COURSE OVERVIEW IE0315
Maintain QMI (Analysers and Sample Systems)

Course Title
Maintain QMI (Analysers and Sample Systems)

Course Date/Venue
Session 1: October 07-11, 2024/Midtown Board Room, Hampton Inn Houston Downtown by Hilton, London, United Kingdom
Session 2: December 22-26, 2024/Club B Meeting Room, Ramada Plaza by Wyndham Istanbul City Center, Istanbul, Turkey

Course Reference
IE0315

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 fundamental overview of Maintain QMI (Analysers & Sample Systems). It covers the QMI analysers and sample systems including the basics of quality measurement instruments (QMI) in the context of process systems; the different types of analysers and their roles in maintaining process quality; the purpose and function of analysers in process systems using process and instrumentation diagrams (P&IDs) and how these instruments integrate into the larger process system; the components of analyser sample systems and their functions and importance in the overall system;

Further, the course will also discuss the procedure on how to obtain, interpret and use relevant drawings and specification data for testing and diagnosing faults in QMI equipment and sample systems; and the safety protocols and isolation techniques focusing on how to safely isolate and depressurize analysers in preparation for maintenance activities.

During this interactive course, participants will learn the routine maintenance procedures covering standard maintenance protocols for QMI analysers and sample systems including scheduled checks and cleaning processes; the advanced troubleshooting techniques and methods for identifying and rectifying common issues in analyser systems; the calibration and validation analysers; the techniques and best practices for calibrating analysers to ensure accuracy and reliability; the performance testing and analysis and how to conduct performance tests on QMI equipment; and interpreting results to assess system health and efficiency.

Course Objectives

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

- Apply and gain a fundamental knowledge on maintenance of QMI (Analysers & Sample Systems)
- Explain the purpose of analysers in the process system using P&IDs
- Explain the functions of the individual components of analyser sample systems
- Obtain, interpret and use relevant drawings and specifications data for testing and fault diagnosis of QMI (Analyser Equipment and Sample Systems) to be tested or maintained
- Perform isolation and depressurization of analysers in preparation for maintenance activities
- Discuss QMI analysers and sample systems covering the basics of quality measurement instruments (QMI) in the context of process systems as well as identify different types of analysers and their roles in maintaining process quality
- Determine the purpose and function of analysers in process systems using process and instrumentation diagrams (P&IDs) and explain how these instruments integrate into the larger process system
- Identify the components of analyser sample systems and explain their functions and importance in the overall system
- Obtain, interpret and use relevant drawings and specification data for testing and diagnosing faults in QMI equipment and sample systems
- Carryout safety protocols and isolation techniques focusing on how to safely isolate and depressurize analysers in preparation for maintenance activities
- Implement routine maintenance procedures covering standard maintenance protocols for QMI analysers and sample systems including scheduled checks and cleaning processes
- Apply advanced troubleshooting techniques and methods for identifying and rectifying common issues in analyser systems
- Calibrate and validate analysers as well as carryout techniques and best practices for calibrating analysers to ensure accuracy and reliability
- Carryout performance testing and analysis and conduct performance tests on QMI equipment and interpret results to assess system health and efficiency

Who Should Attend

This course provides basic overview of maintenance of QMI (Analysers & Sample Systems) for all personnel who operate and maintain quality measurement instruments (QMI) as well as those who have use the results. This includes plant instrumentation engineers, maintenance engineers, lab managers, plant chemists, maintenance supervisors and technicians.

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: -

- 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.

- 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.

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. Ahmed El-Sayed, PhD, MSc, BSc, is a **Senior Electrical & Instrumentation Engineer** with over **35 years** of extensive experience in the **Oil**, **Gas**, **Power**, **Petroleum**, **Petrochemical** and **Utilities**. He specializes in **P&ID** Reading & Interpretation, **Engineering Drawings**, **Electrical Drawing & Schematics, Electrical Drawing & Wiring,** Developing & Revising **Engineering Drawing**, **Piping & Instrument Drawing** Reading, **Electrical & Instrument Drawings**, **Relay** Design & Maintenance, **Relay** Programming, **Relay** Construction & Functions, **Protective Relaying**, **Relay** Coordination, **Siemens Protection Relays**, **Power System Protection Relays & Hardware**, **Electrical Power System Protection Relays**, **Electrical Faults & Relay** Protection, **ABB Relay** REG 216, **Fault Calculation Relay**, Modern **Power System Protective Relaying**, **Power System Study on ETAP**, **ETAP-Power System Analysis**, **Flow Measurement** Foundation, **Hydrocarbon** Measurement & Sampling, **Gas Dosiers** Preparation, **Gas/Liquid Fuel** Measurement, **Instrumentation Measurement & Control System**, **Flow** Measurement, **Pressure** Measurement, **Level & Temperature** Measurement, **Measurement Devices & Control System**, **Instrumentation & Control** Systems, **Control System** Orientation, Uninterruptible Power Supply (**UPS**) **Battery Charger**, **Industrial UPS Systems Construction & Operation**, **Test Lead-Acid & Ni-cad Battery Systems**, **Hazards & Safe Work Practice**s, **Transformer** Operational Principles, Selection & Troubleshooting; **HV & LV Transformers**, **Control Valves & Actuators**, **Electrical Safety**, **Protection Relay Application**, **Power Systems Security**, Power **Electronics**, Electrical **Substations**, **UPS** & **Battery System**, **Earthing & Grounding**, Power **Generation**, **Protective Systems**, **Electrical Generators**, **Power** & **Distribution Transformers**, **Electrical Motors**, **Switchgears**, **Transformers**, **AC** & **DC Drives**, **Variable Speed Drives** & **Generators**, **Generator Protection**, **GE Gas Turbines**, PLC, SCADA, DCS, Process Control, Control Systems & Data Communications, Instrumentation, Automation, Valve Tuning, SIS, SIL, ESD, Alarm Management Systems, Engine Management System, Bearing & Rotating Machine, Fieldbus Systems and Fiber Optics Technology. He is currently the **Systems Control Manager** of **Siemens** where he is in-charge of Security & Control of Power **Transmission Distribution** & **High Voltage** Systems and he further takes part in the Load Records Evaluation & Transmission Services Pricing.

