Integrated Water & Wastewater Network Design using OpenFlows WorkSuite

Course Objectives

- To provide comprehensive knowledge of Bentley OpenFlows applications for water distribution, surge analysis, and sewer network design.
- To develop practical skills in creating, analyzing, and optimizing hydraulic models using WaterCAD, HAMMER, SewerCAD, and SewerGEMS.
- To enable participants to design efficient water supply and wastewater systems based on engineering standards.
- To build competency in interpreting simulation results, troubleshooting network issues, and preparing technical reports.
- To familiarize learners with integrated workflows involving CAD, GIS, and infrastructure data management.

Course Outcomes

- Participants will be able to develop complete water distribution and sewer network models using OpenFlows software.
- Learners will perform hydraulic, transient, and capacity analyses for real-world utility systems.
- Participants will optimize pumps, pipelines, valves, and sewer networks for improved operational performance.
- Learners will generate professional engineering reports, profiles, and design documentation.
- Participants will gain confidence to apply OpenFlows tools in municipal, industrial, and infrastructure projects.

Target Audience

- Civil Engineers involved in water supply, wastewater, and utility infrastructure projects.
- Mechanical and Process Engineers working on pumping systems and hydraulic networks.
- Design Engineers, Drafting Professionals, and BIM Modelers in infrastructure sectors.
- Municipal engineers, consultants, and planners handling urban utility development projects.
- Students and fresh graduates seeking specialized skills in hydraulic and sewer network modeling.

Course Outline

The course comprises **40-hours** of theory and labs and is divided into **9** different Modules. Each chapter will be followed by hands-on lab exercises to reinforce learning and gauge understanding of the topics covered.

Table of Contents: -

5.3 Building a HAMMER Model from WaterCAD
5.4 Pump Trip and Valve Closure Simulations
5.5 Surge Protection Devices
5.6 Air Valves, Surge Tanks, Relief Valves
5.7 Interpreting Transient Results

Module 6: OpenFlows SewerCAD – Sanitary Sewer Design

6.1 Introduction to Gravity Sewer Systems
6.2 Creating Sewer Networks
6.3 Manholes, Pipes and Lift Stations
6.4 Load Generation and Population Data
6.5 Hydraulic Grade Line Analysis
6.6 Sewer Capacity Checks
6.7 Pump Station Modeling

Module 7: OpenFlows SewerGEMS – Advanced Sewer Modeling

7.1 Dynamic Sewer Simulation Concepts
7.2 Wet Weather Flow Modeling
7.3 Infiltration/Inflow Analysis
7.4 Scenario Alternatives and What-if Studies
7.5 Flooding and Surcharge Analysis
7.6 System Rehabilitation Planning

Module 8: GIS, CAD & Data Integration

8.1 Importing CAD Drawings and GIS Data
8.2 Background Layers and Terrain Models
8.3 Database Connectivity
8.4 Model Validation and Cleanup
8.5 Exporting Reports and Drawings

Module 9: Design Reports & Deliverables

9.1 Creating Profiles and Thematic Maps
9.2 Quantity Estimation and BOQ Support
9.3 Hydraulic Reports and Summaries