COURSE OVERVIEW ME0271
Cooling & Water Systems Management

Course Title
Cooling & Water Systems Management

Course Date/ Venue
Session 1: April 14-18, 2025/Fujairah Meeting Room, Grand Millennium Al Wahda Hotel, Abu Dhabi, UAE
Seesion 2: October 05-09, 2025/Boardroom 1, Elite Byblos Hotel Al Barsha, Sheikh Zayed Road, Dubai, UAE

Course Reference
ME0271

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

Course Description

This practical and highly-interactive course includes real-life case studies 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 comprehensive and overview of cooling water, fire water systems and waste water treatment units. It covers the heat transfer, conduction, convection and radiation; the factors of heat transfer and the basic types of heat exchangers; the shell and tube heat exchangers, air fin or fin fan cooler and the main components of cooling water system; the P&ID and device summary as well as the proper start-up, shutdown and troubleshooting of cooling water system; the industrial fire fighting systems, fire water supply and active & passive systems; and the flow diagram, fire water supply, equipment and components.

During this interactive course, participants will learn the advantages and application of carbon dioxide systems; the types and application of deluge systems; the characteristics and components of wastewater; the principles of the processes used in primary and secondary treatment of wastewater; the tertiary treatment options; controlling and optimizing the treatment process; the calculations for process optimisation; the new wastewater treatment technologies; the sludge treatment and disposal; and the responsibilities for health and safety and risk assessments.

Course Objectives

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

- Apply and gain an in-depth knowledge on cooling water, fire water systems and waste water treatment units
- Discuss heat transfer, conduction, convection and radiation
- Identify the factors of heat transfer and the basic types of heat exchangers
- Recognize shell and tube heat exchangers, air fin or fin fan cooler and the main components of cooling water system
- Illustrate P&ID and device summary as well as start-up, shutdown and troubleshooting of cooling water system
- Recognize industrial fire fighting systems, fire water supply and active and passive systems
- Illustrate flow diagram and determine fire water supply, equipment and components
- Identify foam types, concentrations, properties and comparison as well as wet and dry pipe sprinkler systems
- Explain the advantages and application of carbon dioxide systems
- Recognize the types and application of deluge systems including wastewater characteristics and components
- Enumerate BOD, COD, the other measures of wastewater strength and effluent discharge consent
- Explain the principles of the processes used in primary and secondary treatment of wastewater
- Discuss tertiary treatment options as well as control and optimize treatment process
- Calculate process optimisation and apply the new wastewater treatment technologies
- Carryout sludge treatment and disposal, identify the responsibilities for health and safety and carryout risk assessments

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 cooling water & fire water systems, waste water treatment units for power plant operators.

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: -

- 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.

- 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.

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 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. Mustafa Fadel is a **Senior Mechanical Engineer** with over **25 years** of industrial experience within the **Power & Water Utilities** and other **Energy Sectors**. His specialization widely covers **District Cooling**: **Plant**: **Design**, **Operation & Maintenance HVAC System**, **HVAC** Equipment Terminology, **HVAC System Block Load Calculation**, **HVAC System** Development of Drawings, **Air Distribution** System, Basic **Chiller Water System Design & Selection**, **Pump** Design & Selection, **Rotating & Static Equipment**, **Cooling Tower Design**, **Boiler** Design & Selection, Energy Management & Value Engineering for Mechanical System, Mechanical Ventilation, Smoke Ventilation, Staircase Pressurization, System Design & Development of Drawings, Data Center Design, **Precision AC Equipment Selection**, **Refrigeration Systems**, **Air Cooler Design**, **Chillers**, **Mass** & **Heat Transfer**, **Electromechanical**, **Rotating & Static Equipment** including **Heat Exchangers**, **Piping & Pipeline**, **Pressure Vessels**, **Valves**, **Tanks Turbines**, **Compressors**, **Motors**, **Pumps**, **Evaporators**, **Condensers**, **Blowers** and **Fans**, **Maintenance Planning & Scheduling**, **Root Cause Failure Analysis**, **Performance Calculations**, **Reliability Maintenance** and **Corrective** & **Preventive Maintenance**. Further, he is also well-versed in **HSE Management**, **KPI's**, **CMMS** and **AutoCAD** as well as in various international standards such as the **ASHRAE**, **API**, **ASTM**, **ASME**, **AMCA**, **NFPA** and **SMACNA**. Currently, he is the **HVAC&R Specialist** in **SEGAS LNG Plant** wherein he is responsible for the implementation, construction and maintenance strategy for industrial HVAC&R equipment.

During his career life, Mr. Fadel has gained his practical and field experience through his various significant positions and dedication as the **Section Head**, **Project Manager**, **HVAC System Consultant Engineer**, **Mechanical Engineer**, **HVAC&R Instructor** and **Senior Technical Consultant** for international companies and universities like the **Foster Wheeler**, **Technip**-Italy, Borner Company, Union FENOSA Gas, Asphalt Bitumen, King Khalid University, Alexandria Petroleum Company, FAWAZ Company, Marium Corporation and many more.

