



EcoStruxure Water Cycle Advisor – Water Simulation

The digital twin for managing your water supply network.

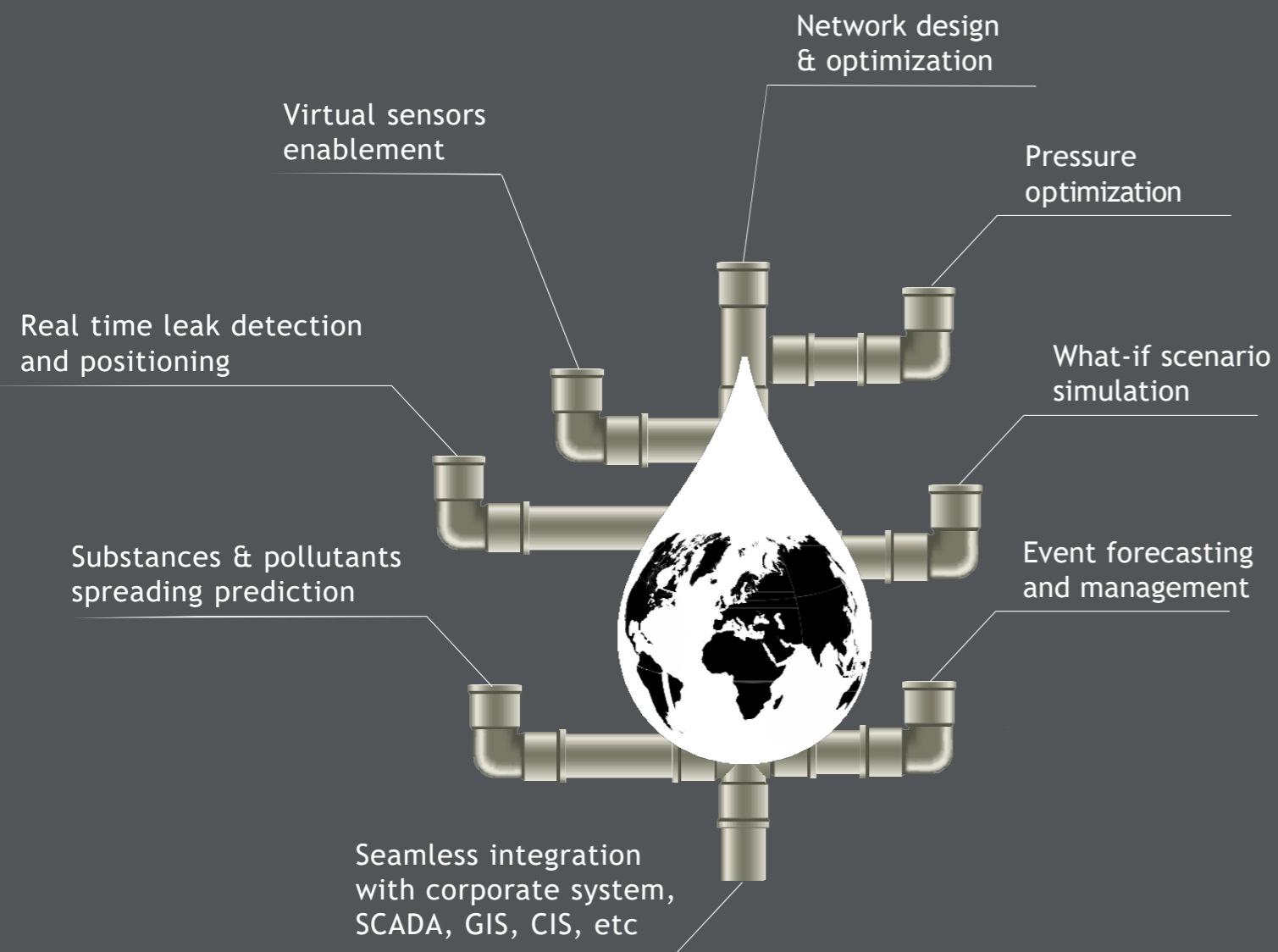
EcoStruxure™ Water Simulation is the digital twin for designing, operating and optimizing your water supply network. EcoStruxure™ Water Simulation forecasts the behaviour of the water supply network, and anticipates the impact of planned and unplanned events before they happen. By using real-time data, EcoStruxure Water Simulation considers the ever-changing condition of the network, so your actions are always based on the most updated situation.

