

COURSE OVERVIEW IE0047

REX Tank Gauging Technical Product Training

Course Title

REX Tank Gauging Technical Product Training

Course Date/Venue

Session 1: February 16-20, 2025/Boardroom 1,
Elite Byblos Hotel Al Barsha, Sheikh
Zayed Road, Dubai, UAE

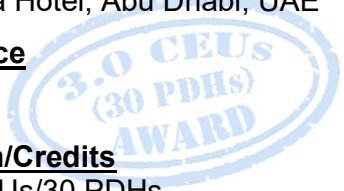
Session 2: August 18-22, 2025/Fujairah
Meeting Room, Grand Millennium Al
Wahda Hotel, Abu Dhabi, UAE

Course Reference

IE0047

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.



Storage tanks store a diverse variety of liquids used in the hydrocarbon processing industry at oil/gas fields, refineries, petrochemical plants, marine terminals, bulk storage, oil depots and marketing terminals. They are also part of the support facilities in other industries, such as fuel storage tanks at power plants. These tanks have gained importance and visibility in recent years due to failures that have resulted in hydrocarbon spills and environmental impact. Following these incidents, there has been a marked increase in governmental regulation and industry attention to tanks.



Tank gauging is essential for the assessment of tank contents, tank inventory control and tank farm management. Modern tank gauges help in accurate level gauging for refineries, tank terminals and petrochemical industries. They are suitable for custody transfer as well as inventory control and are usually designed to be used in SIL-3 loops to prevent spillage.

This course is designed to provide an up-to-date overview of the tank gauging methods and procedures. It covers the level measurement, tank gauging and the various types of gauging; the innage gauging, outage gauging and free water gauging; the temperature measurement in land tanks; the manual sampling of the land tanks; the buoyancy tape systems including the hydrostatic pressure and ultrasonic measurement; the vibration switches, radar measurement and high precision tank radar REX; the antenna design important for reliability as well as the radar tank gauging for LNG carriers; and the marine radar technology developed for oil tankers.

By the end of the course, participants will be able to measure gauging accuracy and apply outage and innage gauging procedure; identify gross observed volume (GOV), gross standard volume (GSV) and net standard volume (NSV); use portable tank gauges; and recognize gauging tanks with floating roofs; and analyze the effect of random errors in land tank measurement as well as the safety and hazards.

Course Objectives

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

- Apply systematic techniques on tank gauging
- Discuss level measurement, tank gauging and the various types of gauging
- Recognize innage gauging, outage gauging and free water gauging
- Carryout temperature measurement in land tanks and manual sampling of the land tanks
- Explain the buoyancy tape systems including the hydrostatic pressure and ultrasonic measurement
- Determine vibration switches, radar measurement and high precision tank radar REX
- Identify the antenna design important for reliability as well as the radar tank gauging for LNG carriers
- Recognize the marine radar technology developed for oil tankers
- Measure gauging accuracy and apply outage and innage gauging procedure
- Determine gross observed volume (GOV), gross standard volume (GSV) and net standard volume (NSV)
- Use portable tank gauges and identify Gauging tanks with floating roofs
- Analyze the effect of random errors in land tank measurement as well as the safety and hazards

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 the major aspects of tank gauging for engineers and other technical staff who are in charge of custody measurement and loss control for petroleum products in oil/gas fields, gas plants, export facilities, refineries, marine terminals or bulk storage plants. Engineers, shift supervisors and other technical staff involved in meter proving and calibration will benefit from this course.

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. Barry Pretorius is a **Senior Instrumentation Engineer** with almost **45** years of extensive experience within the **Oil, Gas, Petrochemical, Refinery & Power** industries. His expertise widely covers in the areas of **Cyber Security** Practitioner, **Cyber Security** of Industrial Control System, **IT Cyber Security** Best Practices, **Cybersecurity** Fundamentals, **Ethical Hacking & Penetration Testing**, **Cybersecurity** Risk Management, **Cybersecurity** Threat Intelligence, **OT Whitelisting** for Better Industrial Control System Defense, **NESA** Standard and Compliance Workshop, **OT, Cyber Attacks** Awareness - Malware/Ransom Ware / Virus /Trojan/ Phishing, **Information Security Manager**, **Security System** Installation and Maintenance, Security of Distributed Control System (**DCS**), Process Control, Instrumentation, Safeguarding & Security, Programmable Logic Controller (**PLC**), **Siemens PLC** Simatic S7-400/S7-300/S7-200, **PLC & SCADA** for Automation & Process Control, **Artificial Intelligence**, **Allen Bradley PLC** Programing and Hardware Trouble Shooting, Schneider **SCADA System**, **Wonder Ware**, **Emerson**, **Honeywell**, **Honeywell** Safety Manager PLC, **Yokogawa**, Advanced **DCS Yokogawa**, **Endress & Hauser**, Field Commissioning and Start up Testing Pre Operations, System Factory Acceptance Test (**FAT**), System Site Acceptance Test (**SAT**), **SCADA HMI & PLC** Control Logic, Implementation, Systems Testing, Commissioning and Startup, **Foxboro DCS & Triconics**, **SIS** Systems, **Drives**, Motion Control, **Hydraulics**, **Pneumatics** and **Control Systems** Engineering, **Electrical & Automation Control Systems**, **HV/MV Switchgear**, **LV & MV** Switchgears & Circuit Breakers, **High Voltage Electrical Safety**, **LV & HV Electrical System**, **HV Equipment** Inspection & Maintenance, **LV Distribution Switchgear & Equipment**, **Electrical Safety**, **Electrical** Maintenance, **Transformers**, **Medium & High Voltage Equipment**, **Circuit Breakers**, **Cable & Overhead Line** Troubleshooting & Maintenance, **Electrical Drawing & Schematics**, **Voltage Distribution**, **Power Distribution**, **Filters**, **Automation System**, **Electrical Variable Speed Drives**, **Power Systems**, **Power Generation**, **Diesel Generators**, **Power Stations**, Uninterruptible Power Systems (**UPS**), **Battery Chargers**, **AC & DC Transmission**, **CCTV** Installation, **Data & Fire Alarm** System, **Evacuation** Systems and **Electrical Motors & Variable Speed Drives**, & Control of Electrical and Electronic devices.

