COURSE OVERVIEW TE0189

Water Network Pipeline: Design, Troubleshooting & Maintenance

Course Title

Water Network Pipeline: Design, Troubleshooting & Maintenance

Course Date/Venue

April 28–May 02, 2024/Safir Meeting Room, Divan Istanbul Sisli, Istanbul, Turkey

Course Reference

TE0189

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 Water Network Pipeline Design, Troubleshooting and Maintenance. It covers the water pipeline systems, design considerations, hydraulic principles, pipeline materials and their properties; the hydraulic analysis methods for water pipelines and determining pipe sizing and flow rates; the pressure management and control; the pump selection and system design; the pipeline material selection, types and properties of different pipe materials; the pipe joining methods and techniques; the pipeline construction and installation considerations; the common pipeline issues and challenges; the leak detection methods and technologies; the pipeline repair techniques and best practices; the pipeline maintenance, preventive maintenance techniques, cleaning and flushing procedures; and the corrosion prevention and control.

During this interactive course, participants will learn the rehabilitation techniques for aging pipelines; the trenchless pipeline repair methods and pipeline replacement considerations; the pipeline monitoring and SCADA systems; the remote sensing, data collection, real-time monitoring and control strategies; the water quality considerations in pipeline systems, contaminant monitoring and treatment; the disinfection techniques and water quality maintenance and sampling; planning for pipeline emergencies; and the emergency shutdown procedures, contingency plans, response strategies, post-emergency recovery and restoration.

Course Objectives

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

- Apply and gain an in-depth knowledge on water network pipeline design, troubleshooting and maintenance
- Discuss water pipeline systems, design considerations, hydraulic principles, pipeline materials and their properties
- Carryout hydraulic analysis methods for water pipelines and determine pipe sizing and flow rates
- Apply pressure management and control as well as pump selection and system design
- Perform pipeline material selection and recognize the types and properties of different pipe materials
- Employ pipe joining methods and techniques as well as pipeline construction and installation considerations
- Identify the common pipeline issues and challenges and apply leak detection methods and technologies
- Carryout pipeline repair techniques and best practices, pipeline maintenance, preventive maintenance techniques, cleaning and flushing procedures and corrosion prevention and control
- Apply rehabilitation techniques for aging pipelines including trenchless pipeline repair methods and pipeline replacement considerations
- Recognize pipeline monitoring and SCADA systems as well as illustrate remote sensing, data collection, real-time monitoring and control strategies
- Apply water quality considerations in pipeline systems, contaminant monitoring and treatment, disinfection techniques and water quality maintenance and sampling
- Plan for pipeline emergencies and carryout emergency shutdown procedures, contingency plans, response strategies, post-emergency recovery and restoration

Who Should Attend

This course provides an overview of all significant aspects and considerations of water network pipeline design, troubleshooting and maintenance for utility managers, mechanical engineers, civil engineers, water engineers, engineering managers, design consultants, utility managers, superintendents, supervisors and other senior technical staff.

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 Certificate(s)

Internationally recognized certificates will be issued to all participants of the course 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$ 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 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. Laith Ahmad, MSc, BSc, is a **Senior Civil & Water Engineer** with extensive years of practical experience within the **Power & Water Utilities** and other **Energy** sectors. His expertise includes **Wastewater** Treatment, **Rural Pipe** System, **Pipe** Materials & Fittings, **Pipes & Fittings**, **Water Network System** Design & Operation, **Supply Water Network** Rehabilitation, **Water Loss** Reduction, **Main Water** System Construction, **Main Water Line** Construction, **Water Distribution** Design & Modeling, **Water Supply** System, Oilfield **Water Treatment**, Best Practice in **Sewage** & Industrial **Wastewater Treatment** & Environmental Protection, **Water Distribution** Design & Modelling, Treating & Handling Oily **Water**, **Water GEMS** Fundamental & Advanced, **Water Chemistry** for **Power Plant**, Industrial **Water** Treatment in Refineries & Petrochemical Plants, **Water Pollution** Control, Permitting & Enforcing Drilling for **Groundwater**, **Groundwater** Desalination, **Water** Sector Orientation, Environmental Impact Assessment (**EIA**), **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, **Water Fittings**, **Fittings & Valves**, **Water Valves**, **Control Valves**, **Float Valves**, **Couplings & Pressure** Testing, **Water Distribution** Systems, Risk Management & Project Management, **Civil Engineering**, **Concrete Mix** Design, **Engineering Contracts**, **Claims** Management & Dispute Resolution, **Civil Engineering**, Drawings & Construction Specifications, AutoCAD, CIVIL 3D, Bridge Design, ETABS, PROKON, **Flows Water GEMS**, SewerCAD, Hydraulic Modelling (GIS & Surge Analysis) and OSHA General.