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Life Is On

Schneider
Electric

Water utilities worldwide use Schneider Electric's Digital Twin for designing, operating and optimizing their water supply networks



A challenging future

Without real-time intelligence on operational performance, network status and customer demand, it is a challenge for water utilities to react swiftly to changes in these conditions.

Many utilities have invested significantly in SCADA systems. This allows for partial monitoring of the network, however, it does not provide knowledge of what happens to the water once it leaves the waterworks nor the option to proactively forecast the impact of changes in conditions on the distribution network.

Deteriorated water quality due to aging distribution pipelines and depleting water sources represents another major challenge of today's water utilities.

Non-Revenue Water (NRW), has a negative financial impact on water utilities, water resources and, subsequently, on the level of service and quality of the water itself.

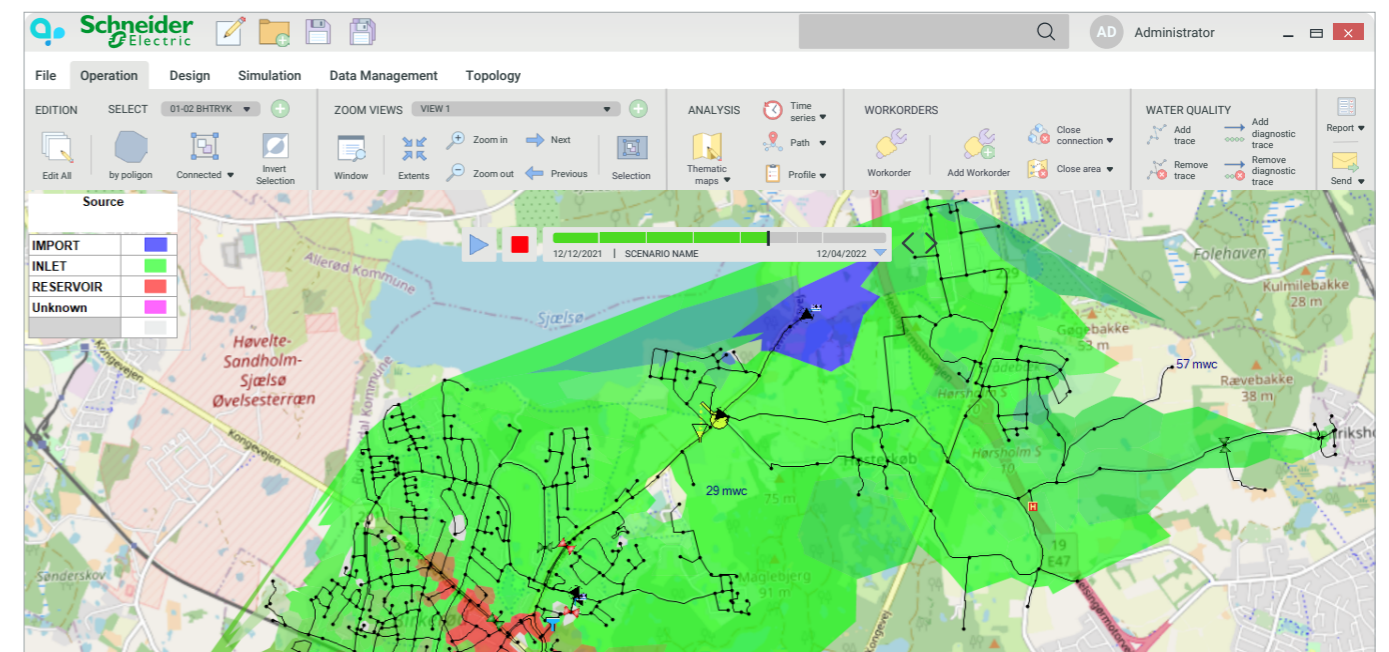
Regulatory standards are becoming more and more challenging to live up to and require extensive documentation – to the point of requiring contingency plans for the unexpected.

