

Smart Metering across urban, suburban and rural areas

Case Study – Severn Trent Smart Metering

High performance across topographies.

The issue

Severn Trent's strategic drinking water plan is to balance supply and demand, investing wisely to safeguard the water supply for future generations.

Severn Trent, as with many other water utility companies in the UK, has been rolling out an AMR (Automatic Meter Reading) solution but is also thinking about AMI (Advanced Metering Infrastructure) technology developments and the additional benefits that it could generate for their wider business.

The first step in the AMI journey at Severn Trent was to investigate whether there was a smart metering solution suitable to their requirements. To respond to such a fundamental question, Severn Trent challenged the industry to provide a solution that could work across the different environments found in their region, from rural to urban.

Furthermore, Severn Trent wanted to assess whether it would be possible to deploy such a solution based only on their own assets i.e. their own properties. This is a useful question that the industry had not tested before and this made this trial even more interesting and testing.

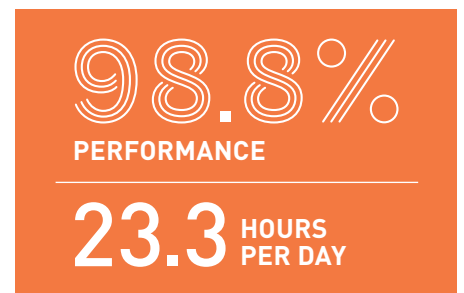
The solution

The trial was conducted in and around Nottingham as the area was representative of the challenges existing across the whole Severn Trent supply area.

The trial required an end-to-end solution. SUEZ worked in partnership with the Severn Trent team for meter installation and site access as well as Diehl for WIZE meters and transmitters and Temetra who supply Severn Trent's Meter Data Management (MDM) platform.

Four WIZE network gateway sites were implemented and each were equipped with one or two antenna depending on the expected contribution and need to generate directional propagation. Diehl WIZE meters were fitted pre-assembled and pre-activated, allowing for the simplest process installation and immediate connection to the SUEZ On'Connect™ platform.

The meters transmit encrypted readings via the WIZE network to the SUEZ On'Connect™ system. The data is unencrypted, validated and deciphered by the platform before onward transmission to the Temetra platform twice a day.



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The results

- WIZE was the only solution that proved viable for the rural areas as well as the urban and suburban
- 98.8% average performance with nominal variation due to the different terrains
- On average, 23.3 hourly readings available daily per meter
- 100% of the meters installed in narrow boundary boxes
- All of the network was based on Severn Trent properties
- The system was integrated into existing Temetra MDM
- The field engineers found the meter installation to be simple and quick
- 14% of properties included in the WIZE trial were found to have leaks
- An unexpected benefit was the ability to understand the changes in water usage

behaviour during the first lock-down back in 2020 which provided Severn Trent with assistance in supply and demand planning.

How a WIZE solution works

Network

WIZE provides a low-power, long-range and bi-directional communication network that operates over a protected frequency channel for smart metering in the VHF frequency band; 169 MHz.

The WIZE network communication protocol is an open protocol promoted and supervised by the WIZE Alliance and it is fully compliant with the European standard EN13757.

The SUEZ approach to deploy WIZE networks provides the most efficient roll-out as it maximizes population coverage and network performance whilst providing value for money. Considerations for hosting the transmitters include:

- Site Ownership: properties owned by the utility company are significantly more cost efficient, afford increased autonomy and allow for quicker installation
- Site topography and required antennae height influence the quality of network coverage
- Meter locations: The sites can impact transmission conditions and need to be taken into account when developing a resilient network
- Access to power. If power isn't available onsite, SUEZ can provide solar or wind power solutions.

Endpoints

WIZE meters have a battery life of 15 to 20 years battery life depending on the configuration and data granularity.

WIZE meters are available for the main meter manufacturers, including DIEHL, ITRON, Elster-Honeywell and SENSUS.

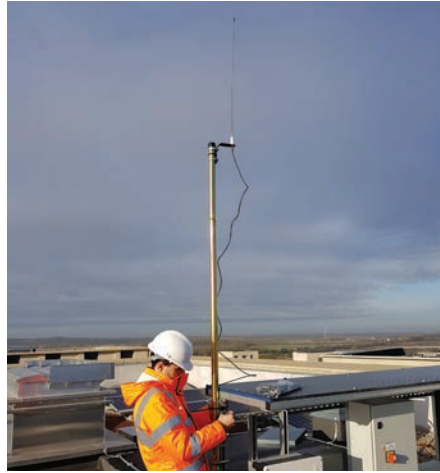
Results table

	% Meters	% Meters giving 24 readings per day	% Data Availability
Urban	62	96.3	99.2
Suburban	21	99.4	99.4
Rural	17	80.6	95.3
Total		96.3	98.8

Source: Severn Trent.

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The WIZE meters and transmitters are usually supplied pre-configured and pre-activated so they connect seamlessly to the WIZE network as soon as within range and without the need of additional configuration. meters are linked to the SUEZ On'Connect™ platform and ready to install. Field teams are trained on the simple steps for fitting the equipment. A simple installation is key to generate cost and operational efficiencies.

Data

WIZE meters can provide 15 minute, hourly and daily readings, as well as a range of alerts such as leakage, backflow and tampering.

Additionally, WIZE meters offer the option to produce specific data frame for network analytics and asset management.

The data transmission is encrypted and can only be deciphered by the SUEZ ON'Connect platform before onward transmission to the customer platform of choice (e.g. Temetra).

About Severn Trent

We were founded in 1974 as a regional, state-owned water authority based in the Midlands and responsible for water supply management, and waste water treatment and disposal. Located in the catchment areas of two of Britain's largest rivers - the Severn and the Trent, it's from these rivers that we get our name.

About SUEZ

Since the end of the 19th century, SUEZ has built expertise aimed at helping people to constantly improve their quality of life by protecting their health and supporting economic growth. With an active presence on five continents, SUEZ and its 90,000 employees strive to preserve our environment's natural capital: water, soil, and air. SUEZ provides innovative and resilient solutions in water management, waste recovery, site remediation and air treatment, optimizing municipalities' and industries' resource management through "smart" cities and improving their

environmental and economic performance. The Group delivers sanitation services to 64 million people and produces 7.1 billion m3 of drinking water. SUEZ is also a contributor to economic growth, with more than 200,000 jobs created directly and indirectly on an annual basis, and a provider of new resources, with 4.2 million tons of secondary raw materials produced. By 2030, the Group is targeting 100% sustainable solutions, with a positive impact on our environment, health and climate.

For more information

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“ This has been an excellent project with Severn Trent testing the WIZE smart metering technology across their terrain. We are delighted that using only Severn Trent properties as requested, the SUEZ WIZE equipment was able to reach all the urban, suburban and rural districts and achieve an amazing performance of 98.8%. It was particularly interesting to use the company assets alone as we know that this can represent a 30-40% implementation saving.

– Francesc Cabrespina, SUEZ



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