EcoStruxure™
Innovation At Every Level

EcoStruxure Water Advisor – District Energy

The digital twin for managing your energy supply network.

EcoStruxure™ District Energy is the digital twin for designing, operating and optimizing your energy supply network. EcoStruxure™ District Energy reduces the utility's energy costs and usage to provide the appropriate cooling/heating service, minimize heat losses, and streamline the network operations.

Thanks to the use of our digital twin, we can provide further predictive analytics, automated dynamic optimization and control, continuous visibility and transparency, as well as AI powered intelligence, hence, offering higher efficiency and lowering temperatures on every district energy utility.

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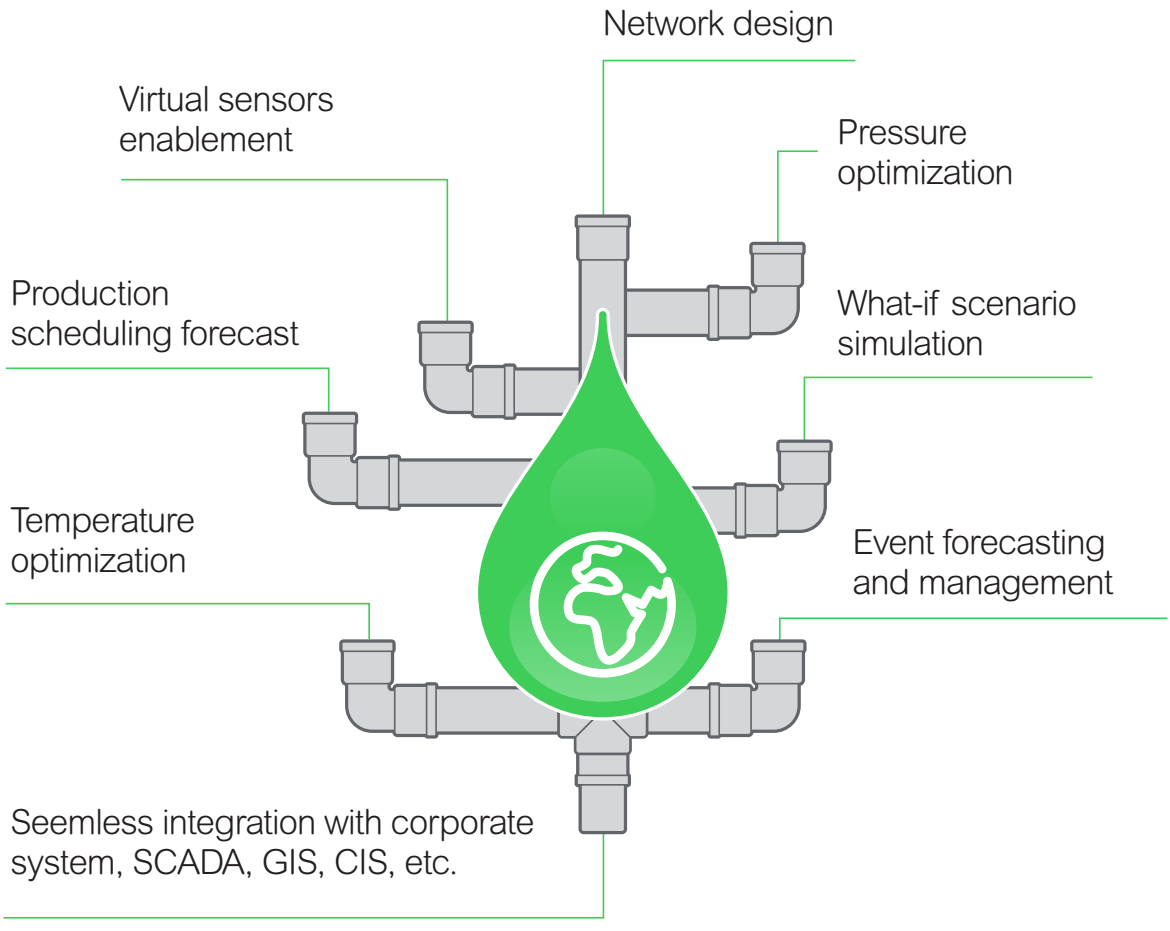
Life Is On | Schneider Electric

District energy utilites woldwide use Schneider Electric's Digital Twin for designing, operating and optimizing their energy supply networks



A challenging future

Without real-time intelligence on operational performance, network status, and customer demand, it is a challenge for District Energy 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 energy once it leaves the plant nor the option to proactively forecast the impact of changes in conditions on the distribution network.

Minimizing the energy loss in the network represents another major challenge of today's district energy utilities. Most utilities operate at a constant supply temperature despite fluctuations in demand and changing weather conditions.