“With Water Simulation, it is now much easier to see the ramifications of the operational changes, which enables Kalundborg Forsyning to act swiftly and efficiently based on real-time data.”

Nurudeen Adeyinka Salau
Project Manager

“We can trace contaminations accurately both forwards and backwards in the network, and to us it is an indispensable tool.”

VandCenter Syd



“Today we can hardly do without Water Simulation. Water Simulation gives us certainty and precise answers, and consequently we have a surety that is invaluable in everyday life.”

Erling Nissen,
Senior Network Specialist

“Previously, most decisions were made based on hunches rather than facts. With Water Simulation, this has changed completely.”

Frits Klemmensen
Engineer

EcoStruxure Water Simulation can help you confront these challenges

EcoStruxure Water Simulation is a **digital twin which includes an hydraulic modeling engine** able to simulate the flow and the pressure among many other hydraulic variables (head, pressure gradient, velocity, etc.) in your distribution network. Unlike other tools, EcoStruxure Water Simulation extends the engine calculation capabilities with a powerful, strong and structured **custom formula editor**, allowing operators to create custom indicators for what they want to really focus on. Additionally, unlike other tools, it includes a **powerful data manager able to handle thousands of SCADA tags in seconds** making available all the information in your SCADA for analyzing and tracking the current situation, enabling operators to make better and smarter decisions to optimize production and enhance economic performance.

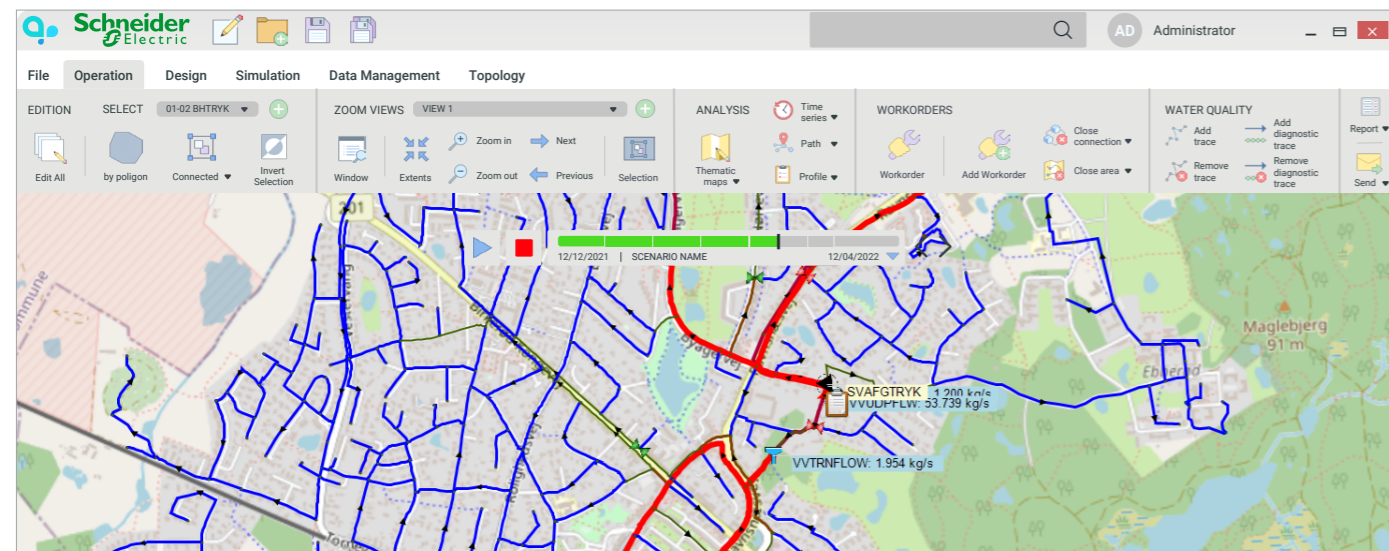
Improved network overview

EcoStruxure Water Simulation integrates easily and cost effectively with any corporate application (SCADA, GIS, CIS etc.), empowering you by providing an effective and comprehensive overview of your entire network and operation.

