PRODUCT DATA SHEET

Bentley
Advancing Infrastructure

CONNECT Edition

OpenFlows™ WaterSight™

Real-time System Insights for Water Supply and Distribution Infrastructure

OpenFlows WaterSight brings SCADA, GIS, hydraulic modeling, and customer information into a connected data environment, delivering cost-effective operations strategies in real time. A scalable environment provides your entire utility access to critical system and individual asset performance information, observed from measurements and analytically derived, which enhances operations, maintenance, and decision-making.

Powered by a single water infrastructure digital twin, the application alerts you to nonperforming assets or anomalous network conditions, as well as efficient analysis of present, historic, and forecasted performance for all assets. You can confidently share detailed visuals of current asset and network performance in context with similar assets or with historical performance, as well as evaluate the expected benefits and consequences of operational and maintenance actions.

Actionable Insights for the Entire Utility

Whether you are an operator, system manager, engineer, or a network modeler, you need to work in an environment that integrates federated data spread across multiple systems with the power of real-time analysis. OpenFlows WaterSight connects all data sources and creates a continuous, consistent digital representation of your operated assets. The solution's browser-based portal provides an easy framework to visualize and communicate with stakeholders from any device. Your entire team can quickly identify system inefficiencies and anomalous events, track system performance over time, make more-informed decisions, and drive high-quality, consistent, and cost-effective service levels immediately as well as in the future.

Moving Beyond SCADA Results

As an operator, your insights are no longer limited by the number and location of sensors. You can readily monitor various parameters at any point in the system. OpenFlows WaterSight visualizes current data in the context of historical trends. Thematic displays provide visual cues on the normal operating ranges as well as indicate when recorded data points are outside of normal operation.

With OpenFlows WaterSight, you can investigate the real-time performance for each asset using an embedded hydraulic model that is continually updated with boundary conditions from sensors. Any parameter that can be computed with the hydraulic model can therefore be simulated and monitored in real time without the need to separately open, set up, and run hydraulic modeling software. This enables graphical indication of current pressure, velocity, water age, and other characteristics for every asset in the system, providing instant detection of areas in need of intervention to improve service levels or minimize potential issues.

Proactive Network Management

OpenFlows WaterSight computes up to one week of demand forecasts for each sensor or district metered area by combining machine learning algorithms with advanced data analytics. Zone demand forecasts, along with other initial conditions from other sensors, can also be used as boundary conditions for the model runs, empowering you with more reliable insights and support toward a more proactive system operation.

Identify Where Your Water Is Going and at What Cost

OpenFlows WaterSight helps reduce nonrevenue water using live water audit calculations. You can compare overall production against metering data to estimate how much water was lost, both in quantity and percentage. The application also performs automated evaluation of nightly minimum flows, enabling you to identify the location and quantity of nonrevenue water. This auditing is available for individual zones or the entire network, which allows you to detect when a problem occurred or determine the effectiveness of mitigative actions. You can also improve energy efficiency by leveraging real-time analyses of each pump and tank, with alerts that tell you when performance is outside of service thresholds.

Early Warning and Emergency Management

OpenFlows WaterSight improves your awareness of anomalous network events such as leaks, bursts, and meter failures, contributing to reduced response times and subsequent operational cost reduction. By incorporating a real-time anomaly detection system, OpenFlows WaterSight can automatically trigger alerts whenever real data is outside the expected operational behavior. Volumes lost in each event are automatically computed, allowing you to manage those events with status updates, category classifications, and comments.

Hydraulic modeling experience is not required to use OpenFlows WaterSight. Whether you are in the field or control room, your entire team can evaluate current network performance as well as various what-if scenarios when quick decisions are needed due to a fire, pipe break, pump outage, or other time-critical events, and demonstrate the impact of actions to service levels and customers throughout the network.

Connected Data Environment

OpenFlows WaterSight leverages a connected data environment that provides a cloud-provisioned open framework for collaboration and asset information management throughout the lifecycle of water infrastructure. The connected data environment ensures the accuracy and availability of system data at every stage of the asset lifecycle, allowing faster project startup, streamlined workflows, improved standard adherence, reduced risk, more informed decisions, and increased asset performance.

