



## COURSE OVERVIEW TE0278 Water Network Operations Advanced Knowledge

### Course Title

Water Network Operations Advanced Knowledge

### Course Date/Venue

November 18-22, 2024/Dalma Meeting Room, Millennium Downtown Abu Dhabi, Abu Dhabi, UAE

### Course Reference

TE0278



### 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 participants with a detailed and up-to-date overview of Advanced Water Network Operations. It covers the components and layout of water distribution systems; the various water sources and strategies for managing supply; the hydraulics and fluid dynamics, water quality standards, monitoring and sensing technologies and challenges in water network operations; the key considerations in the design of efficient and resilient water networks; and the advanced hydraulic modelling.



Further, the course will also discuss the GIS applications in water networks and asset management and capital planning; the demand forecasting and management and ways to reduce energy consumption in water networks; the routine maintenance strategies, advanced leak detection and repair and pressure management and control; utilizing SCADA systems for real-time monitoring and control; and effective strategies for handling water network emergencies.

During this interactive course, participants will learn the green practices in water network maintenance and operations; the water regulations and compliance and health and safety in water operations; the risk management and mitigation, water treatment processes and customer service and communication; protecting water infrastructure from cyber threats and the new technologies and methodologies in the field; how climate change affects water supply and distribution; the interdependence between water and energy systems; the smart technologies in water distribution; and building resilience into water networks against natural and man-made disasters.

### Course Objectives

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

- Apply and gain an advanced knowledge on water network operations
- Discuss the components and layout of water distribution systems
- Identify various water sources and apply strategies for managing supply
- Recognize hydraulics and fluid dynamics, water quality standards, monitoring and sensing technologies and challenges in water network operations
- Explain the key considerations in the design of efficient and resilient water networks
- Illustrate advanced hydraulic modelling, GIS applications in water networks and asset management and capital planning
- Employ demand forecasting and management and ways to reduce energy consumption in water networks
- Apply routine maintenance strategies, advanced leak detection and repair and pressure management and control
- Utilize SCADA systems for real-time monitoring and control and apply effective strategies for handling water network emergencies
- Implement green practices in water network maintenance and operations
- Discuss water regulations and compliance and health and safety in water operations
- Employ risk management and mitigation, water treatment processes and customer service and communication
- Protect water infrastructure from cyber threats and explore new technologies and methodologies in the field
- Explain how climate change affects water supply and distribution and examine the interdependence between water and energy systems
- Implement smart technologies in water distribution and build resilience into water networks against natural and man-made disasters

### 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 advanced water network operations for water network operators, water quality specialists, project managers, asset managers, water engineers and superintendents.

**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 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. Kyle Bester** is a **Senior Water Engineer** with extensive years of practical experience within the **Oil & Gas, Power & Water Utilities** and other **Energy** sectors. His expertise includes **Water Reservoir, Water Tanks, Water Pumping Station, Water Distribution System, Water Network System, Water Pipes & Fittings, Water Hydraulic Modelling, Water Storage Reservoir, Reservoirs & Pumping Stations Design & Operation, Pumping Systems, Interconnecting Pipelines, Water Network Hydraulic Simulation Modelling, Water Supply Design, Water Balance Modelling, Water Distribution Network, Water Network System Analysis, Water Forecasts Demand, Water Pipelines Materials & Fittings, Water Network System Design, Pump Houses & Booster Pumping Stations, Potable Water Transmission, Water Distribution Network, Districts Meters Areas (DMAs), Water Supply & Desalination Plants Rehabilitation, Water Reservoirs & Pumping Stations, Water Network System Extension, Water Network System Replacement & Upgrade, Water Networks Optimization, Water Supply & Distribution Systems Efficiency & Effectiveness, Pipe Materials & Fittings, Service Reservoir Design & Operation, Pipes & Fittings, Water Network System Design & Operation, Supply Water Network Rehabilitation, Water Loss Reduction, Main Water System Construction, Main Water Line Construction, Transmission & Distribution Pipelines, Water Distribution Design & Modelling, Water Supply System, Oilfield Water Treatment, Best Practice in Sewage & Industrial Wastewater Treatment & Environmental Protection, Water Distribution Design & Modelling, Desilting, Treating & Handling Oily Water, Water Chemistry for Power Plant, Water Sector Orientation, Environmental Impact Assessment (EIA), Potable Water, Reverse Osmosis Treatment Technology and Chlorination System, Well Inventory, Monitoring & Conservation, Qualitative Analysis of Soil & Ground Water, Water Networking, Hydraulic Modelling Systems, Pumping Stations, Centrifugal Pumps, Pipelines & Pumping, Water Reservoirs, Water Storage Tanks, Extended Activated Sludge Treatment, Sewage & Industrial Wastewater Treatment & Environmental Protection, Supervising & Monitoring Sewage Works, Water Desalination Technologies, Water Distribution & Pump Station, Best Water Equipment Selection & Inspection, Hydraulic Modelling for Water Network Design, Water Utility Industry, Water Desalination Technologies & New Development, Water Hydrology, Water Conveyors, Water Networks Rehabilitation.** He is currently the **Part Owner & Manager** of Extreme Water SA wherein he manages, re-designed and commissioned a water and wastewater treatment plants.