Mr. Fadel has a **Bachelor's** degree in **Power Mechanical Engineering**. Further, he is a **Certified Instructor/Trainer**, a **Certified Internal Verifier/Assessor/Trainer** by the **Institute of Leadership & Management** (**ILM**) and an active member of the American Society of Heating Refrigetaring and Air Conditioning Engineers (**ASHRAE**), **USA**. He has further delivered and participated numerous engineering and inspection projects, trainings, courses, seminars and conferences globally.

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 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 – 0915	***Introduction to Heat Transfer***
0915 – 0930	***Conduction, Convection & Radiation***
0930 – 0945	*Break*
0945 – 1115	***Heat Transfer Factors***
1115 - 1215	***Basic Types of Heat Exchangers***
1215 – 1230	*Break*
1230 – 1330	***Shell & Tube Heat Exchanger***
1330 – 1420	***Air Fin (or Fin Fan) Cooler***
1420 – 1430	***Recap***
1430	*Lunch & End of Day One*

Day 2

0730 – 0900	***Main Components of Cooling Water System***
0900 – 0930	***P&ID***
0930 – 0945	*Break*
0945 – 1100	***Device Summary***
1100 – 1215	***Start-up & Shutdown of Cooling Water System***
1215 – 1230	*Break*
1230 – 1330	***Troubleshooting of Cooling Water System***
1330 – 1420	***Industrial Fire Fighting Systems***
1420 – 1430	***Recap***
1430	*Lunch & End of Day Two*

Day 3

0730 – 0830	***Fire Water Supply***
0830 – 09830	***Active & Passive Systems***
0930 – 0945	*Break*

0945 – 1100	***Flow Diagram***
1100 – 1215	***Fire Water Supply, Equipment & Components***
1215 – 1230	*Break*
1230 – 1330	***Foam Types, Concentrations, Properties & Comparison***
1330 – 1420	***Wet & Dry Pipe Sprinkler Systems***
1420 – 1430	***Recap***
1430	*Lunch & End of Day Three*

Day 4

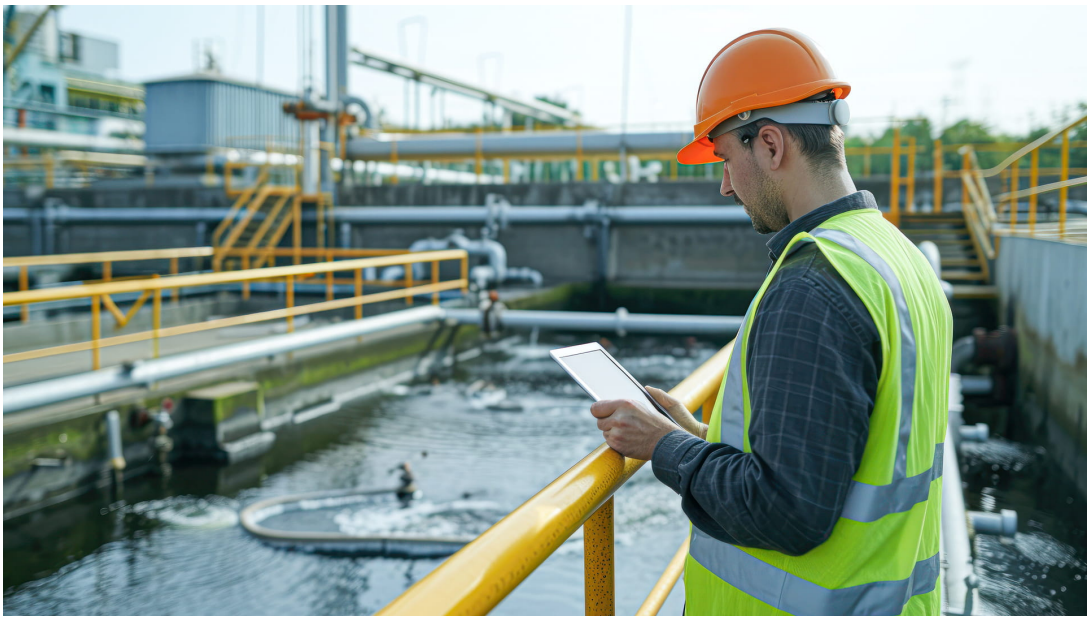
0730 – 0830	***Advantages & Application of Carbon Dioxide Systems***
0830 – 0930	***Types & Applications of Deluge Systems***
0930 – 0945	*Break*
0945 – 1100	***Wastewater Characteristics & the Components of Wastewater***
1100 – 1215	***BOD, COD and the other Measures of Wastewater Strength***
1215 – 1230	*Break*
1230 – 1330	***Effluent Discharge Consents***
1330 – 1420	***The Principles of the Processes Used in Primary & Secondary Treatment of Wastewater***
1420 – 1430	***Recap***
1430	*Lunch & End of Day Four*

Day 5

0730 – 0830	***Tertiary Treatment Options***
0830 – 0930	***Controlling & Optimizing the Treatment Process***
0930 – 0945	*Break*
0945 – 1130	***Calculations for Process Optimisation***
1130 – 1215	***New Wastewater Treatment Technologies***
1215 – 1230	*Break*
1230 – 1130	***Sludge Treatment & Disposal***
1230 – 1345	***Responsibilities for Health & Safety, and Carrying out Risk Assessments***
1345 – 1400	***Course Conclusion***
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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