During his career life, Dr. Ahmed has been actively involved in different Power System Activities including Roles in Power System Planning, Analysis, Engineering, **HV Substation** Design, Electrical Service Pricing, Evaluations & Tariffs, Project Management, Teaching and Consulting. His vast industrial experience was honed greatly when he joined many International and National Companies such as **Siemens**, **Electricity Authority** and **ACETO** industries as the **Instrumentation & Electrical Service Project Manager**, **Instrumentation & Control Engineer**, **Energy Management Engineer**, **Department Head**, **Assistant Professor**, **Instrumentation & Control Instructor**, **Project Coordinator**, **Project Assistant and Managing Board Member** where he focused more on dealing with Technology Transfer, System Integration Process and Improving Localization. He was further greatly involved in manufacturing some of **Power System** and **Control & Instrumentation Components** such as Series of Digital Protection **Relays**, MV **VFD**, **PLC** and **SCADA** System with intelligent features.

Dr. Ahmed is well-versed in different electrical and instrumentation fields like **ETAP**, Load Management Concepts, **PLC** Programming, Installation, Operation and Troubleshooting, **AC Drives** Theory, Application and Troubleshooting, Industrial Power Systems Analysis, AC & DC **Motors**, Electric Motor **Protection**, **DCS SCADA**, **Control** and Maintenance Techniques, Industrial Intelligent Control System, **Power Quality** Standards, Power Generators and Voltage Regulators, Circuit Breaker and Switchgear Application and Testing Techniques, **Transformer** and **Switchgear** Application, Grounding for Industrial and Commercial Assets, Power Quality and **Harmonics**, **Protective Relays** (O/C Protection, Line Differential, Bus Bar Protection and **Breaker Failure Relay**) and Project Management Basics (PMB).

Dr. Ahmed has **PhD**, **Master** & **Bachelor** degrees in **Electrical Engineering** from the **University of Wisconsin Madison**, **USA** and **Ain Shams University**, respectively. Further, he is a **Certified Instructor/Trainer**, a **Certified Internal Verifier/ Assessor/Trainer** by the **Institute of Leadership and Management** (**ILM**), an active member of IEEE and ISA as well as numerous technical and scientific papers published internationally in the areas of Power Quality, Superconductive Magnetic Energy Storage, SMES role in Power Systems, Power System **Blackout** Analysis, and Intelligent Load Shedding Techniques for preventing Power System Blackouts, HV **Substation Automation** and Power System Stability. He has further delivered numerous trainings, seminars, courses, workshops 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 Fee

London	**US$ 8,800** per Delegate + **VAT**. This rate includes Participants Pack (Folder, Manual, Hand-outs, etc.), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.
Istanbul	**US$ 6,000** per Delegate + **VAT**. This rate includes Participants Pack (Folder, Manual, Hand-outs, etc.), 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 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	***Introduction to QMI Analysers & Sample Systems:*** *The Basics of Quality Measurement Instruments (QMI) in the Context of Process Systems. This will include an Overview of Different Types of Analysers and their Roles in Maintaining Process Quality*
0930 – 0945	*Break*
0945 – 1030	***Purpose & Function of Analysers in Process Systems****: The Purpose of Analysers using Process and Instrumentation Diagrams (P&IDs). This will help in Understanding How these Instruments Integrate into the Larger Process System*
1030 – 1230	***Purpose & Function of Analysers in Process Systems****: The Purpose of Analysers using Process and Instrumentation Diagrams (P&IDs). This will help in Understanding How these Instruments Integrate into the Larger Process System (cont'd)*
1230 – 1245	*Break*