During his career life, Mr. Bester has gained his practical and field experience through his various significant positions and dedication as the **Project Manager, Asset Manager, Manager, Water Engineer, Supervisor, Team Leader, Analyst, Process Technician, Landscape Designer** and **Senior Instructor/Trainer** for various international companies, infrastructures, water and wastewater treatment plants from New Zealand, UK, Samoa, Zimbabwe and South Africa, just to name a few.

Mr. Bester holds a **Diploma in Wastewater Treatment** and a **National Certificate in Wastewater & Water Treatment**. Further, he is a **Certified Instructor/Trainer**, an **Approved Chemical Handler** and has delivered numerous courses, trainings, conferences, seminars and workshops 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 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: Monday, 18<sup>th</sup> of November 2024**

0730 – 0800	<i>Registration &amp; Coffee</i>
0800 – 0815	<i>Welcome &amp; Introduction</i>
0815 – 0830	<b>PRE-TEST</b>
0830 – 0930	<b>Overview of Water Networks: Understanding the Components &amp; Layout of Water Distribution Systems</b>
0930 – 0945	<i>Break</i>
0945 – 1030	<b>Water Sources &amp; Supply Management: Exploration of Various Water Sources &amp; Strategies for Managing Supply</b>
1030 – 1130	<b>Hydraulics &amp; Fluid Dynamics: Basic Principles that Govern Water Flow in Pipes &amp; Network Systems</b>
1130 - 1215	<b>Water Quality Standards: Introduction to Water Quality Parameters &amp; Regulatory Standards</b>
1215 – 1230	<i>Break</i>
1230 – 1330	<b>Monitoring &amp; Sensing Technologies: Overview of Technologies Used for Water Quality &amp; Flow Monitoring</b>
1330 - 1420	<b>Challenges in Water Network Operations: Discussion on Common Operational Challenges &amp; Their Impacts</b>
1420 – 1430	<b>Recap</b>
1430	<i>Lunch &amp; End of Day One</i>

**Day 2: Tuesday, 19<sup>th</sup> of November 2024**

0730 – 0830	<b>Water Network Design Principles: Key Considerations in the Design of Efficient &amp; Resilient Water Networks</b>
0830 – 0930	<b>Advanced Hydraulic Modelling: Techniques for Simulating Water Flow &amp; Pressure in Network Models</b>
0930 – 0945	<i>Break</i>
0945 – 1100	<b>GIS Applications in Water Networks: Using Geographic Information Systems for Mapping &amp; Management</b>
1100 – 1215	<b>Asset Management &amp; Capital Planning: Strategies for Long-Term Asset Management &amp; Infrastructure Investment</b>



1215 - 1230	Break
1230 - 1330	<b>Demand Forecasting &amp; Management:</b> Methods for Predicting Water Demand & Managing Supply Accordingly
1330 - 1420	<b>Energy Efficiency in Water Distribution:</b> Exploring Ways to Reduce Energy Consumption in Water Networks
1420 - 1430	<b>Recap</b>
1430	Lunch & End of Day Two

