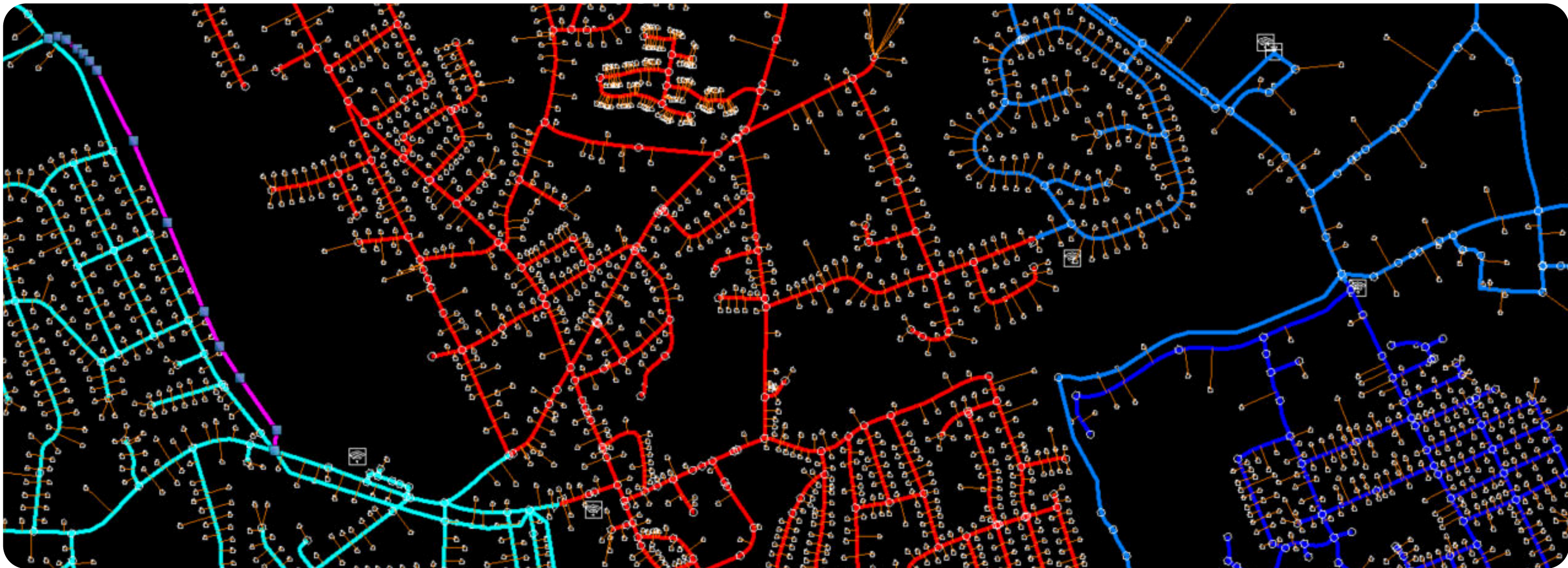
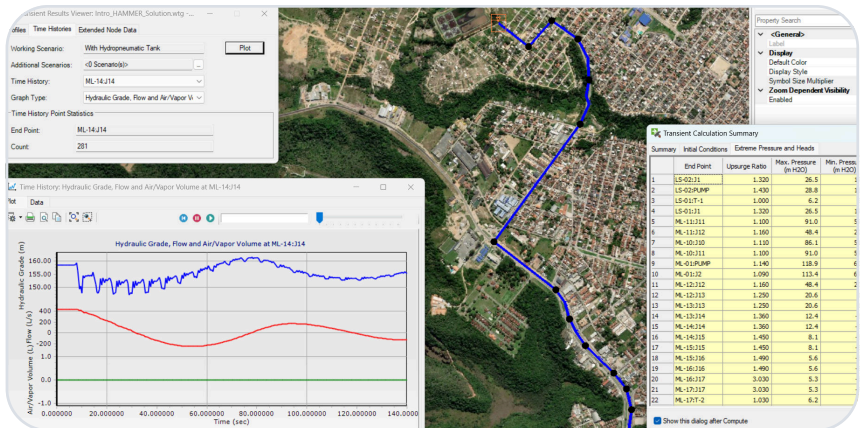