Integration of multiple generating units (solar panels, wind farms, energy from geothermal, heat pumps, data centers,etc.) and changing production needs, heat/power ratio and prices.

More complex heat storage, central large-scale thermal storage, distributed thermal storage, grid storage, Borehol thermal storage of low temperature network, etc.)

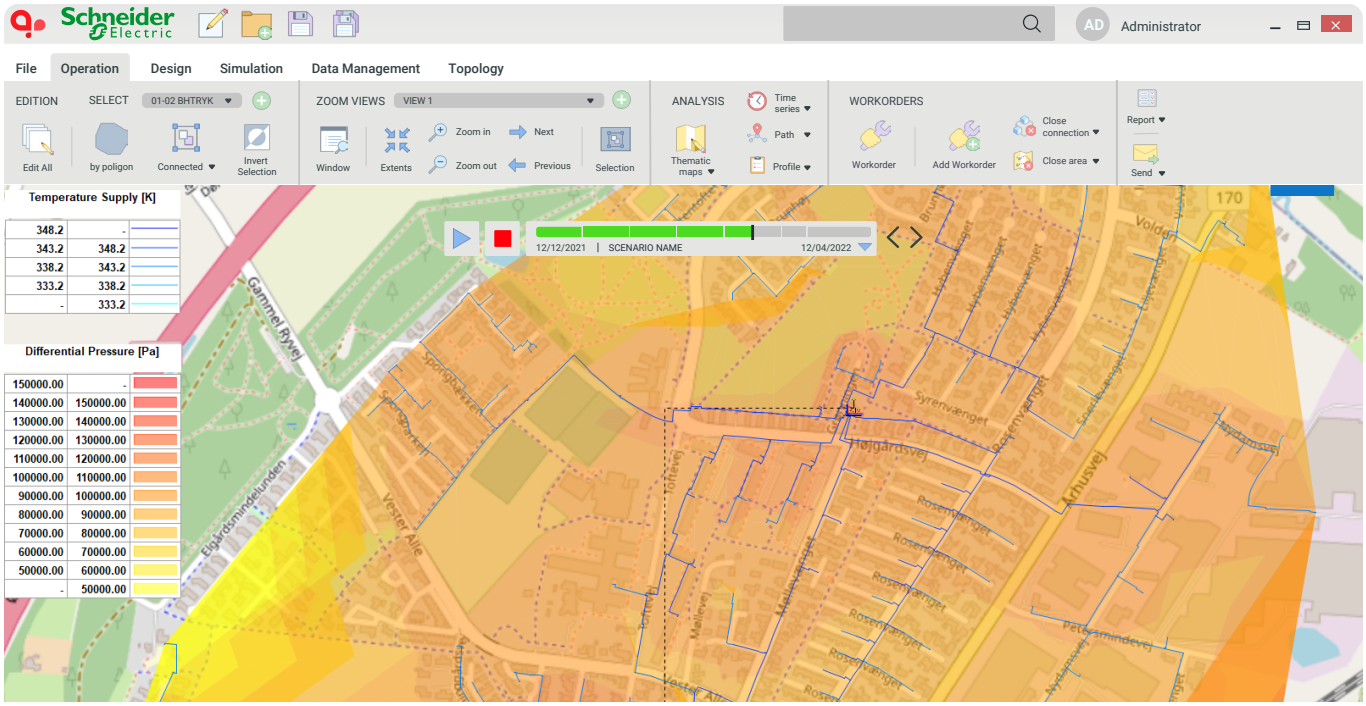
- Near zero energy buildings
- More complex heat extraction from consumers of DH systems:
  - Changing consumpton betwen heat pump and distritc heating sytem
  - Building-Integrated thermal storages
  - Demand respons heating
  - Flexible eletricty demand
  - EcoStruxure District Energy can help you confront those challenges

EcoStruxure District Energy can help you confront those challenges

EcoStruxure District Energy is a digital twin which includes an hydraulic and thermodynamic engine able to simulate flow, pressure and thermal behavior in your water or steam-based supply network. Unlike other tools, EcoStruxure District Energy extends the engine calculation capabilities with a powerful 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.