During his career life, Mr. Laith has gained his practical and field experience through his various significant positions and dedication as the **Civil Engineer**, **Water Engineer**, **Technical Trainer**, **Project Manager**, **Head of Contract & Document Section**, **Site Engineer**, **Sales Engineer** and **Instructor/Trainer** for various international companies and projects such as the Al-Qusor Academy, SORAQIA, Water Authority of Jordan, CONMIX for Chemicals Construction & Decorative Plaster, Al-Jafer Main Water Line Construction, Faquo'h District of Karak Governorate, ZARA Main Water System Construction, Ground Water Desalination Project-Consulting Services and Marka Water Training Centre, just to name a few.

Mr. Laith has a **Master's** degree in **Public Administration** and a **Bachelor's** degree in **Civil Engineering**. Further, he is a **Certified Instructor/Trainer** and has delivered numerous courses, trainings, conferences, seminars and workshops internationally.

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, 28th of April 2024***

0730 – 0800	*Registration & Coffee*
0800 – 0815	*Welcome & Introduction*
0815 – 0830	***PRE-TEST***
0830 – 0930	***Introduction to Water Network Pipeline Systems*** *Design Considerations • Hydraulic Principles • Pipeline Materials and Their Properties*
0930 – 0945	*Break*
0945 – 1100	***Hydraulic Analysis & System Design*** *Hydraulic Analysis Methods for Water Pipelines*
1100 – 1230	***Hydraulic Analysis & System Design (cont'd)*** *Determining Pipe Sizing and Flow Rates*
1230 – 1245	*Break*
1245 – 1420	***Hydraulic Analysis & System Design (cont'd)*** *Pressure Management and Control • Pump Selection and System Design*
1420 - 1430	***Recap***
1430	*Lunch & End of Day One*

Day 2: ***Monday, 29th of April 2024***

0730 – 0930	***Pipeline Materials & Construction Techniques*** *Pipeline Material Selection • Types and Properties of Different Pipe Materials*
0930 – 0945	*Break*
0945 – 1100	***Pipeline Materials & Construction Techniques (cont'd)*** *Pipe Joining Methods and Techniques • Pipeline Construction and Installation Considerations*
1100 – 1230	***Troubleshooting Techniques: Leak Detection & Repair*** *Common Pipeline Issues and Challenges • Leak Detection Methods and Technologies*
1230 – 1245	*Break*
1245 – 1420	***Troubleshooting Techniques: Leak Detection & Repair (cont'd)*** *Pipeline Repair Techniques and Best Practices • Case Studies on Leak Detection and Repair*
1420 - 1430	***Recap***
1430	*Lunch & End of Day Two*

Day 3: ***Tuesday, 30th of April 2024***

0730 – 0930	***Pipeline Maintenance Strategies*** *Importance of Pipeline Maintenance • Preventive Maintenance Techniques*
0930 – 0945	*Break*
0945 – 1100	***Pipeline Maintenance Strategies (cont'd)*** *Cleaning and Flushing Procedures • Corrosion Prevention and Control*
1100 – 1230	***Pipeline Rehabilitation & Replacement*** *Rehabilitation Techniques for Aging Pipelines • Trenchless Pipeline Repair Methods*