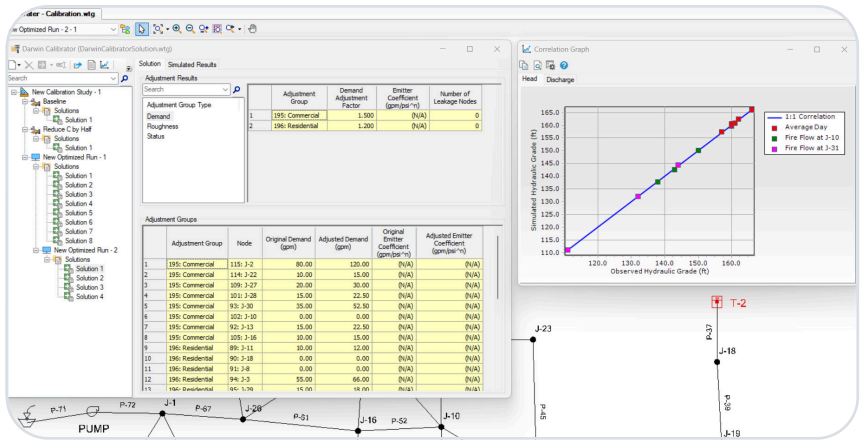


OpenFlows™ Water

Water distribution system modeling and management



Identify, manage, and mitigate the risks associated with transients to prevent catastrophic water failures.



Perform multiple hydraulic modeling scenarios for a variety of “what-if” conditions.

Plan, design, and operate water distribution systems quickly and easily

OpenFlows Water is a hydraulic modeling application trusted by thousands of engineers to understand the behavior of their water distribution systems and make better, more informed decisions. The application helps with planning, analyzing, and designing sustainable water systems, as well as solving everyday operational challenges. OpenFlows Water offers reliable, versatile, and easy-to-deploy hydraulic analysis solutions, including advanced AI-powered assistance to efficiently design or rehabilitate pipes, calibrate networks, locate leaks,

and improve pump energy efficiency. OpenFlows users benefit from Bentley’s superior support, learning resources, and value-added services.

Seamless interoperability and modeling

Whether as a stand-alone application or directly within your preferred MicroStation®, AutoCAD, or ArcGIS environment, OpenFlows Water allows you to efficiently build your hydraulic model by synchronizing network data from standard formats, such as GIS and CAD files, databases, and spreadsheets. Full support for the industry-standard EPANET file format ensures effortless model exchange, while live connections to SCADA data minimize system disruptions by providing a realistic view of current operational conditions. Workflows are further streamlined with coordinate system reprojection capabilities, removing the need for third-party tools. Furthermore, OpenFlows Water connects your hydraulic models to Bentley Infrastructure Cloud™, where they can be viewed in 3D alongside other designs and asset data as part of a connected digital twin.

Scenario management

Perform multiple hydraulic modeling scenarios using alternative data sets to simulate the system under a variety of "what-if" conditions, including different demands, master planning horizons, operational strategies, or possible designs. In master planning, you can easily configure model runs to include only assets that will be in service in a selected year. The multiple scenario annotation capability makes it easier to visualize and present comparisons of different simulation results directly on your model.

AI-powered insights and performance

Advance how you interact with your hydraulic model with Bentley Copilot, an AI assistant. Converse with the AI to interrogate model data, launch commands, and perform edits using natural language to dramatically streamline daily workflows. Beyond interactive assistance, leverage the power of genetic algorithms to make smarter decisions faster. Automatically identify the most cost-effective pipe designs and rehabilitation strategies with Darwin® Designer, ensure model accuracy with the automated Darwin Calibrator, and find the best pump operating strategies to reduce energy costs with Darwin Scheduler.

Surge protection and transient analysis

Transient pressures (water hammer) can cause catastrophic damage to pipes and equipment, endanger operators, introduce dangerous contaminants into the system, and interrupt service to customers. Perform transient analyses to identify, manage, and mitigate the risks associated with transients to prevent catastrophic water failures with both design and operational measures.

Advanced results and reporting

Clearly communicate project outcomes and drive decisions with a wide array of result visualization tools. Use thematic mapping, dynamic graphing, and contour plots to interpret results. The new multiple scenario annotation feature allows for easy side-by-side comparisons, while direct export to MS Office streamlines reporting workflows. Tools like graphing, color coding, annotations, flex tables, profiles, queries, and contours make viewing and presenting results powerful.

System requirements

Minimum: Windows 10, 11, or Server, 8GB RAM. OpenFlows Water can run as a stand-alone application, or within MicroStation, ArcGIS Pro, and AutoCAD.
Recommended: 16GB RAM

OpenFlows Water at-a-glance

OpenFlows Water includes the capabilities of WaterCAD®, WaterGEMS®, and HAMMER®. The software is licensed in four convenient tiers. See the [comparison checklist](#) to decide the tier that best suits your project and analysis needs.

