

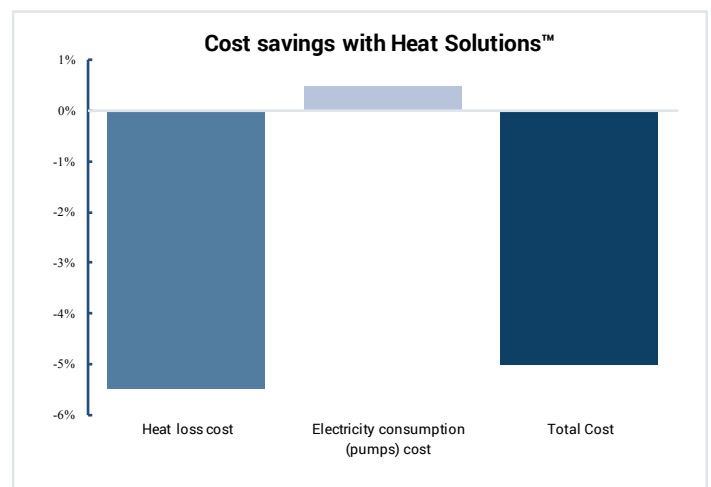
Heat Solutions™

Forecasting and temperature optimization for district heating

Heat Solutions™ (formerly known as PRESS™) is an integrated portfolio of forecasting and optimization solutions for the district heating sector. The solution consists of MetFor™, which delivers locally-calibrated weather forecasts, HeatFor™ which provides heat demand forecasts and HeatTO™, which provides temperature optimization of the supply temperature. The solution can reduce heat losses and thereby reduce production costs, heat prices and CO2 emissions while increasing security of supply.

Why do you need Heat Solutions™?

Heat Solutions™ is a fully automated system, which makes it possible to manage the district heating network and production of district heating more efficient and reliably. MetFor™ and HeatFor™ provide accurate weather and heat demand forecasts, allowing HeatTO™ to optimize the supply temperature in the district heating network. The optimization of the supply temperature will ensure that the needs of the customers are met, while the supply temperature is reduced as much as possible. This will reduce heat losses, production costs and the heat price. An additional benefit is that the reduction in fuel consumption can reduce CO2 emissions and improve the green profile of district heating.



Heat Solutions™ typically reduce heat losses from pipelines with 10-20%, which results in a fuel saving of 3% to 5% - or even more in heating networks with high heat losses.

Benefits

- ✓ Reduce heat losses, fuel costs, heat prices and CO2 emissions
- ✓ Increase security of supply
- ✓ Easy and inexpensive to install and operate with short payback period
- ✓ Fully automatic with minimal maintenance
- ✓ Reliable, stable and high availability with a proven operational track record of 20 years
- ✓ Highly flexible and configurable. Fits to most network configurations

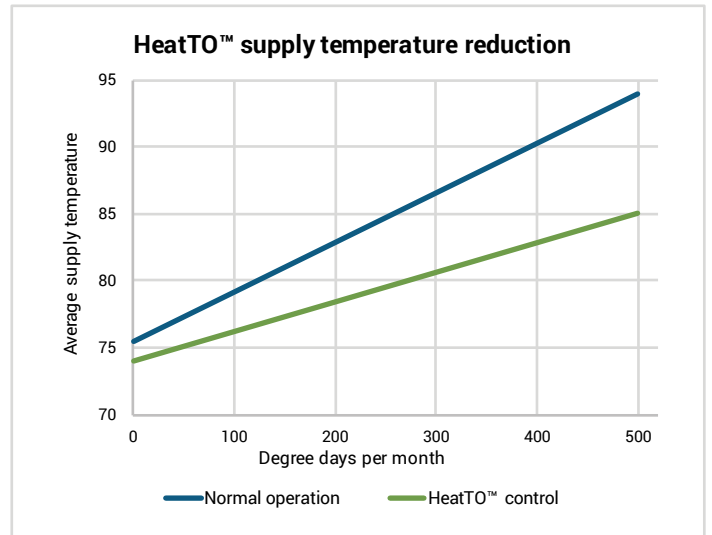
Heat Solutions™ is an industry leading solution which requires minimal effort to operate and yet delivers accurate forecasts and great savings compared to competing technologies.

How does Heat Solutions™ work?

The three sub-solutions work as an integrated system. MetFor™ makes a local calibrated weather forecast. It is based on 2-3 external weather forecasts which are weighted and combined with local weather measurements. The locally calibrated weather forecast is fed into HeatFor™ and combined with historical demand data in order to deliver an accurate heat demand forecast. Based on this heat demand forecast and online measurements from the heating network (flow, supply and return temperature), HeatTO™ optimizes the supply temperature to meet demand, while minimizing supply temperature.

Heat Solutions™ is based on self-learning algorithms that continuously self-calibrate and improve as they receive data from the district heating network, and thereby the system is fully automatic.

Ideally the solution is integrated with local online weather measurements, but can also run solely on meteorological forecasts. Heat Solutions™ is provided with a data validation module and a data interfaces which enable SCADA integration through text files, FTP, database access or web services. The data validation module ensures that data with errors is identified, corrected or replaced by other values.



Heat Solutions™ can be delivered as a software package which is installed at the district heating operator or as a hosted solution at ENFOR™. In addition, the solution comes with various support and maintenance packages that can be tailor-made.

Features

- Self-learning and self-calibrating algorithms for weather forecast, heat demand and optimization of supply temperature
- Works for single network or multiple networks with dependencies
- Web-interface available for configuration and monitoring
- Data integration interfaces based on FTP, SFTP or web-services supporting numerous formats and file types (CSV, XML, SOAP, JSON etc.)
- Runs on Windows and Linux

About ENFOR™

ENFOR provides forecasting and optimization solutions for the energy sector. Utilities, energy traders, transmission and distribution system operators use ENFOR solutions for forecasting of wind power, solar power, hydro power, electricity and heat demand as well as optimization of district heating systems. Based in Denmark, and established in 2006 as a spin-off from the Technical University of Denmark, the company has a solid operational track record and successfully serve customers all over the world.

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*"The future is an unknown, but a somewhat predictable unknown.
To look to the future we must first look back upon the past."*

- Albert Einstein