1230 – 1245	*Break*
1245 – 1420	***Pipeline Rehabilitation & Replacement (cont'd)*** *Pipeline Replacement Considerations • Rehabilitation Case Studies*
1420 - 1430	***Recap***
1430	*Lunch & End of Day Three*

Day 4: Wednesday, 01st of May 2024

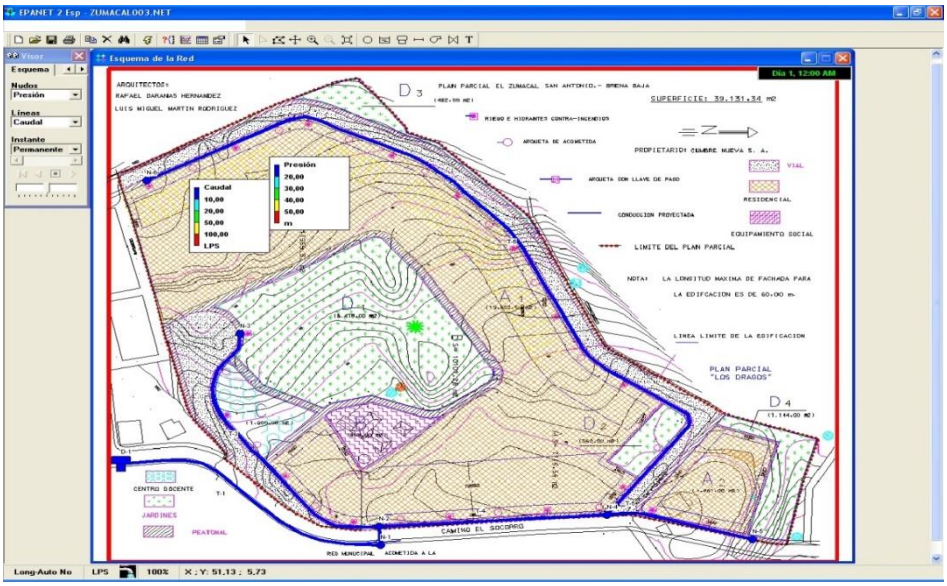
0730 – 0930	***System Monitoring & Control*** *Pipeline Monitoring Systems • SCADA (Supervisory Control and Data Acquisition) Systems*
0930 – 0945	*Break*
0945 – 1100	***System Monitoring & Control (cont'd)*** *Remote Sensing and Data Collection Techniques • Real-Time Monitoring and Control Strategies*
1100 – 1230	***Water Quality Management*** *Water Quality Considerations in Pipeline Systems • Contaminant Monitoring and Treatment*
1230 – 1245	*Break*
1245 – 1420	***Water Quality Management (cont'd)*** *Disinfection Techniques • Water Quality Maintenance and Sampling*
1420 - 1430	***Recap***
1430	*Lunch & End of Day Four*

