

Pioneering customer satisfaction in Brønderslev Forsyning A/S

District Heating of the Future

○ 64 °C

○ 17,212 kWh

○ 37 °C







THE CHALLENGE: ELIMINATING EFFICIENCY PROBLEMS IN THE HEATING NETWORK

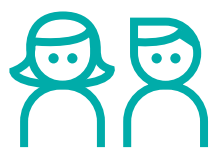
Wholly owned by the Danish city of Brønderslev, the Brønderslev Forsyning A/S holding company is responsible for the district heating and water supply, as well as for wastewater treatment. The utility has implemented a comprehensive Fixed Network solution together with Diehl Metering, enabling energy-efficient heat production and distribution.

Brønderslev Forsyning A/S is a pioneer in the field of smart energy and is implementing, among other things, a “District Heating of the Future” concept for the city of Brønderslev. The utility company relies upon its own combined heat and power unit – one of the most efficient plants worldwide due to the combination of solar, biomass and heat pumps – for the generation of power and district heating.

Forsyning A/S therefore had to deal with unfavorable (i.e. low) temperature spreads and high return temperatures, and as a consequence, the heat produced in the power plant was not used effectively. Both consumer and utility had to bear unnecessary extra costs, as the overall effectiveness of energy generation and distribution was reduced as a result of the problems described above.

 Before the implementation of Diehl Metering’s smart metering system solution, the Danish supplier was confronted with efficiency problems in its heating network. Since the old mechanical meters were unable to provide current values on the temperature conditions in the distribution network, it was not possible to efficiently control the forward and return temperature. In particular, high return temperatures indicated that many households were not properly using the district heating water provided to them. This was due to consumers with disadvantageous heating behavior – known as “bad coolers” – or because the settings on their heating system were not optimized. These consumers were often unaware of these issues and had little motivation to change their behavior. Brønderslev

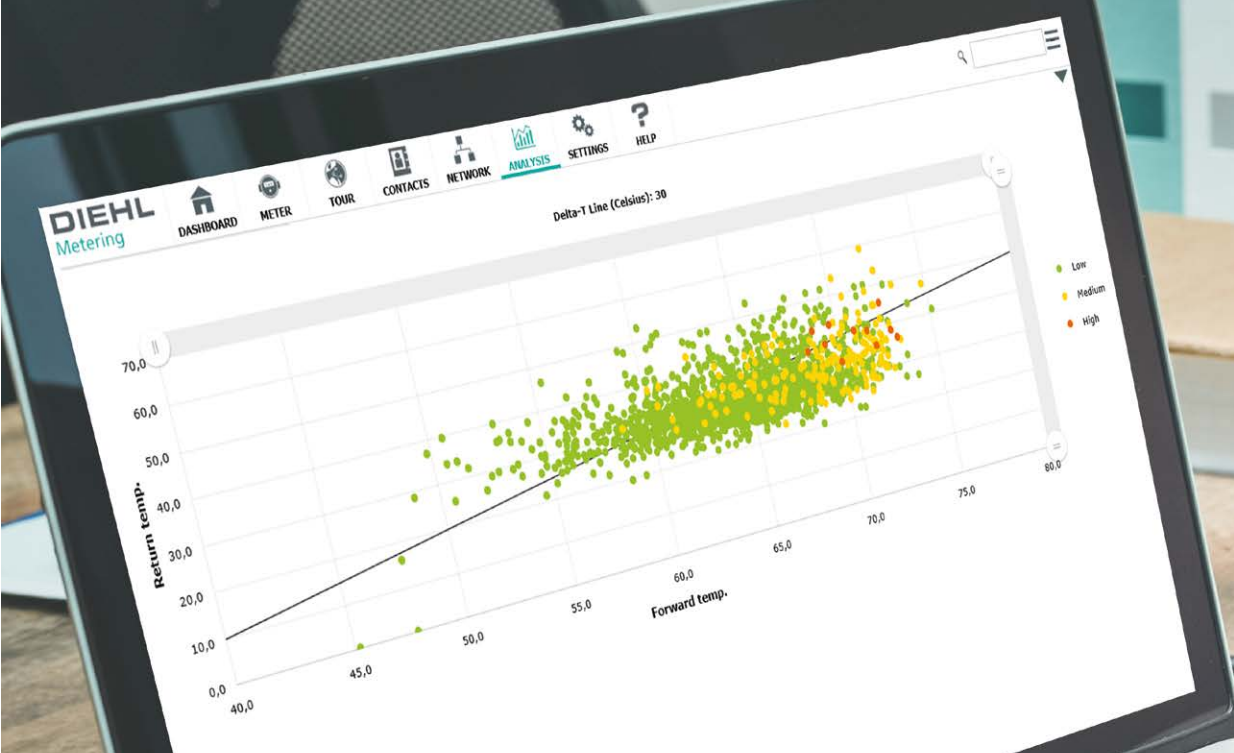
 Because the old mechanical heat meters had no integrated communication capability and thus could not transfer consumption data or meter alarms to the utility, Brønderslev Forsyning A/S’s direct customer service was very limited. An automated and prompt leakage alarm is particularly important for consumers, as cost-effective damage to buildings due to leaks or burst pipes in the home can be effectively avoided – and this was not possible with the old infrastructure.




