COURSE OVERVIEW HE0928
NFPA 13

Course Title
NFPA 13

Course Date/Venue
September 21-25, 2025/Bahrain Meeting Room, Barcelo Al Jaddaf Hotel, Dubai, UAE

Course Reference
HE0928

Course Duration/Credits
Five days/3.0 CEUs/30 PDHs

Course Description

This practical and highly-interactive course includes practical sessions and demonstration where participants carryout firefighting. Theory learnt in the class will be applied using a fire extinguisher through practical sessions.

This course is designed to provide participants with a detailed and up-to-date overview of NFPA 13. It covers the purpose and scope of NFPA 13 including the types of sprinkler systems, sprinkler system components and functionality; the fundamental design criteria for sprinkler systems, water supply requirements for sprinkler systems and fire sprinkler system standards and codes compliance; the occupancy and hazard classification, sprinkler system design approaches and sprinkler head selection and spacing; and the hydraulic calculation principles, pipe sizing and layout considerations and system modifications and retrofit requirements.

Further, the course will also discuss the storage sprinkler systems and protection requirements; the high-piled storage and ESFR systems, standpipe systems and fire department connections; the NFPA 13 seismic design requirements, types of seismic bracing and restraint methods; the pipe hanger spacing, seismic loads, expansion loops and flexible couplings; the combination of sprinklers with foam systems (NFPA 16); and the water mist systems (NFPA 750), sprinkler integration with fire alarm systems (NFPA 72) and sprinklers in industrial and special hazards.

During this interactive course, participants will learn the pipe installation techniques and sprinkler head installation requirements; the valves, gauges and riser installation and drainage and fire pump considerations; the hydrostatic testing and acceptance procedures and flow and pressure testing requirements; the functional testing of alarms and controls and final inspection and compliance reports; the periodic inspection, testing, and maintenance (ITM), impairment procedures and fire watch requirements; the common installation errors and code violations; and the fire code compliance and insurance requirements covering AHJ (Authority Having Jurisdiction) requirements, FM global and insurance-driven standards, legal liabilities for non-compliance and best practices for maintaining code compliance.

Course Objectives

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

- Apply and gain an in-depth knowledge on pre inspection, testing and maintenance of water-based fire protection systems in accordance with NFPS 13 standards
- Discuss the purpose and scope of NFPA 13 including the types of sprinkler systems, sprinkler system components and functionality
- Explain the fundamental design criteria for sprinkler systems, water supply requirements for sprinkler systems and fire sprinkler system standards and codes compliance
- Apply occupancy and hazard classification, sprinkler system design approaches and sprinkler head selection and spacing
- Recognize hydraulic calculation principles, pipe sizing and layout considerations and system modifications and retrofit requirements
- Discuss storage sprinkler systems and protection requirements, high-piled storage and ESFR systems and standpipe systems and fire department connections
- Identify NFPA 13 seismic design requirements, types of seismic bracing and restraint methods, pipe hanger spacing and seismic loads and expansion loops and flexible couplings
- Discuss combination of sprinklers with foam systems (NFPA 16), water mist systems (NFPA 750), sprinkler integration with fire alarm systems (NFPA 72), sprinklers in industrial and special hazards
- Apply pipe installation techniques, sprinkler head installation requirements, valves, gauges, and riser installation and drainage and fire pump considerations
- Carryout hydrostatic testing and acceptance procedures, flow and pressure testing requirements, functional testing of alarms and controls and final inspection and compliance reports
- Employ periodic inspection, testing, and maintenance (ITM), impairment procedures and fire watch requirements, common installation errors and code violations
- Review fire code compliance and insurance requirements covering AHJ (Authority Having Jurisdiction) requirements, FM global and insurance-driven standards, legal liabilities for non-compliance and best practices for maintaining code 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 on the pre inspection, testing and maintenance of water-based fire protection systems in accordance with NFPS 13 standards for fire protection engineers, mechanical and civil engineers, fire inspectors and code officials, contractors and installers, building owners and facility managers, insurance and risk assessment professionals, firefighters and emergency responders and those who involved in fire protection system design, installation, inspection, and compliance.