Day 5: Thursday, 02nd of May 2024

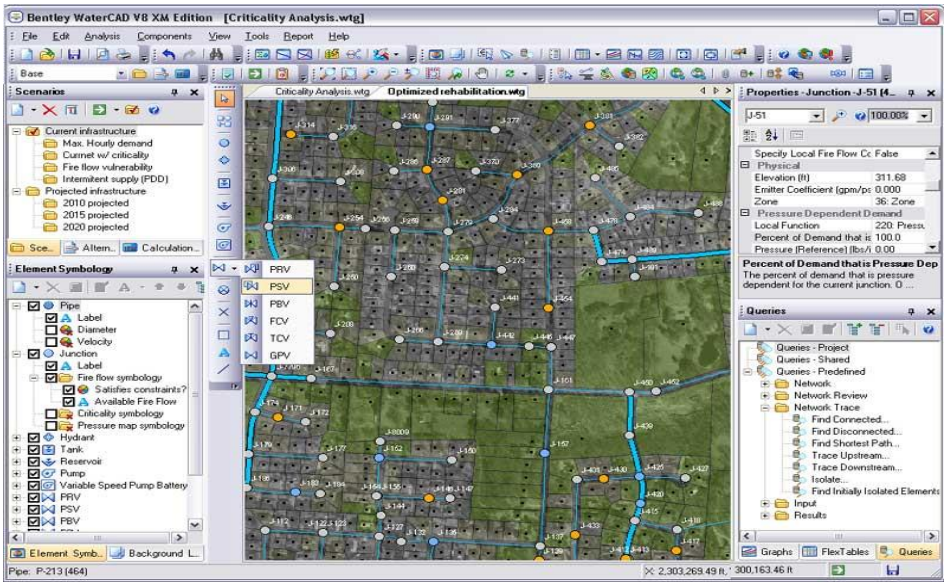
0730 – 0930	***Emergency Response & Disaster Management*** *Planning for Pipeline Emergencies • Emergency Shutdown Procedures*
0930 – 0945	*Break*
0945 – 1100	***Emergency Response & Disaster Management (cont'd)*** *Contingency Plans and Response Strategies • Post-Emergency Recovery and Restoration*
1100 – 1230	***Case Studies & Practical Exercises*** *Analysis of Real-World Pipeline Design Projects • Troubleshooting Exercises and Simulations*
1230 – 1245	*Break*
1245 – 1345	***Case Studies & Practical Exercises (cont'd)*** *Group Discussions and Q&A Sessions • Course Review and Closing Remarks*
1345 - 1400	***Course Conclusion***
1400 – 1415	***POST-TEST***
1415 – 1430	*Presentation of Course Certificates*
1430	*Lunch & End of Course*

Simulator (Hands-on Practical Sessions)

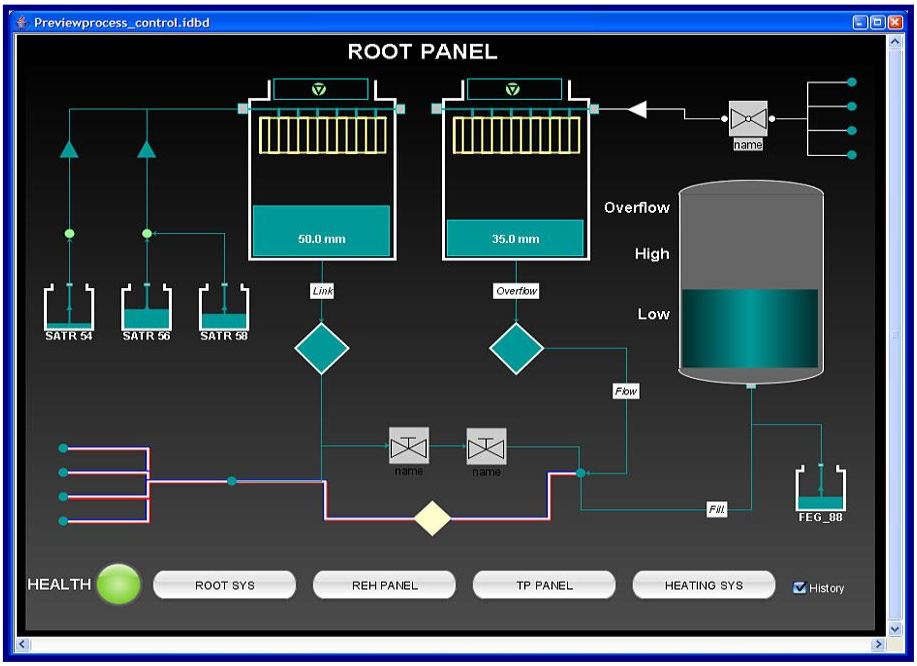
Practical sessions will be organized during the course for delegates to practice the theory learnt. Delegates will be provided with an opportunity to carryout various exercises using the latest revision of "EPANET", "WATERCAD" and "HMI SCADA" Simulators.



EPANET Simulator



WATERCAD Simulator



HMI SCADA

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