**Day 3: Wednesday, 20<sup>th</sup> of November 2024**

0730 - 0830	<b>Routine Maintenance Strategies:</b> Planning & Execution of Maintenance Activities to Ensure Network Reliability
0830 - 0930	<b>Advanced Leak Detection &amp; Repair:</b> Technologies & Methodologies for Detecting & Repairing Leaks
0930 - 0945	Break
0945 - 1100	<b>Pressure Management &amp; Control:</b> Techniques for Optimizing Network Pressure to Reduce Leaks & Bursts
1100 - 1215	<b>SCADA Systems in Water Networks:</b> Utilizing SCADA Systems for Real-Time Monitoring & Control
1215 - 1230	Break
1230 - 1330	<b>Incident Management &amp; Response:</b> Effective Strategies for Handling Water Network Emergencies
1330 - 1420	<b>Sustainable Practices in Operations:</b> Implementing Green Practices in Water Network Maintenance & Operations
1420 - 1430	<b>Recap</b>
1430	Lunch & End of Day Three

**Day 4: Thursday, 21<sup>st</sup> of November 2024**

0730 - 0830	<b>Water Regulations &amp; Compliance:</b> Overview of Regulatory Framework Governing Water Networks
0830 - 0930	<b>Health &amp; Safety in Water Operations:</b> Ensuring Safety of Staff & the Public in Water Network Operations
0930 - 0945	Break
0945 - 1100	<b>Risk Management &amp; Mitigation:</b> Identifying & Mitigating Risks in Water Network Operations
1100 - 1215	<b>Water Treatment Processes:</b> Understanding the Processes Involved in Water Treatment & Distribution
1215 - 1230	Break
1230 - 1330	<b>Customer Service &amp; Communication:</b> Strategies for Effective Customer Engagement & Communication
1330 - 1420	<b>Cybersecurity in Water Networks:</b> Protecting Water Infrastructure from Cyber Threats
1420 - 1430	<b>Recap</b>
1430	Lunch & End of Day Four

**Day 5: Friday, 22<sup>nd</sup> of November 2024**

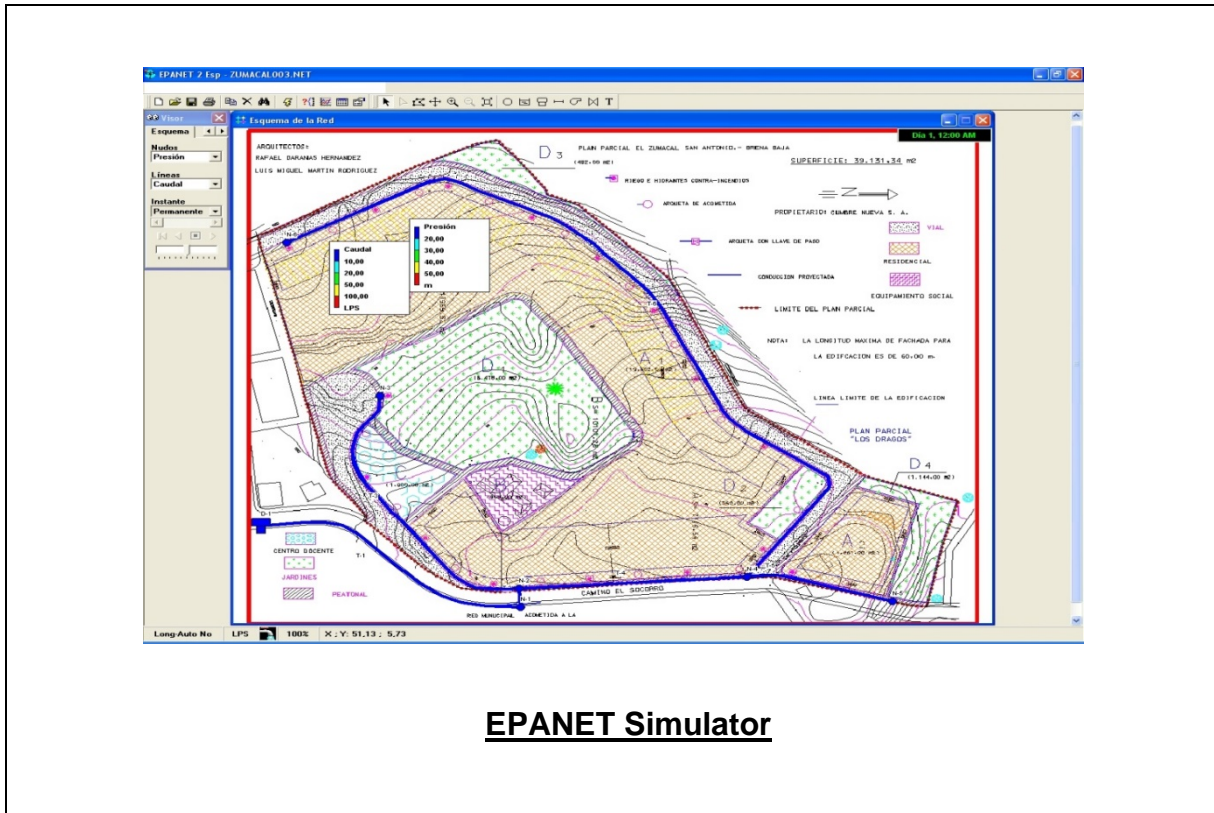
0730 - 0830	<b>Innovations in Water Network Operations:</b> Exploring New Technologies & Methodologies in the Field
0830 - 0930	<b>Climate Change Impacts on Water Networks:</b> Understanding How Climate Change Affects Water Supply & Distribution
0930 - 0945	Break
0945 - 1100	<b>Water-Energy Nexus:</b> Examining the Interdependence Between Water & Energy Systems



