Tel No:+97126654546 | Fax No:+97126654182 | Email: training@cmc-me.com | www.cmc-me.com

WE024:
Hydraulic Modelling for Water Network Design

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Training Description:

Water distribution networks are crucial for supplying water for residential areas, hospitals, educational institutions, industrial zones, commercial areas, and for firefighting purposes. This training course provides participants with a greater working expertise and understanding of water distribution system.

This intensive training course will present concepts and tools to analyze and design water distribution networks. Topics covered will include fundamental hydraulic principles and overview of the design standards of water distributions systems.

Training Objectives:

By the end of the training, participants will be able to:

- ✓ Obtain and apply knowledge on hydraulic modeling for water network design
- ✓ Design and Evaluate Hydraulic Networks for municipalities
- ✓ Understand and design and specify pumping stations
- ✓ Evaluate the effects of hydraulic transients
- ✓ Understand how and where to install relief valves and systems to avoid hydraulic transients
- ✓ Able to use EPANet and will be introduced to other hydraulic network design programs

Training Designed for:

This course is intended for Engineering and Public Works Directors, City Engineers, Water Distribution System Managers, Infrastructure Managers, Consulting Engineers, Designers, Managers, Technicians, and computer persons that have to work on, design, or maintain water systems. The course will consider the design of pipelines, the use of pumping stations, and selection of pumps and systems, valves, and the analysis of pipelines and networks using network software.

Training Requirement:

"Hand's on practical sessions, equipment and software will be applied during the course if required and as per the client's request." EPANET Software will be used during the practical session.

Content, location and duration can be adapted to your specific wishes. It is therefore possible to focus on specific modules of the training course as per client's learning needs and objectives. Further, it should be forwarded to us a month prior to the course dates.

Training Program:

DAY ONE:

- ❖ Introduction
- ❖ Nomenclature
- ❖ Steady Flow & Diurnal Demands
- ❖ Description of Hydraulic Elements and discussion of terms
- ❖ Fundamentals of Hydraulics, Bernoulli Equation and Conservation of Mass and Energy
- ❖ Laminar and Turbulent Flows Determination of Reynolds Number
- ❖ Pipe Friction and head loss equations, Darcy-Weisbach, Hazen Williams and other equations for pipe friction flows

- Hydraulic Transients and their causes, Introduction to and analysis of Water Hammer & Pipeline Pressure Transients use of Water Hammer Spreadsheet
- Surge Tanks & Pressure reducers

DAY TWO:

- Types of pumps and their characteristics
- Critical parts of a pump- detailed analysis of parts of centrifugal and other types of pumps, including wear rings, impellers, volutes, etc.
- Analysis of pump curves, combinations, and systems
- Variable vs. Fixed speed drives
- Pumping Stations – design and analysis
- Pump Inlet Conditions design, inlet basin designs
- Pumping from aqueducts
- Standpipes, reservoirs, and elevated storage tanks
- Booster Pumps
- Specific Speed and Affinity Laws

DAY THREE:

- Pump bases and mountings
- Vibration
- Retrofitting existing system with new pumps
- Design considerations
- Cavitation and other things which damage a pump
- Analysis of pumping curves and ranges, checking performance
- System Head curves and Best Efficiency Points

DAY FOUR:

- Analysis of Minor Losses and How to set up a network
- Skeletonization and simplification of systems
- Introduction to computer analysis of systems
- Revisiting Hazen-Williams and Darcy Equations and their application to computer network analysis
- Setting up a network and modeling a network
- EPANET and other programs- example and computerized systems
- Age of the water in the system

DAY FIVE:

- Water Chemistry and contaminants
- Disinfection and deterioration of water quality, water age
- Cleanout and repair of water systems
- Bacterial Quality of Water and challenges
- Carbonate Chemistry of Water.
- Langelier Saturation Index - “Hungry” Water leads to pipe breaks
- Pipe strength and materials selection
- Course Conclusion
- POST-ASSESSMENT and EVALUATION

Training Methodology:

This interactive training course includes the following training methodologies as a percentage of the total tuition hours:

- 30% Lectures, Concepts, Role Play
- 70% Workshops & Work Presentations, Techniques, Based on Case Studies & Practical Exercises, Gamification, Software & General Discussions
- Pre and Post Test

Training Certificate(s):

CMCT Internationally recognized certificate(s) will be issued to each participant who completed the course.

Training Fees:

TBA as per the course location - This rate includes participant's manual, hand-outs, buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

Note: The 5% VAT (Value Added Tax), will be effective starting 01st of January 2018 as per the new regulation from the UAE Government. The VAT applies for all quotation both for local and abroad.

Training Timings:

Daily Timings:

07:45 - 08:00	Morning Coffee / Tea
08:00 - 10:00	First Session
10:00 - 10:20	Recess (Coffee/Tea/Snacks)
10:20 - 12:20	Second Session
12:20 - 13:00	Recess (Prayer Break & Lunch)
13:00 - 14:00	Last Session

For training registrations or in-house enquiries, please contact:
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