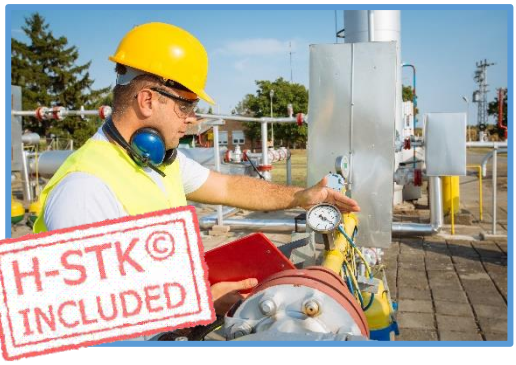
COURSE OVERVIEW IE0367
Maintain Fire and Gas Control System

Course Title
Maintain Fire and Gas Control System

Course Date/Venue
February 04-08,2024/The Mouna Meeting Room, The H Dubai Hotel, Sheikh Zayed Rd - Trade Centre, Dubai, UAE



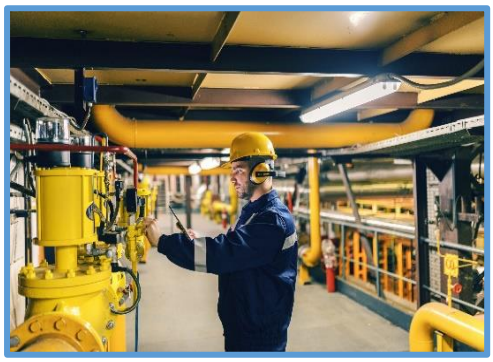
Course Reference
IE0367

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 course is designed to provide a comprehensive overview of the Fire and Gas Control System. It covers the basics, types and importance of fire and gas systems in industrial safety; the different types of detectors like smoke, heat, gas and their operational principles; the system components and layout; the control panels, sensors, alarms and emergency shutdown systems; the relevant national and international standards (NFPA, OSHA, etc.) for fire and gas systems; the routine maintenance tasks, schedules and record-keeping; and the control system operation, control logic and response procedures.



During this interactive course, participants will learn the routine maintenance procedures and the step-by-step guide on regular maintenance activities; the frequent operational problems in fire and gas systems; the techniques and best practices for calibrating different types of detectors; the procedures for conducting regular system tests and inspections; the importance of maintaining accurate records in compliance with safety regulations; the preventive maintenance plan and the techniques to handle complex issues and system malfunctions; the software/firmware updates to control systems and ensuring uninterrupted power supply and maintaining backup batteries; the sensor sensitivity and environmental challenges; the emergency situations involving fire and gas leak; and the strategies to calibrate detectors and operate control panels.

Course Objectives

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

- Apply and gain an in-depth knowledge on fire and gas control systems maintenance
- Discuss the basics, types and importance of fire and gas systems in industrial safety
- Explore different types of detectors like smoke, heat, gas and their operational principles
- Explain the system components and layout covering the control panels, sensors, alarms, and emergency shutdown systems
- Discuss relevant national and international standards (NFPA, OSHA, etc.) for fire and gas systems
- Carryout routine maintenance tasks, schedules and record-keeping
- Evaluate the control system operation, control logic and response procedures
- Apply routine maintenance procedures including step-by-step guide on regular maintenance activities for various system components
- Identify and solve frequent operational problems in fire and gas systems
- Employ techniques and best practices for calibrating different types of detectors
- Implement the procedures for conducting regular system tests and inspections
- Recognize the importance of maintaining accurate records and ensure compliance with safety regulations
- Develop and implement a preventive maintenance plan as well as apply the techniques to handle complex issues and system malfunctions
- Manage and apply software/firmware updates to control systems and ensure uninterrupted power supply and maintain backup batteries
- Adjust sensor sensitivity and address environmental challenges
- Prepare and respond emergency situations involving fire and gas leak
- Demonstrate strategies to calibrate detectors and operate control panels

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, sample video clips of the instructor's actual lectures & practical sessions during the course conveniently saved in a **Tablet PC**.*