System Requirements

Minimum
600 x 900 resolution
Windows 8.1
Internet connection

Recommended
8 GB of RAM
1920 x 1080 resolution
Windows 10

Browser Compatibility
Current version of Google Chrome, Mozilla Firefox, or Microsoft Edge

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OpenFlows WaterSight At-A-Glance

Network Monitoring
- Real-time monitoring of flow, pressure, level, and other measured variables
- Defines zones flow as a combination of inflows, outflows, and storage sensors
- Real-time monitoring of zones flow
- Graphical, thematic view of measured data
- Navigation in the time-series history
- Trend charts showing measurement points overlaid upon expected behavior and patterns
- Demand forecasts for any sensor and zone up to one week
- Side-by-side comparison of trend charts for multiple sensors
- Minimum nightly flow monitoring
- Filling data gaps
- Tabular data of measurements with view and export options

Water Audit
- Computed water balance audit based on production and billing data
- Audit computation customizable by time frame and zone
- Automatic division between real and apparent losses
- Graphical comparisons of the water balance components for multiple zones
- Water balance components evolution along time for any zone
- Automatic calculation of key performance indicators- minimum night flow per connection and ratio between minimum and average flow
- Background leakage comparison between different zones

Pump Performance and Energy Management
- Individual pump and/or total pump station performance evaluations in terms of best operation point, energy efficiency, and energy cost
- Pump operation comparisons over historical time periods
- Variable speed pumps performance assessment

Tanks assessment
- Trends in tank operation
- Low- and high-level alerts
- Calculation of turnover time and mix performance ratio

Event Management and Emergency Response
- Automatic alerts generated for sensors or zones based on user-defined rules
- Volume lost calculation and duration for each event
- Events management- update status, category, and edit comments
- Events highlighted in the sensor or zone graphs
- Ability to add manual events
- Define and analyze impacts of events like pipe breaks, fires, and pump shutdowns

Real-time Simulation
- Automated background run of hydraulic model using real-time boundary conditions from SCADA
- Graphical, thematic display of modeling results for hydraulic grade line (HGL), pressure, flow, velocity, water quality, and other characteristics
- Real-time model results assessment with 24 hours forecast
- Trend chart of current and projected results
- Automatic calculation and adjustment of demand patterns for forecasting
- Hydraulic model for offline analysis

Easy Administration
- Set alerts for anomalous conditions
- Incorporate new sensors, pumps, tanks, or zones into the system
- Customer billings and numerical model upload option
- Customizable general settings
- Manage users and access to cloud application
- Customizable definition of thematic displays for all users
- Refresh/modify links to external data
- User-customizable reports with Power BI

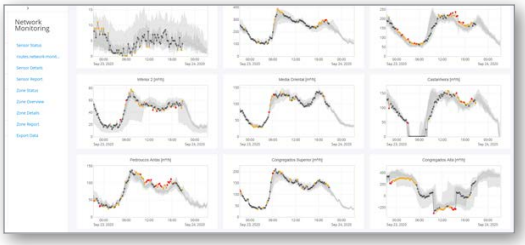

Figure 1. Network monitoring dashboard – real-time general over-view of all sensors and zones.

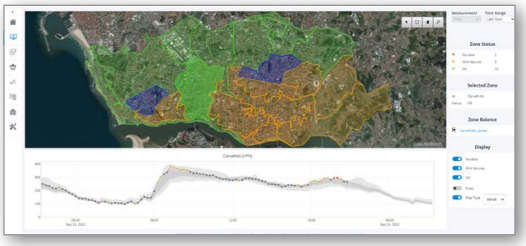

Figure 2. Zone status dashboard – real-time analysis of flow data availability for each zone.

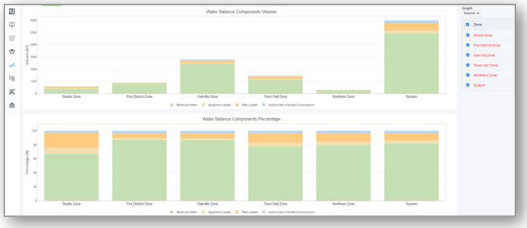

Figure 3. Compare water balance volumes and the related costs associated between different zones.

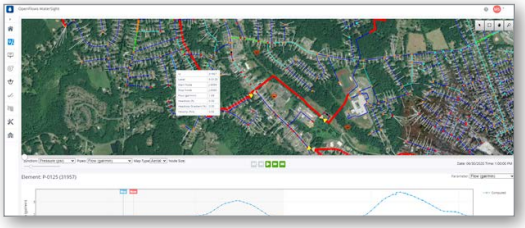

Figure 4. Access to an integrated view of the entire system where the hydraulic model data is integrated with SCADA data.

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