



Project Summary

Organization

Essent Local Energy Solutions

Solution

Utilities/District Heating

Project Objectives

- Implement new cost-effective utility GIS for the design, management, and operation of ELES's growing district heating network in just six months
- Connect new system to ELES's existing network analysis and thermal-hydraulic calculation software
- Find an application with low capital expenditures and operational costs, and implement new system on time without data loss

Products Used

MicroStation®, Bentley® sisNET, Bentley® sisHYD, and Bentley® sisIMS

Fast Facts

- ELES has 300 employees and more than 80,000 customers
- The Dutch government recently passed legislation requiring energy utilities to split or unbundle their network, production, and trade operations
- The new legislation meant that ELES had to implement a new GIS system by June 30, 2009 to meet the deadline set by Dutch government, and remove all of its infrastructure data from the current GIS

Essent Local Energy Solutions Improves Operations and Design Workflows with Bentley sisNET

New Regulations Require Utility to Build New GIS

Critical Timeframe

The Dutch government has passed legislation requiring energy utilities to split or unbundle their network, production, and trade operations. To meet this new requirement, Essent Local Energy Solutions (ELES), a provider of sustainable district heating solutions using waste heat from power plant cooling water in the Netherlands, needed to select and implement a new utility GIS for the design, management, and operation of its growing district heating network.

And it needed to do it in just six months. To achieve its goal, ELES deployed Bentley sisNET to document its district heating network and support the operations part of the infrastructure lifecycle.

Up and Running in Six Months

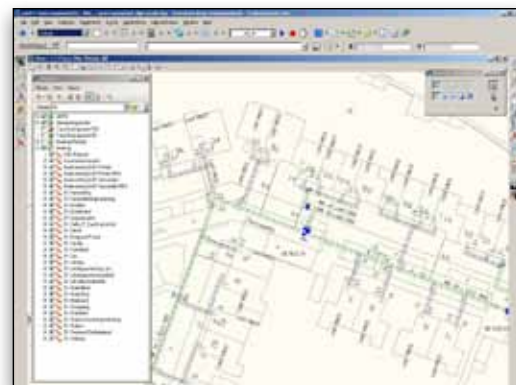
Part of RWE AG, one of Europe's leading utility companies, ELES has 300 employees, more than 80,000 customers, and is a major provider in both Breda and Tilburg in the Netherlands. ELES also operates several smaller networks in the country that are connected to biogas and biomass plants. The company is developing its use of waste heat from other sources, such as waste incineration plants.

ELES had until June 30, 2009, to use the existing GE-Small-world GIS from Enexis (Essent's former grid company) before it had to implement its own system and remove all of its infrastructure data from the Enexis GIS. ELES had two options: replicate its high-end and highly customized GIS or start again with a more cost-effective alternative. Because the Enexis GIS wasn't cost efficient for the number of people using it, ELES opted to research other systems.

A Firm Promise

In addition to finding an application with low capital expenditures and operational costs, Essent had to complete its system on time without data loss. Live data had to be accessible to mobile workers, too, and the system had to comply with the Netherlands' "call-before-you-dig" legislation. This requires contractors to contact the Cable and Pipes Information Center to find out what networks own below-ground assets in a given location.

Following a detailed evaluation of the offerings of four potential suppliers based on total cost of ownership over five years, the findings were turned over to the management team to make the decision. It recommended the Bentley sisNET multi-utility and multi-site GIS-based asset management system, confident that with this system it could meet the changeover deadline. Another reason why ELES selected Bentley's proven technology was because it interoperates with its existing Bentley sisHYD network analysis and thermal-hydraulic calculation software.



Bentley sisNET displays the ELES district heating network and connections to individual homes.

A Comprehensive GIS

The new system enables data to be instantly available to the Bentley sisHYD network modeling and analysis application for hydraulic and thermal calculations, which are necessary to optimize the piping in the district heating networks. Bentley sisHYD also supports the modeling of a comprehensive range of "what-if" conditions such as valve open/valve closed. With MicroStation at the heart of the system, Bentley sisNET adds a configurable district heating data model, business rules, and menu structure. Bentley sisIMS is used to make the network infrastructure data available in a web viewing environment in Adobe SVG format. The application provides fully accessible map and attribute data as well as redlining capabilities to enable field workers with Internet access to use the database and locate work locations, disruptions, and more.

