

# The Design and Management of Sustainable District Heating and Cooling Networks with Bentley® sisNET

Today's environmentally conscious society is constantly searching for more sustainable solutions for the provision of heating and cooling services. When compared to other heating and cooling technologies, district heating and district cooling are more energy efficient and they contribute to a more sustainable future. District heating and cooling are already widely available in some countries, and they are set to become more widespread as pressures mount for more efficient heating and cooling services to be deployed by energy utilities. Bentley is one of the few software vendors that has products specifically designed for managing the lifecycle of district heating and cooling network infrastructure.

## ASSET AND FACILITIES MANAGEMENT

The Bentley sisNET product suite comprises a full range of GIS products that help engineers and GIS professionals in utilities design, document, and manage district heating and district cooling networks more efficiently. Based on a fully configurable geospatial data model, Bentley sisNET offers the ability to faithfully model network assets regardless of layout – e.g. two-pipe or three-pipe networks – or type. A multi-user configuration ensures that multiple editing processes can take place concurrently and that each modification of the network is archived for later retrieval.

A range of dedicated placement and modification commands allows the editor to work with complex, multi-pipe features as single objects. In addition to network editing, a full range of in-depth analysis, reporting and plotting tools are available, as well as an interoperability framework to integrate with CRM and ERP systems such as SAP.

Because the Bentley sisNET suite integrates with Bentley's industry-leading Bentley® sisHYD analytical modeling and network design software, users of the Bentley sisNET product suite can share network connectivity, maintenance records, and operational data to run hydraulic and thermal calculations for their district heating and district cooling systems.

## WEB PUBLISHING

Bentley's solution for district heating and district cooling extends to publishing spatial data over the Intranet or Internet to user communities that do not require full editing privileges with Bentley® sisIMS. As a result, spatial data can easily be presented to groups such as customer service representatives, senior management and sales and marketing, both in dedicated web sites in company portals. Using web technology to grant review access to network assets enables the wider use of critical asset information within utilities.

## SUPPORTING THE FIELD WORK FORCE

Data created and maintained in the desktop GIS environment can be taken into the field with Bentley® sisVIEW for as-built validation, construction, and redlining activities. It provides full access to all the network's assets, and the network documentation can be edited regardless of whether it is graphical or alphanumeric. By offering data access in the field, Bentley sisVIEW helps to optimize fully digital utility workflows.

## THERMAL-HYDRAULIC CALCULATIONS AND MODELING

Bentley sisHYD is a comprehensive analytical modeling and network design solution for the hydraulic and thermal calculations necessary in district heating and district cooling networks. Its calculations are used for static and semi-dynamic analysis of media flow,



*Advanced network analysis in Bentley sisNET.*



*Bentley sisNET integrated with SAP.*



*Bentley sisIMS serves infrastructure data to utility portals.*

pressure, temperature, and heat loss in a given network. Analytical results can be presented in a variety of maps, graphs and reports.

With Bentley sisHYD, utilities can:

- Optimize the balance between electric and heat generation depending on actual and predicted loads
- Identify areas of the network where service will likely be deficient or non-existent
- Design new infrastructure more intelligently or model operational conditions more efficiently

### 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/utilities](http://www.bentley.com/utilities)

### 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



*Reviewing network assets in the field with Bentley sisVIEW.*



*Customizing the display of analytical results in Bentley sisHYD.*

