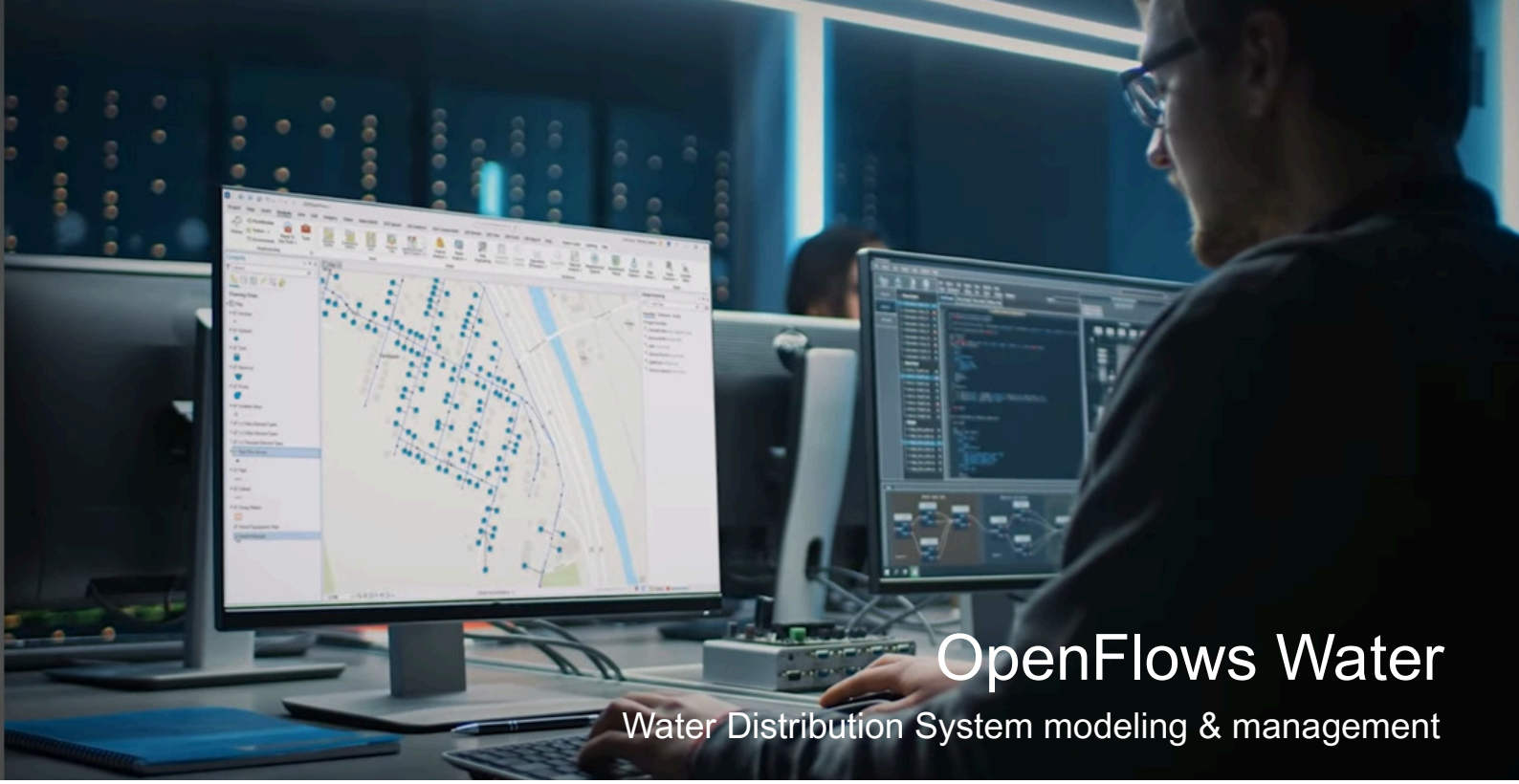


OpenFlows Water

Water Distribution System modeling & management

Rencanakan, rancang, dan operasikan sistem distribusi air dengan cepat dan mudah.

OpenFlows Water adalah aplikasi pemodelan hidraulika yang dipercaya oleh ribuan insinyur untuk memahami perilaku sistem distribusi air dan mendukung pengambilan keputusan yang lebih baik. Aplikasi ini membantu perencanaan, analisis, dan desain sistem air yang berkelanjutan, sekaligus menyelesaikan tantangan operasional sehari-hari. Solusi ini menyediakan analisis hidraulika yang andal, fleksibel, dan mudah diterapkan, termasuk bantuan berbasis AI untuk desain atau rehabilitasi pipa, kalibrasi jaringan, deteksi kebocoran, dan peningkatan efisiensi energi pompa.