During Mr. Pretorius's career life, he has gained his practical experience through several significant positions and dedication as the **Senior Technical Analyst**, **Team Leader**, **Pre-operations Startup Engineer**, **Automation System's Software Manager**, **Automation System's Senior Project Engineer**, **PLC Specialist**, **Site Manager**, **Senior Project & Commissioning Engineer**, **Technical Director**, **Project Engineer**, **Radio Technician**, **A T E Technician** and **Senior Instructor/Trainer** from various companies like the ADNOC Sour Gas, Ras Al Khair Aluminum Smelter, Johnson Matthey Pty. Ltd, Craigcor Engineering, Unitronics South Africa Pty (Ltd), Bridgestone/Firestone South Africa Pty (Ltd) and South African Defense Force.

Mr. Pretorius's has a Higher Diploma in **Electrical Engineering Heavy Current**. Further, he is a **Certified Instructor/Trainer** and delivered numerous trainings, courses, workshops, 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.

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® (Howard 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	<i>Registration & Coffee</i>
0800 – 0815	<i>Welcome & Introduction</i>
0815 – 0830	PRE-TEST
0830 – 0930	<i>Introduction to Level Measurement & Tank Gauging</i>
0930 – 0945	<i>Break</i>
0945 – 1100	<i>Types of Gauging</i>
1100 – 1230	<i>Innage Gauging</i>
1230 – 1245	<i>Break</i>
1245 – 1345	<i>Outage Gauging</i>
1345 – 1420	<i>Free Water Gauging</i>
1420 – 1430	Recap
1430	<i>Lunch & End of Day One</i>

Day 2

0730 – 0830	<i>Temperature Measurement in Land Tanks</i>
0830 – 0930	<i>Manual Sampling of Land Tanks</i>
0930 – 0945	<i>Break</i>
0945 – 1230	<i>Buoyancy Tape Systems</i>
1230 – 1245	<i>Break</i>
1245 – 1345	<i>Ultrasonic Measurement</i>
1345 – 1420	<i>Vibration Switches</i>
1420 – 1430	Recap
1430	<i>Lunch & End of Day Two</i>

Day 3

0730 – 0830	Radar Measurement
0830 – 0930	High Precision Tank Radar REX
0930 – 0945	<i>Break</i>
0945 – 1230	Antenna Design Important for Reliability
1230 – 1245	<i>Break</i>
1245 – 1345	Radar Tank Gauging for LNG Carriers
1345 – 1420	Marine Radar Technology Developed for Oil Tankers
1420 – 1430	Recap
1430	<i>Lunch & End of Day Three</i>

Day 4

0730 – 0830	Gauging Accuracy
0830 – 0930	Outage Gauging Procedure
0930 – 0945	<i>Break</i>
0945 – 1230	Inmage Gauging Procedure
1230 – 1245	<i>Break</i>
1245 – 1345	Determine Gross Observed Volume (GOV)
1345 – 1420	Determine Gross Standard Volume (GSV) and Net Standard Volume (NSV)
1420 – 1430	Recap
1430	<i>Lunch & End of Day Four</i>

Day 5

0730 – 0830	Portable Tank Gauges
0830 – 0930	Gauging Tanks with Floating Roofs
0930 – 0945	<i>Break</i>
0945 – 1230	The Effect of Random Errors in Land Tank Measurement
1230 – 1245	<i>Break</i>
1245 – 1345	Safety & Hazards
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	<i>Presentation of Course Certificates</i>
1430	<i>Lunch & End of Course</i>

Practical Sessions

This practical and highly-interactive course includes real-life case studies and exercises:-



Course Coordinator

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