

DISTRICT ENERGY MANAGEMENT  
Real-time monitoring and proactive decision making  
**CUSTOMER CASE**



# Dynamic Temperature Optimization at Hørning District Heating



A realized Return on Investment in less than 12 months and a tangible reduction in heat loss and CO<sub>2</sub> emission.

The implementation of dynamic Temperature Optimization has caused a reduction in the average supply temperature of approximately 10 °C for Hørning District Heating. The investment has paid itself many times over.

#### The Challenge

### From static to dynamic mindset

Hørning District Heating was previously controlled by a constant supply temperature, which kept the level of consumer complaints related to a too low temperature at a minimum. The constant supply temperature ex plant resulted in fluctuations in the temperature at the consumer.

#### The solution

### TERMIS Temperature Optimization - all inclusive

TERMIS Temperature Optimization uses SCADA data from the district heating network with input from existing measurement points. This scenario constitutes the best baseline for the optimization and encompasses operational changes such as valves that are opened and closed, major clients with varying consumption, and any fluctuations during weekends and vacation periods. Any unusual operational interruptions will also be included in the optimization.

#### The result

### Operational reliability, savings and overview of consumption

Apart from the direct saving, as a direct impact of the heat loss, Operation Manager Peter Jensen also sees other advantages that will result in operational improvements:

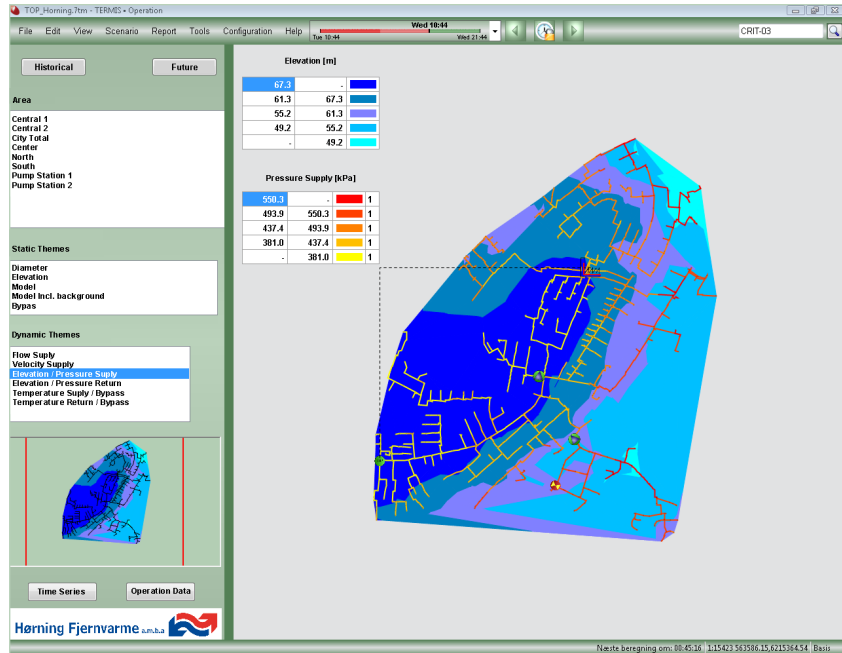
- Hørning now runs in real-time mode, which is synonymous with ongoing improvement of the hydraulic TERMIS model. TERMIS real-time means that Peter

<b>Customer</b>
Hørning District Heating
<b>Country</b>
Denmark
<b>System Integrator</b>
7-Technologies
<b>Application</b>
TERMIS Temperature Optimization
<b>Data</b>
<b>Number of consumers</b>
~ 2,550
<b>Main pipes</b>
~ 44,7 km / 28 miles
<b>Service pipes</b>
~ 34 km / 21 miles
<b>Max. pump</b>
~ 420 m <sup>3</sup> /hour
<b>Average load</b>
~ 15 MW and 200 Tj/year
<b>Inlet temperature</b>
~ reduced from 78 °C to 68.6 °C
<b>Heat loss</b>
~ reduced from 23% to 20.7%
<b>Savings 2008</b>
485,000 DKK / 65,000 EUR
<b>Reduced CO<sub>2</sub></b>
215 tons annually

## CUSTOMER CASE

„ 2005 was the last year we were running with a constant inlet temperature of 78 °C and we were faced with a heat loss of 23.0% at a production of 58,580 Mwh. Currently our average inlet temperature is 68.6 °C and the heat loss is 20.7%. This means that we are saving approximately 1% on our heat loss for every degree the inlet temperature is reduced. The value of this saving is 485,000 DKK per year. And the environment is saved 215 tons CO<sub>2</sub> per year.“

*Peter Jensen, Operation Manager at Hørning District Heating.*



Jensen can follow the operation of the network all the time. TERMIS is considered to be an aiding tool for the SCADA system, and one that provides better knowledge of temperature and pressure conditions in the network. In addition, this knowledge can be used to optimize other operational parameters.

- The Temperature Optimization module maintains a constant temperature in those parts of the network that previously have experienced problems with fluctuating temperatures. Peter Jensen believes that this will prove to have an even larger significance than initially expected: "It is in these areas all our previous temperature related problems have been found. If we keep problem areas at a constant level, we can avoid customer complaints."
- Hørning moreover expects fewer peak load situations as the Temperature Optimization module adjusts the temperature corresponding to a required maximum flow.

### Advantages for the consumers

#### Everybody benefits from Temperature Optimization

According to the Danish District Heating law companies are non-profit, and thus cannot yield a profit from selling heat. Consequently the savings are passed on to the consumers.

#### The environment

TERMIS Temperature Optimization also benefits the environment. The reduction in production reduces the emission of CO<sub>2</sub>. To Hørning this amounts to approximately 215 tons annually.