Interoperabilitas dan Pemodelan

Dapat digunakan sebagai aplikasi mandiri maupun terintegrasi dengan MicroStation, AutoCAD, dan ArcGIS. Mendukung sinkronisasi data GIS, CAD, database, spreadsheet, format EPANET, koneksi SCADA, reproyeksi sistem koordinat, serta Bentley Infrastructure Cloud untuk visualisasi 3D dan digital twin.

Manajemen Skenario

Mendukung berbagai skenario "what-if" untuk mengevaluasi perubahan kebutuhan air, strategi operasi, horizon master plan, maupun alternatif desain sehingga memudahkan perbandingan hasil simulasi

Insight Berbasis AI

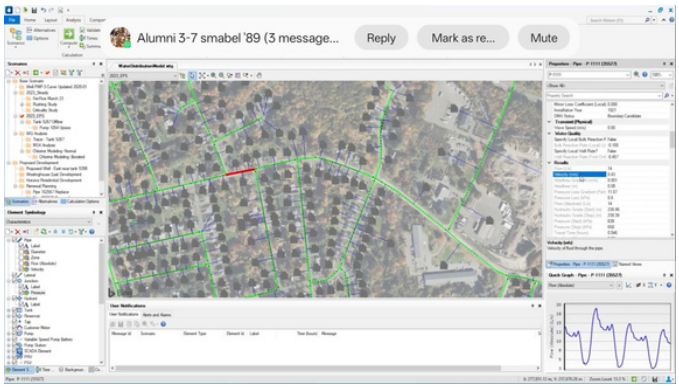
Bentley Copilot membantu analisis model, menjalankan perintah, dan melakukan pengeditan dengan bahasa alami. Darwin Designer, Darwin Calibrator, dan Darwin Scheduler membantu optimasi desain pipa, kalibrasi model, deteksi kebocoran, dan efisiensi pompa.

Analisis Transien (Water Hammer)

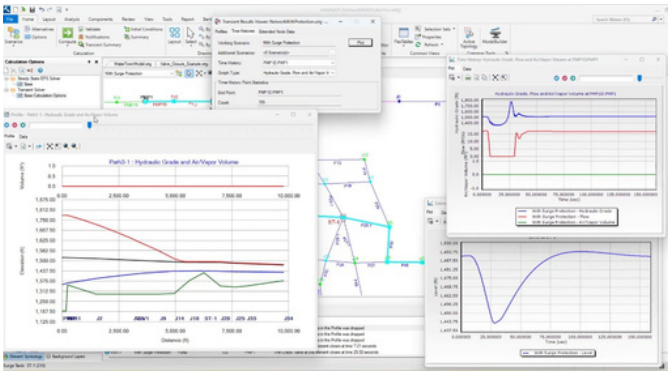
Menganalisis tekanan transien untuk mengidentifikasi, mengelola, dan mengurangi risiko kerusakan pipa serta gangguan layanan.

Visualisasi dan Pelaporan

Menyediakan thematic mapping, grafik dinamis, contour plot, anotasi multi-skenario, serta ekspor langsung ke Microsoft Office untuk pelaporan yang lebih efektif.



Identifikasi, kelola, dan kurangi risiko yang terkait dengan transien untuk mencegah kegagalan yang parah.



Beragam analisa seperti Hammer & Transien dapat dilakukan dengan mudah dalam OpenFLows Water

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PERSYARATAN SISTEM

MINIMUM: Windows 10, 11, dan Server, RAM 8GB. OpenFlows Water berjalan tanpa batasan platform sebagai aplikasi mandiri. Aplikasi ini juga berjalan di ArcGIS, ArcGIS Pro, Microstation, dan AutoCAD. DIREKOMENDASIKAN: RAM 16GB

KHN

OpenFlows Water at a Glance

OpenFlows Water includes the capabilities of WaterGEMS, WaterCAD, and HAMMER. The software is licensed in four convenient tiers. You can choose the best suits for your project & analysis needs.