1245 – 1420	***Purpose & Function of Analysers in Process Systems**: The Purpose of Analysers using Process and Instrumentation Diagrams (P&IDs). This will help in Understanding How these Instruments Integrate into the Larger Process System (cont'd)*
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 – 0930	***Components of Analyser Sample Systems:** The Individual Components of Analyser Sample Systems, Explaining their Functions and Importance in the Overall System*
0930 – 0945	*Break*
0945 – 1100	***Components of Analyser Sample Systems:** The Individual Components of Analyser Sample Systems, Explaining their Functions and Importance in the Overall System (cont'd)*
1100 – 1230	***Interpreting Drawings & Specifications:** Obtaining, Interpreting and Using Relevant Drawings and Specification Data. This is crucial for Testing and Diagnosing Faults in QMI Equipment and Sample Systems*
1230 – 1245	*Break*
1245 – 1420	***Interpreting Drawings & Specifications:** Obtaining, Interpreting and Using Relevant Drawings and Specification Data. This is crucial for Testing and Diagnosing Faults in QMI Equipment and Sample Systems (cont'd)*
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 – 0930	***Safety Protocols & Isolation Techniques:** Necessary Safety Protocols, Focusing on How to Safely Isolate and Depressurize Analysers in Preparation for Maintenance Activities*
0930 – 0945	*Break*
0945 – 1100	***Safety Protocols & Isolation Techniques:** Necessary Safety Protocols, Focusing on How to Safely Isolate and Depressurize Analysers in Preparation for Maintenance Activities (cont'd)*
1100 – 1230	***Routine Maintenance Procedures:** Standard Maintenance Protocols for QMI Analysers and Sample Systems including Scheduled Checks and Cleaning Processes*
1230 – 1245	*Break*
1245 – 1420	***Routine Maintenance Procedures:** Standard Maintenance Protocols for QMI Analysers and Sample Systems including Scheduled Checks and Cleaning Processes (cont'd)*
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

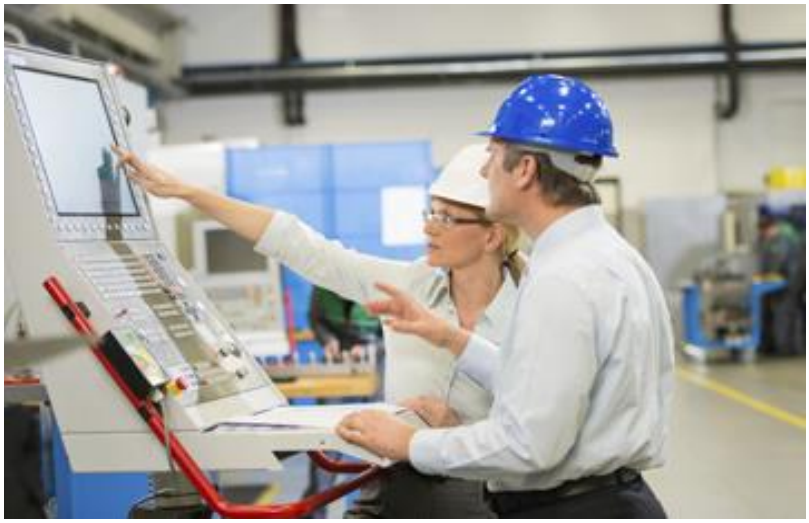
0730 – 0930	***Advanced Troubleshooting Techniques:*** *Advanced Methods for Identifying and Rectifying Common Issues in Analyser Systems*
0930 – 0945	*Break*
0945 – 1100	***Advanced Troubleshooting Techniques:*** *Advanced Methods for Identifying and Rectifying Common Issues in Analyser Systems (cont'd)*
1100 – 1230	***Calibration & Validation of Analysers:*** *Techniques and Best Practices for Calibrating Analysers to Ensure Accuracy and Reliability*
1230 – 1245	*Break*
1245 – 1420	***Calibration & Validation of Analysers:*** *Techniques and Best Practices for Calibrating Analysers to Ensure Accuracy and Reliability (cont'd)*
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 – 0930	***Case Studies: Real-World Applications:*** *Analyzing Real-World Scenarios Where QMI Analysers and Sample Systems Have Played a Critical Role, Discussing Lessons Learned and Best Practices*
0930 – 0945	*Break*
0945 – 1100	***Case Studies: Real-World Applications:*** *Analyzing Real-World Scenarios Where QMI Analysers and Sample Systems Have Played a Critical Role, Discussing Lessons Learned and Best Practices (cont'd)*
1100 – 1230	***Performance Testing & Analysis:*** *How to Conduct Performance Tests on QMI Equipment, Interpreting Results to Assess System Health and Efficiency*
1230 – 1245	*Break*
1245 – 1345	***Performance Testing & Analysis:*** *How to Conduct Performance Tests on QMI Equipment, Interpreting Results to Assess System Health and Efficiency (cont'd)*
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 practical and highly-interactive course includes real-life case studies and exercises:-



Course Coordinator

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