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 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 **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. Mohamed Ghanem, MSc, BSc, is a **Senior HSE & Master Marine Engineer** with extensive experience in **Health & Safety and Marine Engineering** within **Oil & Gas, Refinery** and **Marine** industry. His expertise widely covers in the areas of **NFPA Standards 72**, **101**, **20** & **13**, **NFPA 13 Standard** for the **Installation of Sprinkler Systems**, **Firefighting** Techniques, **Fire** Risk Assessment & Protection, **Fire Officer** Responsibilities, **Fire Fighter** Rescue Missions, **Fire Protection** Methods, **Fire Safety & Fire Risk**, Advanced **Fire Fighting Techniques**, **Active** & **Positive Fire Fighting**, **Fire & Gas Detection** Systems, **Fire Fighting** Systems & **Fire Proofing**, **Risk** Management, **Fire System Integrity Assurance**, **Fire** Prevention & Safety, **Fire Fighting & Rescue** Operations, **Safe Isolation of Plant & Equipment**, **HAZOP & HAZID**, **HAZMAT & HAZCOM** Storage & Disposal, As Low as Reasonably Practicable (**ALARP**), Process Hazard Analysis (**PHA**), Process Safety Management (**PSM**), **Hazardous Materials & Chemicals** Handling, **Pollution Control**, **Environment, Health & Safety** Management, **Process Risk** Analysis, Effective Tool Box Talks, Construction Sites Safety, **HSSE Management** System, **HSSE Audit & Inspection**, **HSEQ Procedures**, **Authorized Gas** Testing, **Confined Space Entry & Rescue**, **Risk** Management, **Quantitative & Qualitative Risk** Assessment, **Working at Heigh**. Further he is also well versed in **Global Maritime Distress Safety System** (**GMDSS**), **Marine** Operations, **International Maritime Conventions & Codes**, **International Ship and Port Facility Security Code** (**ISPS**) **Code**, **Buoyage** System & International Code of Signals, **Oil & Gas Marine Terminals**, **Port Terminals** Crisis Management & Major Emergency Response, **Marine Hazards Prevention & Control**, Single Buoy Mooring System (**SBM**), **Emergency Response** Procedure, **Oil Spill** Management & Recovery, **Oil Spill** Management & Response, **Oil Spill** Prevention & Control, **Oil Spill** Combating Operations, **Oil Spill** Awareness, **Oil & Gas Marine Terminals**, **Offshore Marine** Operation Management, International **Maritime Conventions & Codes**, **Vessel Hull & Machinery Survey**, **Oil & Gas Fields Offshore Survey**, **Oil & Gas Terminals Loading & Dischargin**, **Marine Engineering**, **Terminal** Operations, **Seamanship**, **Shipping** Overview, **Marine Fire Fighting** Equipment, **Life Saving**, **Safety Process**, **Major Emergency** Management & Control, **Crisis** Management during **Oil Spill** and **Firefighting**. He is currently the **Jack Up Barge Engineer & Captain** of **ADNOC Drilling** wherein he oversee all the operations onboard the vessel including navigation, maintenance and compliance with local regulations.

During his life career, Mr. Mohamed has gained his practical and field experience through his various significant positions and dedication as the **Barge Engineer & Marine Planner Onboard**, **Trainee Barge Engineer Onboard**, **Assistant Barge Master II Onboard**, **Assistant Barge Master Onboard**, **Site Engineer**, **HSE Engineer**, **Fire Engineer**, **Marine Surveyor**, **Ship Repair Engineer**, **Vessel Repairing Engineer**, **Metal Cutting & Welding Planner**, **Fire Safety Consultant**, **HSE Safety Officer**, **Fire Protection Specialist**, **Fire Safety Auditor**, **Marine Engineer Onboard**, **Technical Manager** and **Maintenance Mechanical Engineer** from the Shelf Drilling Co, Marine & Engineering Consulting, ADMARINE III (X-GSF 103) at ADES, Oceandro Large Yacht Builder, International Inspection Company, Synchrony-Lift Works and B-Tech Company.