"We chose EcoStruxure District Energy as our backbone optimisation and efficiency software tool not only for thermal modeling, but also for identification and quantification of strategies for increasing efficiencies and reducing operating costs as well as cutting emission."
Juan M. Ontiveros, Executive Director of Utilities and Energy Management at University of Texas at Austin

"The future of sustainable smart local infrastructure is here! EcoStruxure Distric Heating has partnered with resolution for district heating to help reduce primary energy consumption and carbonization in line with our vision: energy for life and green future."
Zorka Mišović, Product Manager Energy Solutions Petrol



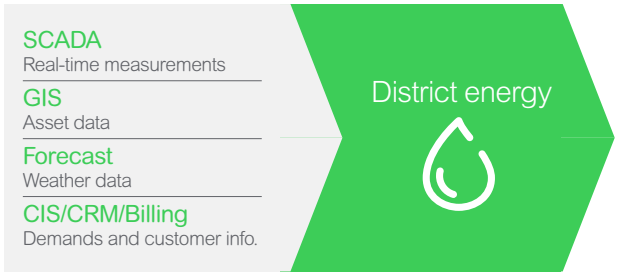
Improved network overview

EcoStruxure District Energy 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 an EcoStruxure District Energy model from a static planning tool into a dynamic decision-making tool that is integrated into your day-to-day operation with instant, clearly identified benefits and economic advantages.

How does it work?

GIS data along with CIS, historical and real-time data from the SCADA, AI load forecast, etc. are fed into the EcoStruxure District Energy, where these are used to build and keep up to date the network's digital twin.

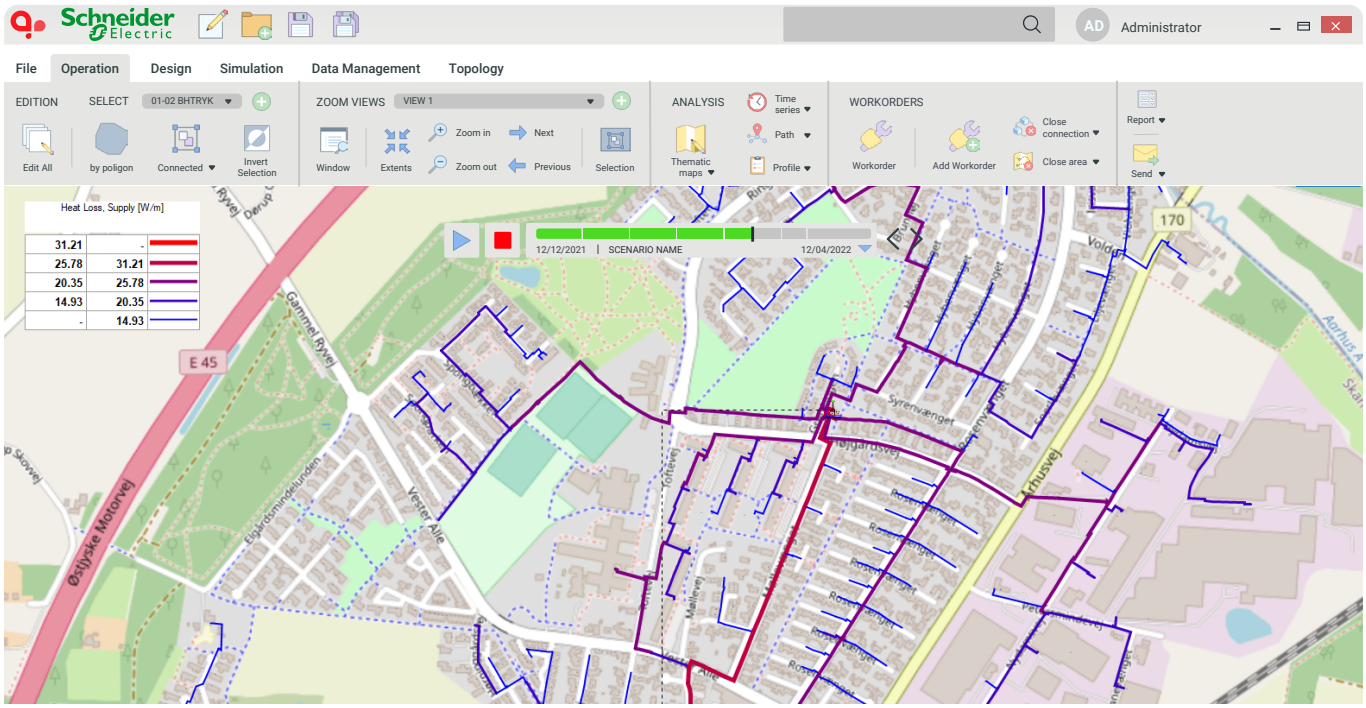


An intuitive and brand new interface, built based on the insights of distric energy network operators, makes available in one click our digital twin functionality:

- 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.
- Optimize the supply temperature aswell as its delivery, leading to a significant reduction in the loss of energy, hence, generating considerable savings.
- Dimension your network according to current and future needs. Make informed decisions based on a predictive analysis.

"After implementing EcoStruxure Distric Energy, HOFOR is saving over 1M€ per year due to lower heat loss in the network."

