LoRa Alliance™

ENERGY & UTILITIES

SUCCESS STORY

NORDIC AUTOMATION SYSTEMS, FORTUM TARTU

LoRaWAN™ for Remote
Energy and Heat Monitoring

THE CHALLENGE

Increasing demand for eco-energy solutions has put pressure on utility companies to find better solutions to read and monitor district heat substation parameters and act instantly when needed. Many companies were requiring customers to manually record their readings every month, leading to poorly kept records, inaccuracies and resource inefficiencies.

Fortum—a clean-energy specialist that provides its customers with electricity, heating and cooling solutions as well as smart solutions to improve resource efficiency—was seeking a solution that optimized energy consumption and maintenance without placing additional responsibility on end-customers.

Further, Fortum was seeking a solution that didn't rely on backup power, but that still provided 24-hour access to data—even in the event of power failure or interruption—something that existing GSM and Ethernet solutions could not do.
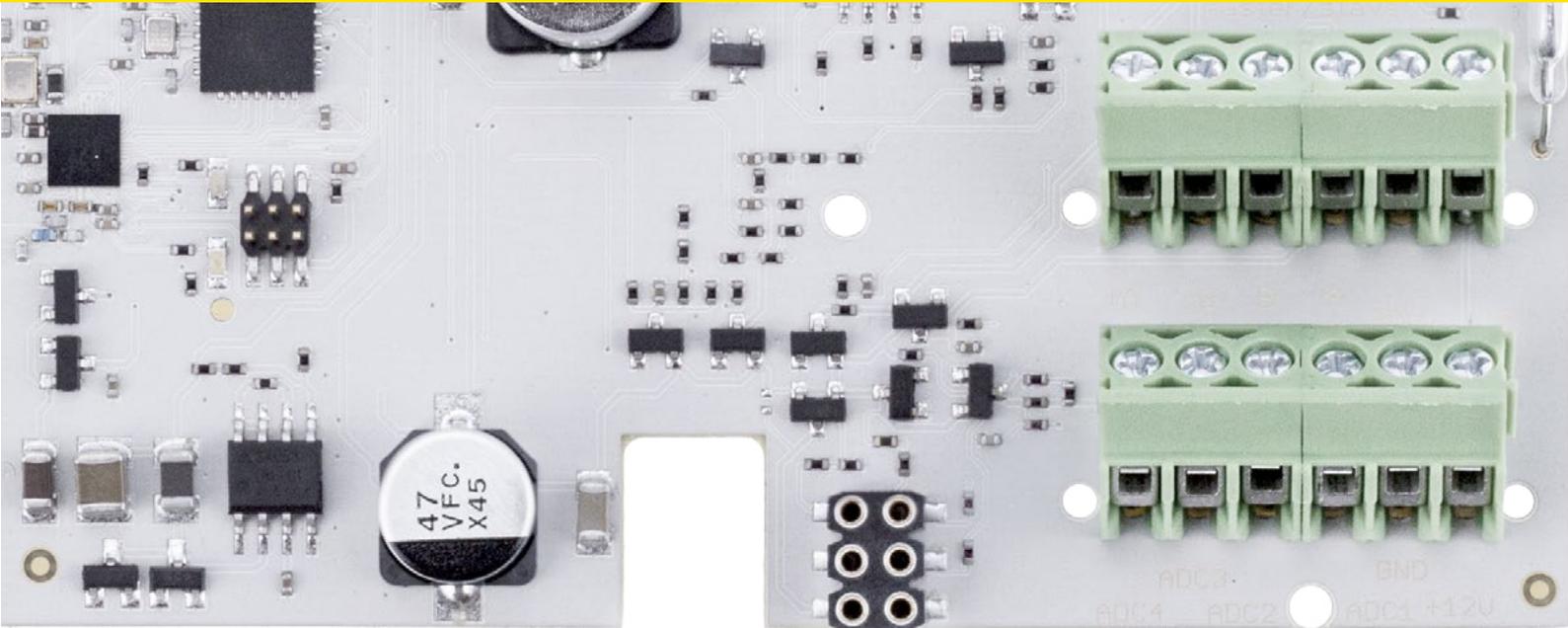

Kamstrup MULTICAL reader

WHY LoRaWAN™?

To overcome these challenges, Fortum chose to partner with Nordic Automation Systems to develop a LoRaWAN-based solution for its Kamstrup MULTICAL® series of meters to enable the monitoring of various district heat substation parameters, with low power consumption and without expensive infrastructure investment.

LoRaWAN-enabled modules offer a simple solution that is adaptable to the existing infrastructure. The LoRaWAN network provided low-cost and long-range connectivity with 100% accessibility to data, as compared to traditional GSM connectivity.

Even with failures in the system, data would always be collected and stored in the remote reading module. Additionally, the LoRaWAN protocol provided greater cost efficiency (between 15-30% savings) than using a mobile network operator, allowing for easier pricing and forecasting.

LoRaWAN module for Kamstrup MULTICAL reader

LoRaWAN IMPLEMENTATION

In just a two-month time frame, Fortum Tartu and Nordic Automation Systems were able to develop LoRaWAN modules for the Kamstrup MULTICAL series of heat meters. The modules were developed to attach as an internal extension within the existing Kamstrup housing, negating the need for the creation of new housing units and savings months in new design and product development.

Five modules were installed at various locations in Tartu, Estonia's second-largest city, with approximately 93,000 inhabitants, during a test period of six months.

LoRaWAN-enabled Kamstrup meters read real-time heat consumption data and provided a detailed end-customer usage overview. All of the data was gathered wirelessly and processed automatically. In addition to tracking energy consumption, the meters also enabled Fortum to collect data on temperature, capacity and pressure.

Installed LoRaWAN module inside Kamstrup MULTICAL reader

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"The key reason we selected a LoRaWAN solution was the independence of external power supplies. This approach means that readings are documented to the remote reading module, which guarantees almost 100% accessibility to data, even when there are alerts in the network."

Indrek Hagu,
Fortum Estonia

LoRaWAN BENEFITS

For Fortum, the deployment of this project enabled energy monitoring of various district heat substation parameters within the requirements specified: low power consumption, without expensive infrastructure investment, 100% access to data and zero dependence on backup power systems.

Using the LoRaWAN protocol facilitated the accessibility of real-time data statistics at any time, reduced dependence and expenditure on human resources and human error, as well as greater connectivity reliability, reduced energy cost and the realization of making long-term, battery-powered wireless energy monitoring possible.

Fortum plans to leverage these benefits by extending its project to hundreds of sites by the end of 2017.

NAS Nordic Automation Systems

Fortum