Case study

Techem

Increasing energy efficiency

Techem reliably measures energy consumption and finds ways to reduce it, with Narrowband-IoT from Vodafone

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A reliable and cost-effective way to increase energy efficiency

With Narrowband-IoT from Vodafone, Techem can track energy consumption reliably and cost-effectively, and also help customers increase their energy efficiency.

The challenge

Optimising meter reading

Techem is a world-leading provider of energy billing and management services for the property sector. Founded in 1952, it has more than 3,600 staff in more than 20 countries covering 11 million homes. Techem has around 150 offices around the world, including more than 60 in Germany alone.

The company's services help to increase heat and water efficiency within the property sector. Its products and solutions save around 6.9 million tonnes of CO_2 per year. These solutions include optimised fuel procurement, innovative energy supply solutions for residential and commercial properties, metering and billing of heat and water consumption, intelligent solutions for controlling heating systems and radiators, and energy monitoring for property owners and users.

As the market leader in remote radio metering of energy consumption in homes and commercial buildings, Techem is driving integration and digital processes in the property sector.

A key element of Techem's range of services is reliable and legally-compliant metering of heat and water consumption in rented and owner-occupied homes, as well as commercial properties.

> "As we were already working with Vodafone on our existing solutions and saw the company as a leader in the development of IoT solutions and Narrowband-IoT, we decided to work with it again when we tested the technology."
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> **Carsten Plachetta**
> **Head of Smart Systems & Monitoring**
> **Techem**

The company has been using radio-based technology for this for many years. Meter readers use a 'walk-by' process to collect readings from electric meters using mobile devices. Plausibility checks are then carried out to avoid transmission errors and other issues.

In certain circumstances, Techem also uses a stationary radio solution to read meters. It installs fixed data recorders in buildings to collect the readings from the meters around them. The data recorders then transmit this information onto a master data recorder, which uses GPRS to transmit the readings to the Techem server via the Vodafone mobile network.

Both processes work well and reliably in practice, but there is still room for improvement. The main disadvantage of mobile data collection is that the company still has to send an employee to the relevant property to take the meter readings. With stationary collection, every master data collector needs 230 volts power supply.

Its location also must be chosen carefully to ensure that it has sufficient mobile coverage. Plus, the radio standard currently in use has limitations as it is unable to penetrate thick concrete walls and transmit signals from deep cellars.

For these reasons, and to further improve and digitise its processes, Techem decided to look for a simpler and more flexible solution when collecting meter readings.

The solution

Highly reliable data transmission

Techem tested a number of different technologies before deciding on a solution based on LTE Cat NB1 (Narrowband-IoT) and a close partnership with Vodafone.

"We had been watching this technology for some time and had actually played an active role in the technical development of Narrowband-IoT," says Dr Arne Kähler, Head of Research & Development at Techem. "We tested other technological approaches thoroughly but concluded that they would not be as promising for a number of different reasons."

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Unlike the other technologies they tested, Narrowband-IoT (NB-IoT) impressed the development engineers at Techem with its low energy consumption, highly reliable data transmission, ability to penetrate building materials, and the Europe-wide consistency and availability of its radio network.

"As we were already working with Vodafone for the radio components of our existing solutions and saw the company as a leader in the development of both IoT solutions and Narrowband-IoT, we decided to work with it again when we tested the technology," says Carsten Plachetta, Head of Smart Systems & Monitoring at Techem.

Together, the experts from Techem and Vodafone carried out laboratory tests and developed devices and applications for operation in the live Vodafone network. The first step was to swap the fixed, stationary data collectors for devices with integrated NB-IoT. Master data collectors were then no longer required as every device could transmit the readings it collected to Techem itself at determined intervals.

"In the long-term, we see opportunities to use NB-IoT in every end device, so we can then remove intermediate data collectors from the process entirely," says Dr Kähler.

The future

New opportunities in energy efficiency

This more robust and energy efficient method of data transmission itself is going to prove to be of great benefit to Techem and its customers – meter readings can be taken considerably faster and more easily. The use of NB-IoT also supports the further digitisation of Techem's business processes.

"On top of this, the modern technology also gives us a foundation for further improvements, particularly in terms of developing new applications and business models," explains Dr Daniel Ghebru, responsible for innovation management at Techem. "Having a better understanding of energy flows and consumption opens up new opportunities for improving energy efficiency in the field of smart buildings and smart homes."

As well as taking meter readings and billing heat and water consumption, Techem also offers its customers expert advice on how to reduce their energy consumption. This helps them not only to lower their bills, but also reduce their CO_2 emissions and therefore help protect the climate. As a member of the 'Smart Living' business initiative founded by the German Federal Ministry for Economic Affairs and Energy and other German companies, Techem is doing its part to make living and working more comfortable, safer and more efficient through digitisation and intelligent, connected systems.

The bottom line

- Considerable improvement in radio communication within buildings
- Simple, robust and energy efficient transmission of meter readings
- Foundation for further digitisation of business processes, new applications and business models
- Helping to lower energy consumption, reducing CO_2 emissions and protecting the environment

About Techem

- World-leading provider of energy billing and management services for the property sector
- Founded in 1962, now employs over 3,600 staff in more than 20 countries
- www.techem.de

www.vodafone.com/business

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