12,600
INHABITANTS


“District Heating of the Future”
for the city of Brønderslev –
energy-efficient heat production
and distribution





THE SOLUTION: A FIXED NETWORK FOR SMART ANALYSES


 In order to stay true to its “District Heating of the Future” concept, Brønderslev Forsyning A/S decided to implement an innovative Fixed Network solution for fully automated reading of more than 5,000 SHARKY 775 ultrasonic energy meters.

 In order to provide consumers with intelligent leak protection, the utility company opted for the additional installation of SHARKY FS 473 ultrasonic flow sensors in the return pipe of each house.

The flow sensors are connected to the SHARKY 775 meters installed in the flow pipe to automatically record and compare the flow rates in the flow and return pipes. Should a value deviate from the


predefined range, the ultrasonic energy meter will set off a leakage alarm. The SHARKY 775 can reliably detect a burst pipe after just 90 seconds as well as low flow rates, caused for example by a dripping heater.


Thanks to the integrated radio module, the ultrasonic energy meters are ready for fully automatic reading within the framework of the Fixed Network immediately after installation.

 The readings regularly sent by the SHARKY 775 ultrasonic energy meters, such as forward and return temperature, flow rate, current output, energy consumption and alarms, are collected several times per hour by permanent receivers and are evaluated through the IZAR software.



THE BENEFIT: HIGH TEMPERATURE SPREADS AND ADDITIONAL SERVICE THANKS TO LEAKAGE ALARM AND CONSUMER EMPOWERMENT

 Thanks to the fully automated reading of the SHARKY 775 ultrasonic energy meters, Brønderslev Forsyning A/S is able to continually improve its customer service. Consumers can be sure that incorrect meter reading is a thing of the past, which was not the case when the meters were self-read.

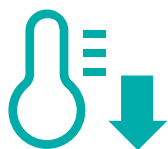
 In addition to correct billing, the Danish district heating supplier can use the meter data that is collected on a regular basis through smart analyses for more energy-efficient heat production and distribution. Diehl Metering IZAR data management software plays an essential role in this: using the Software as a Service IZAR PLUS Portal, Brønderslev Forsyning A/S can check the difference between the forward and return temperature (spread) for each meter in an innovative analysis dashboard. Whereas in the

past high return temperatures caused by suboptimal heating behavior of individual consumers have led to low temperature spreads and thus to high energy costs, huge savings can now be made for suppliers and consumers thanks to the IZAR PLUS Portal smart analysis function.



“Because IZAR software enables us to perform smart analyses, we can better adapt heat generation to our customers’ consumption patterns and notify them of disadvantageous heating patterns. This has allowed us to reduce our return temperature from an average of 40 °C to 35 °C, which corresponds to cost savings of € 100,000 per year at the CHP-production plant due to better flue gas cooling and reduced energy losses in the distribution network. We can invest the money saved, directly in our ‘District Heating of the Future’ concept”.