Who Should Attend

This course provides an overview of all significant aspects and considerations of fire and gas control systems for instrumentation and control technicians, control room operators, maintenance engineers, safety engineers and managers, process engineers, HSE (health, safety, and environment) personnel, emergency response team members, facility managers, technical and maintenance supervisors and those who are involved in the maintenance and operation of fire and gas control 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

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. Hassan Ibrahim, PhD, MSc, BSc, is a **Senior Electrical & Instrumentation Engineer** with over **25 years** of extensive industrial experience. He specializes in **Fire** & **Gas Detection Systems, Instrumentation & Control**, **Control Valves** & Actuators, **Power Electronics**, **Metering Pumps**, **Flow Metering** & **Custody Measurement**, **Pneumatic Systems**, **DCS**, **PLC**, **SCADA**, **Electrical Safety**, **Power System** Equipment, **Electrical Forecasting**, **Power Transmission & Distribution** System, **Substation** Inspection, **Cable & Over Head Power Line**, **Site Inspection**, **Generator Excitation** System, **Flow Measurement Devices**, **Electrical Installations & Utilities**, **Fixed Installations**, **Equipment & Appliances**, **Inspection & Test of Fixed Installations**, **Monitoring & Recording of Data for Consumer Utilities**, **Electric Motor** Protection, Testing & Maintenance, **High Voltage Motors:** Operations, Maintenance & Troubleshooting, **HV/MV Cable Splicing**, **Jointing** & **Termination**, **LV/MV/HV**, **Power Cabling**, Micro Electromechanical Systems (**MEMS**), **Load Calculations**, **Electrical** Engineering Design, Installation, Maintenance, Troubleshooting, Inspection & Testing, **Electrical Drawings & Schematics**, **Engineering Drawings**, **Codes & Diagrams**, Power System **Protective Relay**, Power **Generation**, **Transformers**, **Lighting System**, **Earthing** & **Grounding**, Electrical **Circuits**, **Switchgear** & **Circuit Breakers**, **CCTV** and **AutoCAD**. Further, he is also well-versed in **UPS** and **Battery Systems**, **Protection Gears**, **ETAP**, System Analysis & Design, Energy Saving Techniques, Rational Use of Energy, Green Houses, **Software**, **Hardware**, **Modeling**, **Simulation** & Design, **Renewable Energy Technologies**, **Solar PV** and **Thermal Solar**. Currently, he is the **Technical Professor** for various **Academic organizations** like the **Arab Academy for Science & Technology and Maritime Transport**, **ARADO**, **ACTS**, **PROJACS**, **ITCC** and **AlexPetro Technical Service**.

During his career life, Dr. Ibrahim has been actively involved in rigorous Teaching and Consulting jobs in the **USA** and **Middle East**. He has been the **Professor**, **Associate Professor**, **Teaching Assistant**, **Lecturer/Trainer**, **Consultant**, **Academic Advisor**, **Author**, **Head** of **Graduate Projects**, **Technical Consultant** and **Research** & **Teaching Assistant** of various international and academic institutions and companies. He has been the **Project Engineer** as well of **Textron Automotive Industry**, **USA** where he was responsible for the speed and position control for a virtual vehicle simulation system and testing the electronic circuits and overall system.

Dr. Ibrahim is a **Registered Professional Engineer** and a **Registered Professional Consultant Engineer** and has a **PhD** in **Systems Engineering** from the **Oakland University** (**USA**), a **Master's** degree in **Electrical Power & Machines Engineering** and a **Bachelor's** degree in **Power & Electrical Machines Engineering**. Further, he is a **Certified Instructor/Trainer** and a **Certified Internal Verifier/Trainer/Assessor** by the **Institute of Leadership & Management** (**ILM**). He has supervised various electrical and instrumentation graduate projects and master thesis, published numerous papers and delivered innumerable trainings, courses, workshops and seminars worldwide.

