



PROJECT SUMMARY

Organization

Kelag Wärme GmbH

Solution

Utilities/District Heating

Project Objectives

- Migrate to a GIS that is optimized for district heating infrastructure
- Choose a GIS where the data can be used for thermal-hydraulic calculations
- Realize new efficiencies cross-departmentally

Products Used

MicroStation, Bentley sisNET, Bentley sisVIEW, Bentley sisIMS

FAST FACTS

- Bentley sisNET is now used across all departments including Operations and Sales and Marketing
- Bentley sisNET data is exported to the thermal-hydraulic modeling application instead of the data having to be manually re-created in the modeling application
- Field engineers will be given access to Bentley sisNET via Bentley sisVIEW removing the need for work prints
- Bentley sisNET is integrated with the SAP asset management system
- Data that used to hours of days to find is now available at the click of a mouse saving substantial time and money

BENTLEY® SISNET GIS DELIVERS NEW LEVELS OF ENGINEERING AND OPERATIONAL EFFICIENCY TO KELAG WÄRME

Kelag Wärme GmbH is part of the utility group called Kelag. Kelag Wärme operates in Austria, Romania, Bulgaria, Slovenia and the Czech Republic. Kelag Wärme has 40 years of experience and is a leader in district heating technology. In Austria, Kelag Wärme operates 77 district heating networks and more than a thousand heating plants, varying in size from micro-generation to very large installations. Kelag Wärme's network exceeds 700km in length. Kelag Wärme has also been a leader in finding ways to generate heat in a more sustainable way, and this has involved a major shift to the burning of a renewable fuel – biomass – in the form of woodchip pellets. Kelag Wärme is the largest producer of biomass-based heat in Austria. The Bentley project involved replacing the GIS used to support the district heating operations in Austria.

THE REASONS FOR A NEW GIS

Kelag Wärme found that its existing GIS could not meet all of their requirements and that meant that it had to be replaced with a new generation of technology. These problems included trying to work with a GIS that was not optimized for district heating infrastructure. Also the thermal-hydraulic modeling systems in use at Kelag Wärme could not leverage the data in the legacy GIS. This meant that data had to be recreated, wasting time and money. So, it was time for a fresh start.

BENTLEY SISNET – A GIS OPTIMIZED FOR DISTRICT HEATING

Kelag Wärme looked around carefully in the marketplace and then ultimately chose the Bentley sisNET-based system. There were many reasons why the Bentley system was the right one for Kelag Wärme:

- Bentley sisNET is one of the very few GIS applications optimized for district heating infrastructure (with a separate district heating module)
- Bentley sisNET is based on MicroStation® – which is in use for CAD projects at Kelag Wärme

- The Bentley sisNET data model is customizable and extensible, meaning that all the necessary attributes can be captured and used for analysis, engineering workflows and other management decisions
- The data is stored in a standard Oracle database
- The GIS data can be used directly by the thermal-hydraulic modeling systems in use at Kelag Wärme

Kelag Wärme's Norbert Fischer explains, "The superior ability in Bentley sisNET to handle and model district heating infrastructure drew us to choose the Bentley product over the competition. We also value the openness of the data model, and the fact that the GIS is interoperable with other IT systems including our thermal-hydraulic modeling system and our SAP asset management system."



A KELAG Wärme district heating plant in Austria generates hot water for district heating services.



KELAG Wärme laying new district heating infrastructure documented in Bentley sisNET.

"We have already seen a substantial reduction in the amount of time it takes to locate data for new projects and for field work. What used to take hours or days happens almost instantaneously now."

ABOUT BENTLEY

Bentley Systems, Incorporated is the global leader dedicated to providing comprehensive software solutions for sustaining infrastructure. Architects, engineers, constructors, and owner-operators are indispensable in improving our world and our quality of life; the company's mission is to improve the performance of their projects and of the assets they design, build, and operate. Bentley sustains the infrastructure professions by helping to leverage information technology, learning, best practices, and global collaboration – and by promoting careers devoted to this crucial work.

For more information, visit www.bentley.com

BENTLEY OFFICES

Corporate Headquarters

685 Stockton Drive
Exton, PA 19341 USA
1-800-BENTLEY (1-800-236-8539)
Outside the US +1 610-458-5000

Bentley Systems Europe B.V.

Wegalaan 2
2132 JC Hoofddorp
Netherlands
+31 23 556 0560

Bentley Asia

Unit 1402-06, Tower 1,
China Central Place,
No. 81 Jianguo Road,
Beijing, 100025, China
+86 108 518 5220

LEVERAGING THE GIS DATA CROSS-DEPARTMENTALLY

The data in the Bentley GIS is used by many departments now that the data is trusted and accurate. It is used in Engineering and Planning, Operations and Maintenance, Sales and Marketing and will be used in future by senior management for strategic decision support. Most of the planning for new networks or extensions to existing networks is conducted in Bentley sisNET. There is no need for data to be re-created through ad hoc surveys since the as-built data are fully reliable. Operations and Maintenance will use the data for planning upgrades and equipment replacement strategies. For instance, if you know that a regulating valve has a life of thirty years, you can simply select all valves with an install date more than 30 years ago and then locate them spatially. The field crews are then sent out to replace them. Replacing aging equipment is very important for safety reasons so that there is no risk of the very hot water used in the district heating systems causing harm through pipe ruptures or valve failures. Sales and Marketing use the ortho-photos in the GIS to locate potential new customers through finding new buildings that are close enough to an existing network to be connected.

USING THE GIS FOR MAINTENANCE WORKFLOWS AND IN THE FIELD

The Bentley GIS will be used by planning to schedule the depressurizing of parts of the network for repairs or improvements. The GIS can be used to identify the impacted customers so that they can be notified of any downtime. Shafts and fittings need to be inspected frequently to ensure that they are functioning properly and to avoid valve failures. The GIS data is used in the field too. Currently the data is used in work prints, but as Kelag Wärme upgrades the mobile devices used in the field, Bentley® sisVIEW will be implemented for paperless field engineering workflows, thus saving more money.



Bentley sisNET displays the district heating network and connected buildings.

THE VALUE OF BROWSER-BASED ACCESS TO GIS DATA

Bentley® sisIMS, the Web server component of the product suite, means that GIS data can be served to non-technical users such as senior management, sales and marketing and customer services thus extending the use of the data and increasing its value to the organization. For instance, the data is used to provide responses to other utilities and contractors who need to dig up a road. The GIS will reveal any existing district heating infrastructure – this is data that Kelag Wärme is required to provide by law. The GIS data is created once and then used many times. This produces a cycle of continuous improvement since the more users the data has, the more likely the data will be kept current with everyone following approved workflows for committing data to the GIS.

THE VALUE DELIVERED SO FAR

Norbert Fischer explains how the new Bentley GIS has already delivered a lot of value to Kelag Wärme, "We have already seen a substantial reduction in the amount of time it takes to locate data for new projects and for field work. What used to take hours or days happens almost instantaneously now. This is making us all more productive. The data are in one location so there's no need for a combination of legacy GIS work prints, Excel spreadsheets and Word documents. Our thermal-hydraulic modeling processes are improved and in sum, the quality of the GIS is helping us all, in our different departments, make better informed decisions – and that's exactly what we were looking for when we started this project."

THE NEXT STEPS

A project of this scope is never really completed. The organization will evolve and the GIS must evolve with it. There are already plans to raise the value of the GIS to even higher levels with an integration with the SAP asset management system and integration to real-time SCADA systems which will correlate data on network behavior with spatial views of the infrastructure.



Network infrastructure documented in Bentley sisNET is exported to Google Earth™ for viewing.