Thorkil Bartholdy Neergaard,
Managing Director of Brønderslev Forsyning A/S



**5 °C
TEMPERATURE
DECREASE**

Reduction of average
return temperature from
40 °C to 35 °C

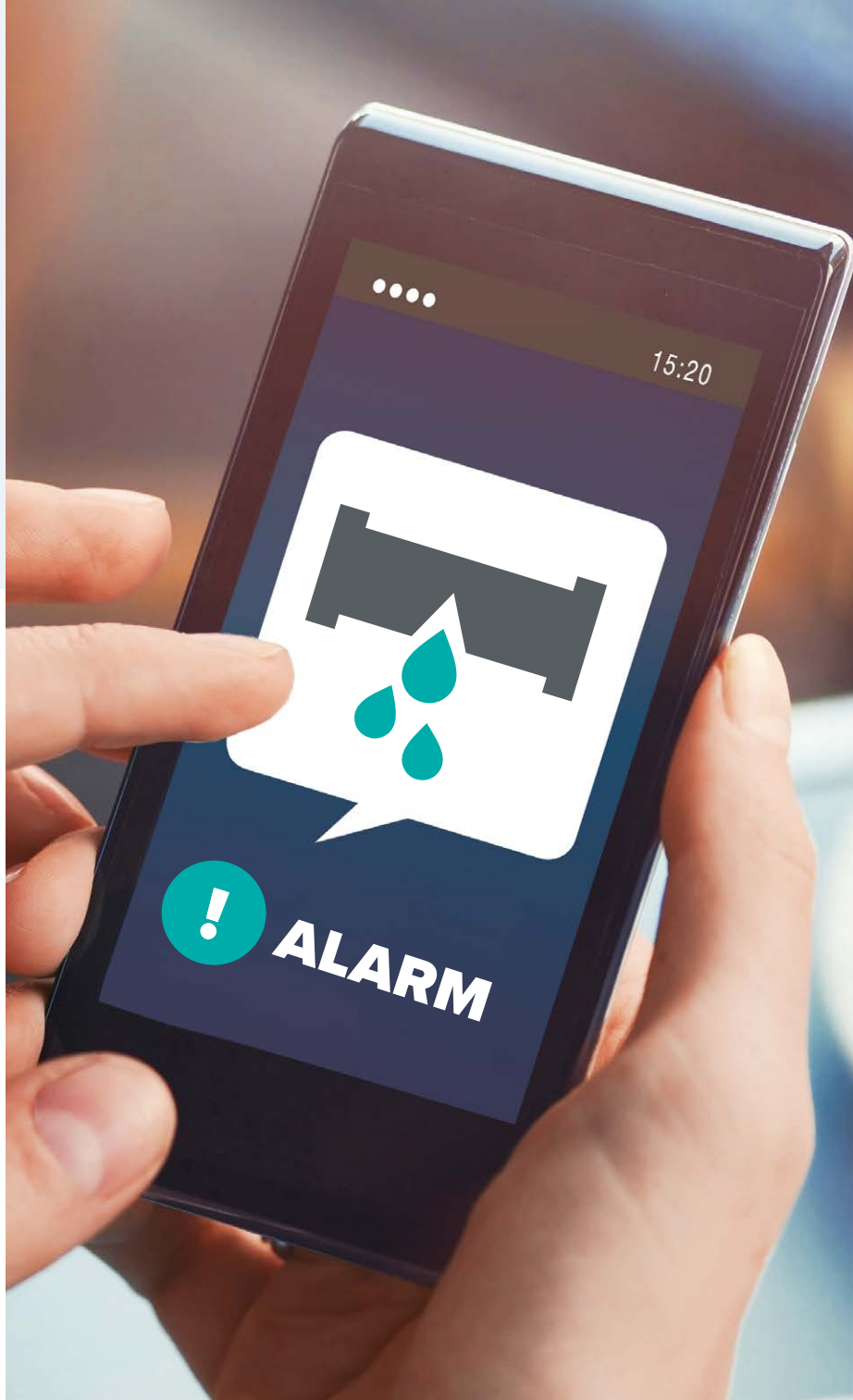
Defects, abnormal operating conditions at the transfer stations, and disadvantageous consumer heating behavior of the “bad coolers” are now being detected quickly using the IZAR PLUS Portal dashboard. In many cases, advising consumers is enough to achieve high temperature spreads and a considerable reduction in return temperatures.