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® (Haward 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: ***Sunday, 04th of February 2024***

0730 – 0800	*Registration & Coffee*
0800 – 0815	*Welcome & Introduction*
0815 – 0830	***PRE-TEST***
0830 – 0930	***Introduction & Safety Briefing:*** *Overview of Course Objectives & Safety Practices*
0930 – 0945	*Break*
0945 – 1100	***Fundamentals of Fire & Gas Systems****: Understanding the Basics, Types of Systems & Their Importance in Industrial Safety*
1100 – 1230	***Fire & Gas Detection Technologies****: Exploration of Different Types of Detectors (Smoke, Heat, Gas) & Their Operational Principles*
1230 – 1245	*Break*
1245 - 1420	***System Components & Layout****: The Control Panels, Sensors, Alarms & Emergency Shutdown Systems*
1420 – 1430	***Recap***
1430	*Lunch & End of Day One*

Day 2: ***Monday, 05th of February 2024***

0730 – 0930	***Standards & Regulations****: Discussion on Relevant National & International Standards (NFPA, OSHA, etc.) for Fire & Gas Systems*
0930 – 0945	*Break*
0945 – 1030	***Basic Maintenance Principles****: Introduction to Routine Maintenance Tasks, Schedules & Record-Keeping*
1030 – 1130	***Control System Operation:*** *Detailed Understanding of System Operation, Control Logic & Response Procedures*

1130 - 1230	***Routine Maintenance Procedures:*** *Step-by-Step Guide on Regular Maintenance Activities for Various System Components*
1230 – 1245	*Break*
1245 – 1420	***Troubleshooting Common Issues****: Identifying & Solving Frequent Operational Problems in Fire & Gas Systems*
1420 – 1430	***Recap***
1430	*Lunch & End of Day Two*

Day 3: ***Tuesday, 06th of February 2024***

0730 – 0930	***Calibration of Detectors****: Techniques & Best Practices for Calibrating Different Types of Detectors*
0930 – 0945	*Break*
0945 – 1030	***System Testing & Inspection****: Procedures for Conducting Regular System Tests & Inspections*
1030 – 1130	***Documentation & Compliance****: Importance of Maintaining Accurate Records & Ensuring Compliance with Safety Regulations*
1130 - 1230	***Preventive Maintenance Strategies****: Developing & Implementing a Preventive Maintenance Plan*
1230 – 1245	*Break*
1245 – 1420	***Advanced Troubleshooting Techniques****: Handling Complex Issues & System Malfunctions*
1420 – 1430	***Recap***
1430	*Lunch & End of Day Three*

Day 4: ***Wednesday, 07th of February 2024***

0730 – 0930	***Software & Firmware Updates****: Managing & Applying Software/Firmware Updates to Control Systems*
0930 – 0945	*Break*
0945 – 1030	***Battery Maintenance & Power Supply Issues****: Ensuring Uninterrupted Power Supply & Maintaining Backup Batteries*
1030 – 1130	***Sensor Sensitivity & Environmental Factors****: Adjusting sensor Sensitivity & Addressing Environmental Challenges*
1130 – 1230	***Emergency Response Planning****: Preparing for & Responding to Emergency Situations Involving Fire & Gas Leaks*
1230 – 1245	*Break*
1245 – 1420	***Practical Session: Detector Calibration****: Hands-on Practice in Calibrating Various Types of Detectors*
1420 – 1430	***Recap***
1430	*Lunch & End of Day Four*

Day 5: ***Thursday, 08th of February 2024***

0730 – 0930	***Practical Session: System Troubleshooting****: Real-world Simulation of Troubleshooting Exercises*
0930 – 0945	*Break*
0945 – 1030	***Control Panel Operation Drill****: Interactive Session on Operating & Understanding Control Panel Indications*
1030 - 1130	***Inspection & Testing Exercise****: Conducting a Thorough Inspection & Testing of a Mock System*

1130 - 1230	***Scenario-Based Training**: Engaging in Simulated Scenarios to Apply Learned Concepts*
1230 – 1245	*Break*
1245 – 1345	***Group Discussion & Feedback**: Sharing Experiences & Learning from Peer Review*
1345 – 1400	***Course Conclusion***
1400 – 1415	***POST-TEST***
1415 – 1430	*Presentation of Course Certificates*
1430	*Lunch & End of Course*

Simulator (Hands-on Practical Sessions)

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 simulator "BW Technologies BW-Clip : Single Gas Detector-H2S".

BW Technologies BW-Clip : Single Gas Detector-H2S

Course Coordinator

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