Real-time SCADA data transforms the EcoStruxure Water Simulation model from a static planning tool into a dynamic decision-making tool, integrated in your day-to-day operation and with instant, clearly identified benefits and economic advantages.

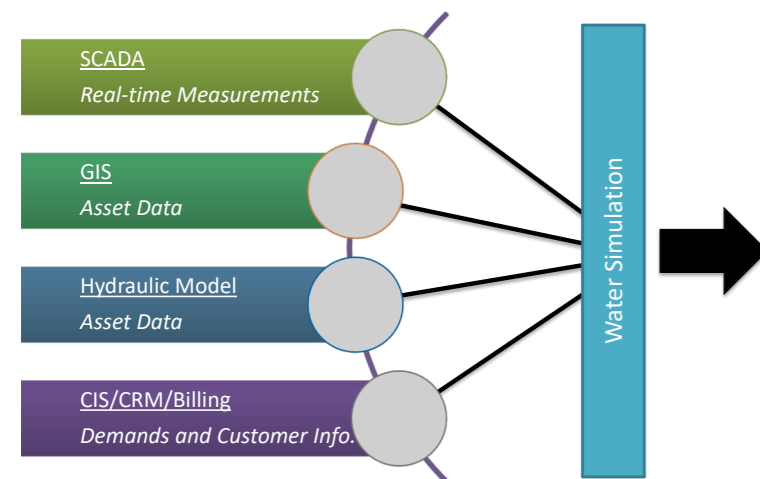
“Very early in the implementation phase we have managed to get an overview of the digital twin that has revealed errors in our SCADA data that we otherwise would not have been able to detect that fast.”

Esbjerg Municipality



How does it work?

GIS data along with CIS, historical and real-time data from the SCADA, demand forecasts, etc. are fed into the EcoStruxure Water Simulation, where these are used to build and keep up to date the network's digital twin.



An **intuitive and brand new interface**, built based on the insights of water network operators, makes available in one click our digital twin functionality:

- Overview and predict your network's evolution. Forecast events and test how to manage them.
- Access and visualize different areas, sections, supply zones and any details of the network.
- Configure and forecast the outcome of network interventions such as supply changes, opening or closing of valves, starting or stopping of pumps and plants, hence, visualizing and assessing the impact on consumer supply.
- Track the water source, age, and substances concentration evolution through the entire network, getting an at-a-glance overview.
- Dimension your network according to current and future needs. Make informed decisions based on a predictive analysis.

Schneider Electric's Digital Twin in figures

+ 90 references worldwide

+ 1.5 millions of m³ distributed hourly

+ 50 real-time implementations

EcoStruxure Water Simulation – the intuitive digital twin for managing your water supply network

With EcoStruxure Water Simulation, unleash the potential of every employee in the utility to serve your customers better thanks to its improved performance and usability.

Are you tired of using powerful engineering tools, where there was no room for the user experience? EcoStruxure Water Simulation digital twin provides a **fully customizable graphical user interface** which has been design and implemented by water distribution and IT professionals.

Are you focused on network operation activities? Water Simulation allows you to operate the network with safety forecasting the network behaviour thanks to the **what if scenatio simulation capabilities**. It includes a dedicated menu focused on operators needs.

Are you focused on network design tasks? Our digital twin includes a menu focused on planners needs, which allows you to design your network to meet future demands, avoid bottlenecks and comply with regulations. And, at the same time, to **optimize your investment with predictive analytic tools**, improving your service level, the customer satisfaction and reducing operating costs.

The screenshot shows the EcoStruxure Water Simulation software interface. At the top, there is a menu bar with options like File, Operation, Design, Simulation, Data Management, and Topology. Below the menu bar, there are various toolbars and panels. The main area is a map showing a water network with pipes and nodes. A time series graph is visible on the right, showing Head VS Flow and Level Evolution. At the bottom, there is a 'Generic Editor' table with columns for different nodes and rows for various parameters like Pressure, Head, Mass Flow, and Velocity.