100,000 € ANNUAL COST SAVINGS

By consumer advice
and optimised temperature spread

Diehl Metering's smart system solution allows the Danish utility to offer its customers an additional safety service in the form of a leakage alarm. As part of the Diehl Metering Fixed Network, consumption data and the various SHARKY 775 meter alarms (including a leakage alarm) are automatically read at regular intervals and displayed in IZAR PLUS Portal. As soon as a leakage alarm is received by Brønderslev Forsyning A/S employees over the Diehl Metering software, the affected and for the special service registered consumer will receive a corresponding alarm via email and/or SMS. This service has been very well received by customers of the Danish energy supplier and has increased customer satisfaction by effectively preventing costly damage to houses.



“Together with Diehl Metering we want to continually improve our system and offer additional services to our customers. The visualized consumptions of the IZAR Software can be viewed at any time via our own web portal. The collected measurement values also form the basis for further optimisation analyses.”



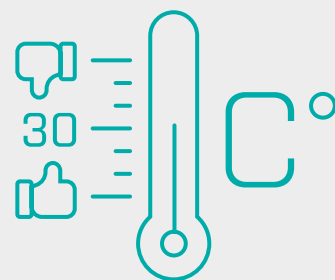
Thorkil Bartholdy Neergaard,
Managing Director at Brønderslev Forsyning A/S

A SOLUTION UPDATE TO SUPPORT A NEW MOTIVATION TARIFF



In 2020, Brønderslev Forsyning A/S further strengthened its solution by offering consumers the possibility to download IZAR@HOME for free. Through this smartphone app, the utility shares insights with consumers about their consumption patterns, empowering them to change their habits and save money. As well as offering added value to consumers, IZAR@HOME simultaneously provides a tool for Brønderslev Forsyning to increase the efficiency of its district heating network.

By customizing the app, the utility defines its own “utility target” that is consistent with its strategy of reducing return temperatures in the network to 30 °C or less. This target is visible to consumers in the app and, through simple graphics, they can track their current average return temperature over the past 12 months, and see if they are hitting the target.



Supported by IZAR@HOME,
Brønderslev's new motivation
tariff brings

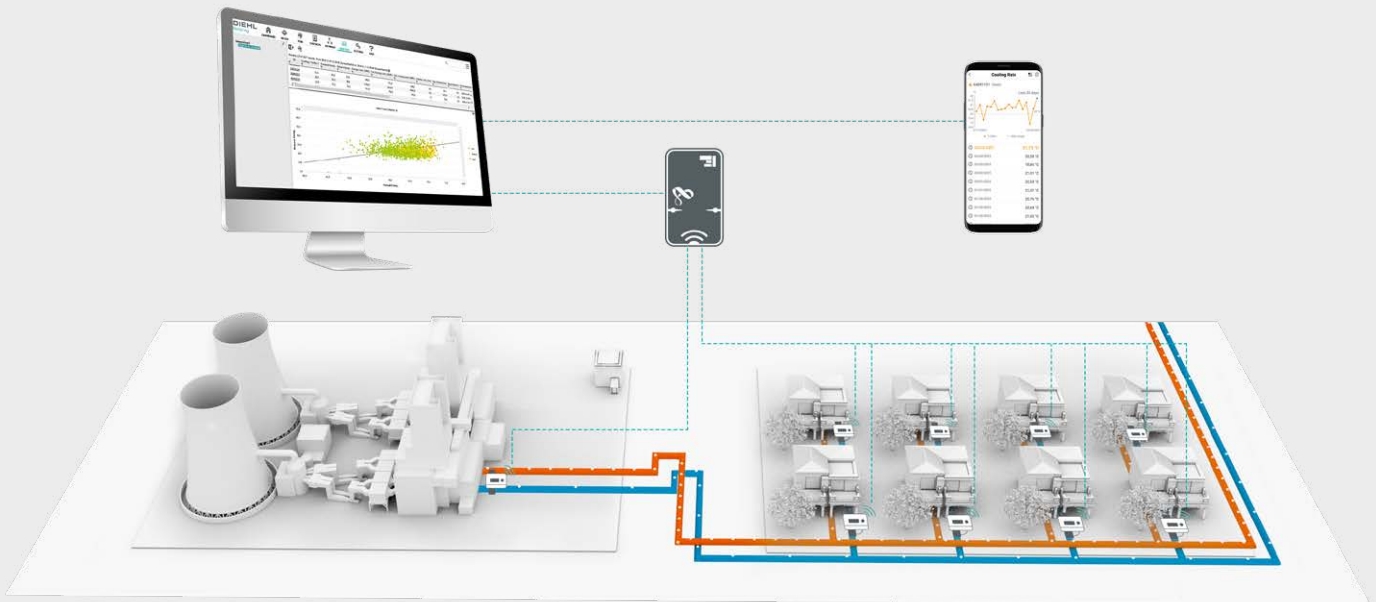
**ADDED VALUE
TO THE DISTRICT
HEATING NETWORK**