Mr. Mohamed has **Master's** and **Bachelor's** degree in **Naval Architecture & Marine Engineering**. Further, he is a **Certified Instructor/Trainer**, a **Certified Trainer**, **Assessor** & **Internal Verifier** by the **Institute of Leadership of Management (ILM)** and holds a certificate in **Marine III Engineer** and OIM & Mobile Offshore Drilling Unit (**MODU**). He is an **active member** of The International Transport Workers' Federation (**ITF**), UK and has delivered numerous courses, workshops, trainings and conferences worldwide.

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: ***Sunday, 21st of September 2025***

0730 – 0800	*Registration & Coffee*
0800 – 0815	*Welcome & Introduction*
0815 – 0830	***PRE-TEST***
0830 – 0930	***Overview of NFPA 13 & Fire Protection Systems*** *Purpose and Scope of NFPA 13 • History and Evolution of NFPA 13 • Relationship with Other NFPA Codes (NFPA 25, NFPA 72, NFPA 20) • Regulatory and Compliance Considerations*
0930 – 0945	*Break*
0945 – 1030	***Types of Sprinkler Systems*** *Wet Pipe Sprinkler Systems • Dry Pipe Sprinkler Systems • Preaction and Deluge Systems • Special Hazard Systems*
1030 – 1130	***Sprinkler System Components & Functionality*** *Sprinkler Heads (Types, Response Time, K-Factors) • Piping and Fittings (Materials, Sizing, Layout) • Water Supply Sources (Municipal, Private, Storage Tanks) • Control Valves, Alarms, and Detection Devices*
1130 – 1215	***Fundamental Design Criteria for Sprinkler Systems*** *Occupancy Classification and Hazard Levels • Density/Area Approach versus Room Design Method • Hydraulic Demand versus Water Supply Capacity • Performance-Based Design Considerations*
1215 – 1230	*Break*
1230 – 1330	***Water Supply Requirements for Sprinkler Systems*** *Minimum Flow and Pressure Requirements • Fire Pump Requirements (NFPA 20 Reference) • Water Storage Tank Sizing (NFPA 22 Reference) • Water Demand Calculation and Testing*
1330 – 1420	***Fire Sprinkler System Standards & Codes Compliance*** *NFPA 13 Editions and Key Updates • Local and International Fire Codes (IBC, IFC) • OSHA and Insurance Industry Guidelines • Design Certification and Compliance Reporting*
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: ***Monday, 22nd of September 2025***

0730 – 0830	***Occupancy & Hazard Classification*** *Light Hazard Occupancies • Ordinary Hazard Occupancies (Group 1 & 2) • Extra Hazard Occupancies (Group 1 & 2) • Storage and Special Occupancy Classifications*
0830 – 0930	***Sprinkler System Design Approaches*** *Area/Density Curves and Design Area Limitations • Calculation of Minimum Water Supply Requirements • High-Piled Storage Considerations • Special Design Considerations for Cold Environments*
0930 – 0945	*Break*

0945 – 1100	***Sprinkler Head Selection & Spacing*** *Types of Sprinklers (Pendent, Upright, Sidewall, ESFR) • Coverage and Placement per NFPA 13 • Obstruction Rules and Clearance Requirements • Ceiling Heights and Deflector Positioning*
1100 – 1215	***Hydraulic Calculation Principles*** *Flow and Pressure Calculations • Friction Loss Calculations (Hazen-Williams Formula) • Hydraulic Calculation Methods (Tree, Loop, Grid) • Computerized Hydraulic Modeling*
1215 – 1230	*Break*
1230 – 1330	***Pipe Sizing & Layout Considerations*** *Pipe Schedule versus Hydraulically Designed Systems • Pipe Material Selection (Steel, CPVC, Copper) • Fittings and Joints (Grooved, Threaded, Welded) • Underground Piping Considerations*
1330 – 1420	***System Modifications & Retrofit Requirements*** *Upgrading Existing Systems to Meet NFPA 13 Standards • Code Compliance for System Renovations • Assessing Water Supply Impact on Modifications • Seismic Protection Considerations*
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: ***Tuesday, 23rd of September 2025***