Interoperability and graphical editing

- Run standalone or within MicroStation, AutoCAD, or ArcGIS Pro
- Streamlined Controls Editor in table format
- Element morphing, splitting, and reconnection
- Scaled, schematic, and hybrid environments
- Multiple background layer and Google map support
- Connects water models to Bentley Infrastructure Cloud for 3D visualization and cross-discipline collaboration
- Optimized graphical display for easier navigation of large models

Model building and design connection

- DGN, DXF, spreadsheet, database, Oracle Spatial, and ODBC connections
- ArcGIS Online*, shapefile, geodatabase*, Geometric Network*, and SDE* connections (*when running within ArcGIS Pro)
- GIS-ID property to associate records in data source/GIS and elements in the model
- SCADAConnect® unlimited signal pack for live connections, customer meter, and lateral link elements (no need to split pipes)
- Automatic demand allocation from GIS data (e.g., point or polygon loads, population, land use, and customer meters)
- Daily, weekly, monthly, and superimposed demand patterns
- Unaccounted-for water and leakage estimation
- Area, count, discharge, and population-based unit demands
- Elevation extraction from DEM, TIN, shapefiles, CAD drawings, surfaces, and raster files
- Series, parallel, branch-trimming, and multicriteria automated skeletonization of pipes
- Automated model skeletonization and support for isolation valves
- User data extensions, including formula-based
- Sync in to update a model, or sync out to an external file
- Automatic coordinate system detection and reprojection for external data sources
- Support for text string output from user data extensions

Scenario and model management

- Manage unlimited scenarios, sub-models, and custom engineering libraries
- Analyze models with statistical analysis, dynamic and static selection sets, and change tracking
- Local and global engineering units management
- Ensure model integrity with drawing review, automatic topology review, and queries for orphaned nodes or dead-end pipes

Hydraulics, operations, and water quality

- Steady-state and extended-period simulations
- Tank mixing analysis
- Water age analysis
- Water loss analysis
- Water quality batch run
- Source tracing
- Fire flow analysis
- Rule-based or logical controls
- Variable-speed pumping
- System head curves and combination pump curves
- Net positive suction head analysis
- Pump and turbine energy and energy cost analysis
- Carbon emission calculation
- Capital cost calculation
- Override of pump and valve controls using historical SCADA data
- Real-time modeling
- Emergency response simulations for pipe breaks, power outages, fires, and pipe shutdowns
- Criticality analysis for pipes and valves
- Shutdown planning
- Leakage and sprinkler modeling
- Pressure-dependent demands
- Conventional and unidirectional flushing simulations
- Control valves and air release valve elements
- Top-fill tank element
- Pressure zone automated identification and management
- Support for district metered area (DMA) design
- Constituent concentration and multispecies water quality analysis
- Populate water quality initial conditions from previous scenario results
- Zone trace query to limit trace analysis to a specific pressure zone or DMA
- Enhanced flushing event management with support for rearranging and relabeling events

AI assistance and system performance

- Bentley Copilot (AI assistant)
 - Natural language model interrogation
 - Launch ribbon commands via text prompts
 - Perform basic model editing and scenario creation
 - Integrated "How do I?" help and documentation search
- System analysis and design
 - Pipe vulnerability rating with the Pipe Renewal Planner
 - AI-powered model calibration and leak detection in Darwin Calibrator
 - AI-powered pipe sizing, design and rehabilitation using genetic algorithms in Darwin Designer
 - AI-powered pump schedule optimization using genetic algorithms in Darwin Scheduler

Transient simulation and analysis

- Hydraulic transient force computation
- Support for multiple what-if scenarios
- Detailed results along entire pipe length using a method of characteristics algorithm
- Synchronized maps, profiles, and point history visualizations
- Supports all hydraulic elements and multiple simultaneous transient sources
- Analysis of impacts of rapid demand and/or pressure changes
- Modeling of surge protection equipment. Multiple supported transient friction methods: steady, quasi-steady, unsteady, or unsteady (Vitkovsky)
- Automated element validation
- Wave speed calculator
- Air valve orifice diameter calculator tool
- Option to treat air valve as a junction during transient analysis
- Simultaneously export multiple transient profile results to CSV

Results presentation

- Thematic mapping with property-based color coding, symbology, and annotations
- Dynamic, multiparameter, and multiscenario graphing
- Scenario and element comparison
- Contour mapping
- Advanced tabular reporting with FlexTables
- Creation of Google Earth (KML) files
- Video recording of results animation
- Customizable reports
- Multiple scenario annotation for side-by-side visual comparison of different scenarios
- Direct export to MS Office for streamlined reporting workflows

Find out more at Bentley.com
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Global office listings: [bentley.com/contact](#)

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