Brønderslev Forsyning A/S benefits
from new efficiencies in its network
operations



Consumers can improve their
return temperature, saving energy
and money



Tariff innovation

As a further incentive, Brønderslev Forsyning A/S introduced a new “motivation tariff” for its customers in 2021. The idea of this tariff is to encourage end users to adopt behavior that positively impacts the operation and overall economy of the heating plant, as well as reducing the volume of water pumped through the district heating system.

With the motivation tariff, consumers who do not sufficiently use the energy of the district heating water and are consequently responsible for high return temperatures in the system, have to pay a surcharge on their kWh consumption of 1% for each degree they surpass the targeted average return temperature of 30 °C. As the utility is legally not allowed to make a profit on its new tariff and does not intend to do so, it has reduced the base heat price for all consumers, meaning that everyone can benefit.

Consumer action

Through IZAR@HOME, Brønderslev Forsyning A/S offers consumers full transparency on their consumption habits and clearly illustrates if their average return temperature is below the 30 °C threshold or not.

This creates a win-win situation whereby consumers are motivated to change their consumption behavior or optimize their own heating system and thus reduce their heating costs, which in turn drives greater efficiency of the district heating network. By introducing the motivation tariff and the IZAR@HOME app, Brønderslev Forsyning A/S can further reduce the return temperature in its district heating network, bringing significant benefits, including reduced heat loss in the distribution network, lower costs for pumping district heating water, higher efficiency of technical systems, lower consumption of wood chips by the power plant, and reduced overall CO₂ emissions for greater sustainability.

Ultimately, this innovative use of IZAR@HOME results in a more efficient district heating network while reducing heating bills and further increasing customer satisfaction.



Digitalization of Brønderslev Forsyning A/S - an ongoing journey

- 2021 Motivation tariff for billing
- 2020 Introduction of the IZAR@HOME consumer app
- 2016 Gradually lowering the forward temperature and focus on cooling in consumer installations
- 2015 New green production strategy
- 2014 Smart heat meter rollout



ABOUT DIEHL METERING

Diehl Metering is a worldwide leader in the design, manufacture and supply of smart metering solutions. With over 150 years of experience, we empower utilities, municipalities and industries to take control of their infrastructures, bringing new efficiencies to the way they manage water and energy.

Our extensive range of services and solutions includes data-driven insights, IoT connectivity, fully-flexible software, and seamless intelligent metering. We also utilise artificial intelligence to boost performance and deliver cost savings for our customers.

Headquartered in Germany, we are a family-owned business with an international reach. We are proud to maintain our founding principles of quality, reliability and customer proximity while proactively shaping a better future for our customers and the communities they serve.

Our approach is to think global and act local.

By anticipating trends and remaining agile, we adapt and develop our strategy with our customers and for them.

In supporting their long-term growth, we also contribute to the sustainability of the planet, crafting innovations that enable our customers to make ever better use of the natural resources we all rely on.

