to-End System Testing Connecting Complete REX Tank Gauging Setup • Performing Complete Calibration and Verification • Data Transmission Verification to Control Room • Validation of Measurement Accuracy and Stability
1215 – 1230	Break
1230 – 1315	Documentation, Reports & Compliance Installation and Commissioning Documentation • Calibration and Test Certificates • Maintenance and Service Report Generation • Compliance With API, OIML, ISO and IEC Standards
1315 – 1330	Course Conclusion Using this Course Overview, the Instructor(s) will Brief Participants about the Course Topics that were Covered During the Course
1330 – 1345	POST-TEST
1345 – 1400	Presentation of Course Certificates
1400	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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