"We wanted a cost-effective application that didn't need customization, and we wanted all the functionality we had in our previous system but with necessary improvements. The entire Bentley sisNET system, including complete data migration, has been implemented within budget and on time."

Find out about Bentley at: www.bentley.com

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Delivered as Promised

Implementation started in January 2009 and was completed on schedule. Koen Albers, ELES team manager of Project Support (which includes the drawing office), managed the budget and the process. A Bentley project manager, an ELES IT representative, and two ELES power users helped to define the requirements and test and accept the system.

The project and data migration plans required a great deal of effort by the team. They covered execution and resourcing, analysis of the Smallworld data model and its migration, software installation and configuration, and production rollout. A precise data migration manual was created to manage the risk revealed by a scored risk assessment of the data migration model. The next step for ELES is to complete the close coupling of Bentley sisNET with Ultimo as The Office of Energy Regulation continues to monitor the asset management strategies of energy companies.

Bentley Support Key to Success

The Bentley project manager from the Netherlands office was heavily involved in specifying and planning the implementation and precise configuration for ELES, which was a key to project success. The more flexible system provides ELES with a configurable data model as well as additional functionality. Since the data is held in an Oracle Spatial data store, which is open and non-proprietary, ELES is not locked into the system through the database technology.

Another factor that helped the project to meet its deadline is that Bentley sisNET has the required functionality and district heating data model built in, which means virtually zero customization was required. Moreover, since Bentley sisHYD, and Bentley sisIMS work with native Bentley sisNET files, full integration and compatibility were assured. This saved

ELES data entry and translation time, and reduced the risk of costly errors that might not have been apparent until site work began. In addition, ELES was already using MicroStation for small engineering projects, so users were familiar with the look and feel of the application. This meant more time could be spent on Bentley sisNET and Bentley sisIMS training.

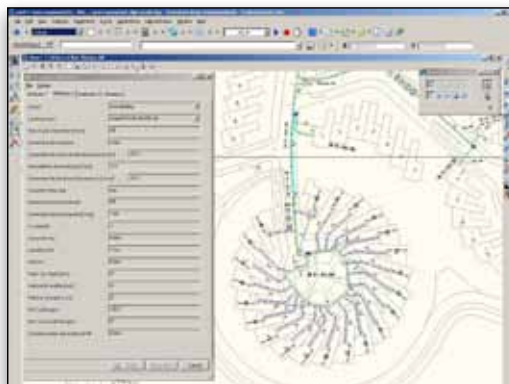
Call Before You Dig

As previously stated, contractors must call the Cable and Pipes Information Center to determine which network owners have below-ground assets in a given location. The center then sends out a request to the network owners to provide the position of the various assets. This time-consuming and expensive manual process has been replaced by an automatic system that results in a large cost savings to ELES. The information is extracted automatically using Internet robots and the center collates the replies for all utilities and sends it to the requester. Bentley worked with ELES partner Geodan to ensure that Bentley sisNET provided the data mandated by the law.

Within Budget and on Time

Albers commented, "I'm happy with the system. Through the effort we put in getting clear project goals and scope, Bentley sisNET has fulfilled our needs and our expectations. We wanted a cost-effective application that didn't need customization, and we wanted all the functionality we had in our previous system but with necessary improvements. The entire Bentley sisNET system, including complete data migration, has been implemented within budget and on time.

"Another benefit is that the Bentley community in the Netherlands is growing with two more implementations of Bentley sisNET – in the electricity transmission and distribution industry."



The network infrastructure is fully attributed in Bentley sisNET; in this case the attributes include the pipe type, dimensions, construction date, and the name of the contractor who installed it.



Bentley sisNET is used to support the operations phase of the lifecycle for ELES's district heating network.