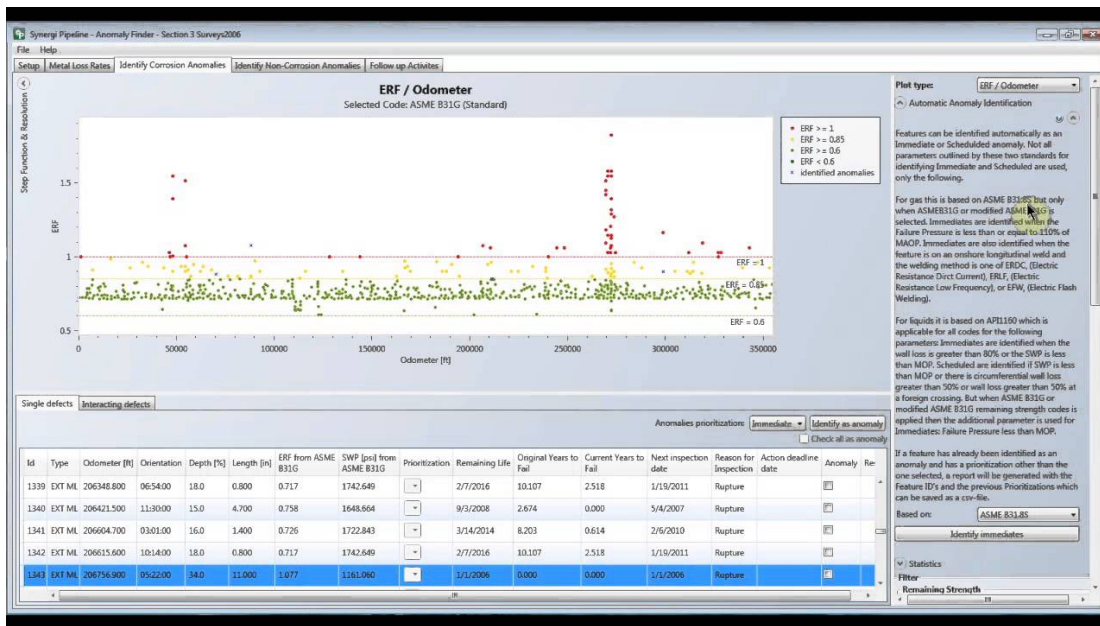
1100 - 1200	<i>Smart Water Networks: Implementation of Smart Technologies in Water Distribution</i>
1200 - 1215	<i>Break</i>
1215 - 1345	<i>Water Network Resilience Planning: Building Resilience into Water Networks Against Natural &amp; Man-Made Disasters</i>
1345 - 1400	<i>Course Conclusion</i>
1400 - 1415	<i>POST-TEST</i>
1415 - 1430	<i>Presentation of Course Certificates</i>
1430	<i>Lunch &amp; End of Course</i>

**Simulator (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 the latest revision of “EPANET” and “Synergi Pipeline” simulators.



**EPANET Simulator**



### Synergi Pipeline

### Course Coordinator

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