INTEROPERABILITY & GRAPHICAL EDITING

- Run standalone and within :
  - ArcGIS, ArcGIS Pro (Esri license required)
  - AutoCAD (AutoCAD license required)
  - MicroStation
- Streamlined controls editor in table format
- Element morphing, splitting, & reconnection
- Scaled, schematic, and hybrid environments
- Multiple background-layer and Bing map support
- Connects water models to Bentley Infrastructure Cloud for 3D visualization and cross-discipline collaboration

MODEL BUILDING AND DATA CONNECTION

- DGN, DXF, spreadsheet, database, Oracle Spatial, & ODBC connections
- ArcGIS Online*, shapefile, geodatabase*, Geometric Network*, & 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, 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, and CAD drawings and surfaces
- Series, parallel, branching, and multicriteria automated skeletonization of pipes
- Automated model skeletonization and support for isolation valves
- User data extensions, including formula-based text
- Sync to update a model or sync out to an external file

SCENARIO AND MODEL MANAGEMENT

- Comprehensive unlimited scenario management
- Custom engineering libraries
- Statistical analysis
- Dynamic and static selection sets
- Local and global engineering units management
- Sub-model management
- Drawing review capabilities for connectivity consistency
- Automated topology review
- Orphaned nodes and dead-end pipe queries
- Change tracking

HYDRAULICS, OPERATIONS, AND WATER QAULITY

- Steady-state and extended-period simulations
- Constituent concentration and multispecies water quality analysis
- 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
- NPSH 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
- Leakage and sprinkler modeling
- Pressure-dependent demands
- Conventional and unidirectional flushing simulations
- Control valves and air release valve elements
- Top-fill tank element
- Preasure zone automated identification and management
- Support for DMA (District Metered Area) design
- Constituent concentration and multispecies water quality analysis
- Populate water quality initial conditions… from previous scenario result.
- 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

OpenFlows™

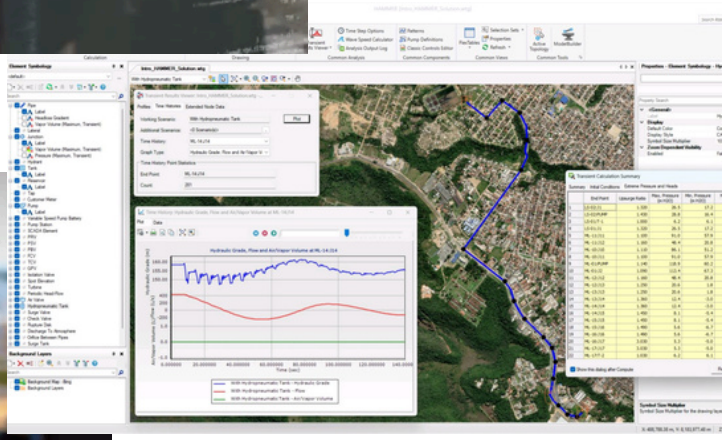
Bentley Channel Partner

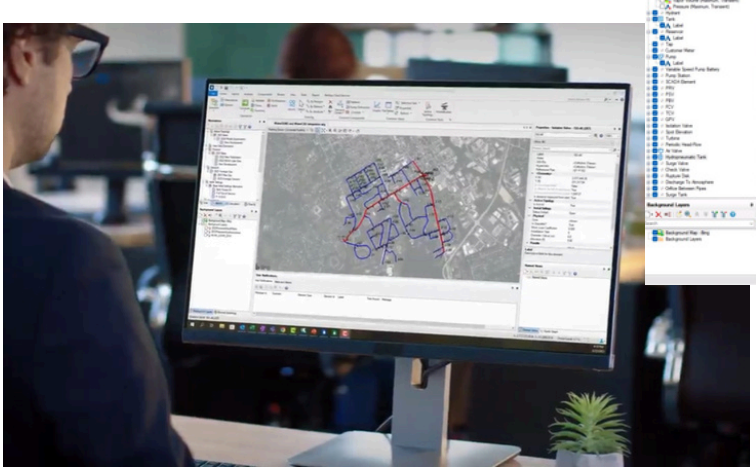
TRANSIENT SIMULATION AND ANALYSIS

- 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 scenarios
- 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

RESULT 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





Ketika sistem distribusi air semakin kompleks, Perusahaan membutuhkan lebih dari sekadar desain model & simulasi hidraulika. ***OpenFlows WaterGEMS*** *menghadirkan platform lengkap untuk perencanaan, analisa, optimasi, monitoring, dan pengelolaan jaringan air minum mendukung era Digital Twin.*