	L-0650	L-0600	L-0115	L-0229	P-0695	L-0038	L-C
Pressure, Ups. [Pa]	666990.7	463907.5	443998.7	565686.2	604902.7	433561.3	
Pressure, Dws. [Pa]	650693.6	407279.5	355131.0	539148.9	604879.1	452414.5	
Head, Ups. [m]	102.45	80.81	80.06	79.77	80.34	96.17	
Head, Dws. [m]	102.46	80.72	80.05	79.77	80.33	95.79	
Pressure Gradient [Pa/m]	0.49	2.71	0.39	0.59	0.12	6.60	
Mass Flow [kg/s]	-0.372	0.426	0.324	-0.380	0.037	1.687	
Volume Flow [m³/s]	0.00	0.00	0.00	0.00	0.00	0.00	
Velocity [m/s]							
Mean Age [s]							
Min Age [s]							

Need to carefully select the number of SCADA tags to set your current real-time digital twin? Do not worry about the amount of real-time data or its frequency, the **new enhanced Water Simulation's data manager processes thousands of SCADA tags in seconds**.

Need to expand your digital twin capabilities? Water Simulation allows you to create **custom KPIs or formulas** with the **new custom formula editor**. It allows you to access and use as needed any information in the digital twin **by using a popular common purpose language**.

- 1 Main menu.
- 2 Custom dashboards.
- 3 Dockable component tabs. Configure, drag and pin them anywhere on the software.



EcoStruxure Water Simulation – digital twin that fits your business, not the other way around



Consumers Easy access to information

- Informed about any planned interruptions or irregularities in delivery by email or sms



Field service Always on...

- Overview of current operational status assists planning and testing
- Automatic customer notifications saves time



Call center Increased customer satisfaction

- Easy access to consumer data and geography improves handling and logging of complaints
- Display of planned changes, maintenance, etc. provides prompt and accurate information for consumers



Engineering and planning Save time

- New pipelines can be accurately dimensioned
- More effective planning can be achieved in connection with rerouting and service work
- Optimized contingency planning



Consultant specialist The best advice

- Comprehensive documentation gives a basis for accurate calculation rather than trial and error
- The correct valves can be closed and optimal pipe dimensioning assessed



Management Overview and actionable insight

- Provides the full picture
- Instant view of supply and quality
- A better understanding of the network permits more qualified decisions



Control room Quick and easy access to data

- Knowledge is stored in the network
- At-a-glance overview of current operational status for effective decision making
- Easy leakage supervision

EcoStruxure Water Simulation – Proven solution, proven results

- Improves service and reduces operating costs. On average, 25% increase in operational efficiency
- On average, our customers have reduced NRW up to 15%
- More than 30 years of experience
- Return on investment in less than 18 months

Add-on modules for further optimization

EcoStruxure Water Simulation is the basis for achieving the full overview of your network. We also offer a number of features and modules which enable you to achieve further savings on both operating costs and capital investments.

Leak Detection – Pipelines

Leak detection and leak location module for transmission pipelines. Leaks are identified based on real-time flow and pressure measurements at inlets and offtakes. When zones with leaks are identified by the leak detection system, an alarm is forwarded to the SCADA system so that action can be taken immediately to resolve the issue.

Pressure Optimization

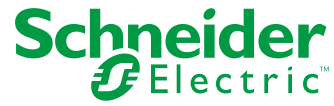
Automatically combines the information from the SCADA system and the model to provide advice for optimal pressure operation of the network. Any reduction of pressure in the distribution network will have immediate and significant impact on the leakage and burst rate in the network as well as in the energy consumption.

Pipe Criticality Coming soon

Machine Learning combined with hydraulic modeling provides accurate insights about the most critical infrastructure, which can be planned for replacement optimizing capital investments at the same time the level of service is maintained. Critical infrastructure is identified and prioritized for replacement/fixing based on its likelihood of failure and criticality.



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