Daniel Lindblom, Project Manager at HOFOR



Schneider Electric – Digital Twin in figures

200
references
worldwide

85K MW
distributed
hourly

150
real-time
implementations

EcoStruxure District Energy – the intuitive digital twin for managing your District Energy network

With EcoStruxure District Energy, 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 District Energy digital twin provides a fully customizable graphical user interface which has been design and implemented by district energy operators and IT professionals.

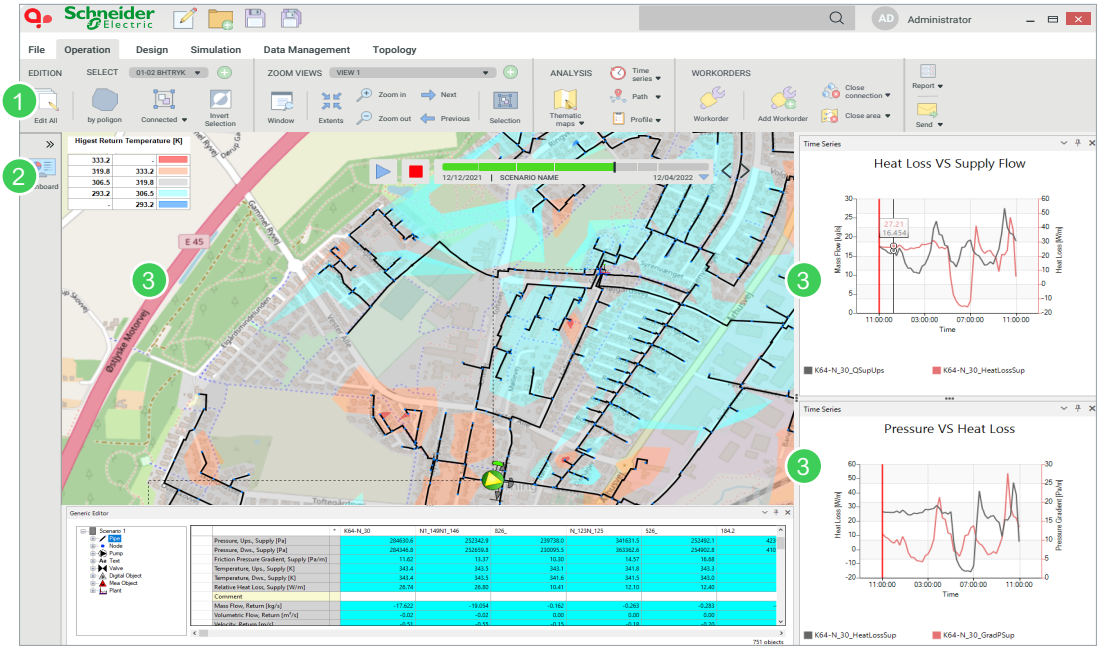
Are you focused on network operation activities? EcoStruxure District Energy allows you to operate the network with safety, forecasting its behaviour thanks to the what if scenatio simulation capabilities. It includes a dedicated menu focused on operators needs.

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.

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 EcoStruxure District Energy's data manager processes thousands of SCADA tags in seconds.

Need to expand your digital twin capabilities? EcoStruxure Distrit Energy 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.

> "EcoStruxure District Energy's Temperature optimization has proven a great success for us. We can document savings of approximately 1½ million DKK per year."
>
> PER SØRENSEN,
> Managign director HJØRRING District Heating



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

EcoStruxure District Energy – 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 save 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 piping can be accurately dimensioned
  - More effective planning can be achieved in connection with rerouting and service work
  - Optimized contingency planning
  - More accurate consumption planning with intervention simulations to assess impact

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 return temperatures
  - 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

EcoStruxure District Energy – Proven solution, proven results

- Improves service and reduces operating costs. On average, 25% increase in operational eficiency
- Our customers have reduced energy losses up to 20%
- Reduction in CO2 emmisions up to 20%.
- More than 30 years of experience
- Return on investment in less than 18 months

Add-on modules for further optimization

EcoStruxure District Energy software is the basis for achieving the full overview of your network, but we also offer a number of additional features and modules, which enable you to achieve further savings on both operating costs and capital investments.

Temperature optimization based on AI

Minimizes the operation costs within the network by automatically advising or adjusting set points for inlet temperatures, while still ensuring that all consumers have at least the minimum guaranteed supply temperature.
The accumulated energy in the network as well as changes in consumption and weather conditions are considered, and so are pumping costs and production costs. Regulation of the inlet temperature is done dynamically. Temperature Optimization typically reduces energy loss and consequently results in tangible ROI as well as reduction in CO_2 emission.

AI load forecaster

The AI Load Forecaster is a feature which relies on a Machine Learning model and provides a forecasted energy consumption in a zone in the near future.

This solution will provide the energy forecast used as input for the temperature optimization module and hence the user will not have to look for third parties to provide this service.

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