0730 – 0830	***Storage Sprinkler Systems & Protection Requirements*** *Classifications of Storage (Encapsulated, Exposed, Palletized) • NFPA 13 Requirements for Rack Storage Protection • Ceiling-Only versus In-Rack Sprinkler Systems • Protection of Group A Plastics and Flammable Liquids*
0830 – 0930	***High-Piled Storage & ESFR Systems*** *ESFR (Early Suppression, Fast Response) Sprinkler Design • K-Factor Considerations for Storage Applications • Water Supply Requirements for ESFR Systems • Limitations and Trade-Offs of ESFR Systems*
0930 – 0945	*Break*
0945 – 1100	***Standpipe Systems & Fire Department Connections*** *NFPA 14 Integration with NFPA 13 • Standpipe Classifications (Class I, II, III) • Hose Connections and Pressure Requirements • Fire Department Connection (FDC) Design Considerations*
1100 – 1215	***Seismic Protection & System Bracing*** *NFPA 13 Seismic Design Requirements • Types of Seismic Bracing and Restraint Methods • Pipe Hanger Spacing and Seismic Loads • Expansion Loops and Flexible Couplings*
1215 – 1230	*Break*
1230 – 1330	***Special Fire Suppression Systems Integration*** *Combination of Sprinklers with Foam Systems (NFPA 16) • Water Mist Systems (NFPA 750) • Sprinkler Integration with Fire Alarm Systems (NFPA 72) • Sprinklers in Industrial and Special Hazards*

1330 – 1420	***Corrosion & System Maintenance Challenges*** *Corrosion Control in Sprinkler Systems • Microbiologically Influenced Corrosion (MIC) • Testing and Inspection for Corrosion Prevention • Internal Pipe Coatings and Corrosion-Resistant Materials*
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: ***Wednesday, 24th of September 2025***

0730 – 0830	***NFPA 13 Installation Standards*** *Pipe Installation Techniques • Sprinkler Head Installation Requirements • Valves, Gauges, and Riser Installation • Drainage and Fire Pump Considerations*
0830 – 0930	***System Commissioning & Acceptance Testing*** *Hydrostatic Testing and Acceptance Procedures • Flow and Pressure Testing Requirements • Functional Testing of Alarms and Controls • Final Inspection and Compliance Reports*
0930 – 0945	*Break*
0945 – 1100	***Periodic Inspection, Testing & Maintenance (ITM)*** *NFPA 25 Overview for Sprinkler System Maintenance • Quarterly and Annual Inspection Requirements • Common ITM Deficiencies and Remedies • Documentation and Recordkeeping Requirements*
1100 – 1215	***Impairment Procedures & Fire Watch Requirements*** *Planned versus Unplanned Impairments • Fire Watch Protocols and Responsibilities • System Restoration Procedures • Coordination with Fire Departments and AHJs*
1215 – 1230	*Break*
1230 – 1330	***Common Installation Errors & Code Violations*** *Improper Sprinkler Spacing • Obstruction Violations • Undersized Water Supplies • Improper Pipe Support and Seismic Bracing*
1330 – 1420	***Fire Code Compliance & Insurance Requirements*** *AHJ (Authority Having Jurisdiction) Requirements • FM Global and Insurance-Driven Standards • Legal Liabilities for Non-Compliance • Best Practices for Maintaining Code Compliance*
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: ***Thursday, 25th of September 2025***

0730 – 0830	***NFPA 13 Updates & Emerging Trends***
0830 – 0930	***Case Studies of Fire Incidents & Lessons Learned***
0930 – 0945	*Break*
0945 – 1215	***Fire Risk Assessment & Performance-Based Design***

1215 – 1230	*Break*
1230 – 1345	***Design Workshop & Hands-On Exercises***
1345 – 1400	***Course Conclusion*** *Using this Course Overview, the Instructor(s) will Brief Participants about t* *Topics that were Covered During the Course*
1400 – 1415	***POST-TEST***
1415 – 1430	*Presentation of Course Certificates*
1430	*Lunch & End of Course*

Simulators (Hands-on Practical Sessions)

Practical sessions 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 fire extinguishers.

Fire Extinguisher

Course Coordinator

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