

Creating efficient distribution networks

SMART STREET

Electricity North West's Smart Street project is now live. By combining innovative technology with existing assets, Smart Street aims to make networks and customers' appliances perform more efficiently and make it easier to adopt low carbon technologies onto the electricity network.

Electricity North West, the company who operates the electricity network in the North West of England, is leading the way in developing smart solutions to meet the UK's future energy challenges. One of the company's latest low carbon projects looks at innovative ways of maximising the use of the existing electricity network by adapting established technology and leveraging learning from previous projects.

Smart Street is the first demonstration in Great Britain of a fully centralised low voltage network management and automation system. Its new voltage control techniques configure and optimise voltage on high voltage (HV) and low voltage (LV) networks in real time using bespoke Spectrum 5 software developed by Siemens. These techniques are intended to minimise the impact of low carbon technologies, while maintaining voltage within statutory limits.

Following a challenging installation programme the Smart Street technologies have been commissioned and the project trials are under way.

The first demonstration in GB of a fully centralised low voltage network management and automation system

Technology installation

A range of new voltage management technologies have been installed in the company's main control room, at six primary substations and at 40 associated distribution substations. The new equipment was installed and the system configured between 2014 and late-2015, before the live trials began in January 2016.

During the technology build Smart Street engineers installed 498 Weezap and 126 Lynx devices (a new controllable switching device developed in

collaboration with project partner Kelvatek). The team also installed 49 end-point monitors, 84 low voltage capacitors, six high voltage capacitors and five on-load tap changing transformers. All of the equipment is monitored and controlled by Siemens Spectrum 5 via Electricity North West's existing network management systems from its control centre.

The Smart Street technologies have been commissioned and the project trials are under way.

During the final stages of the technology build, engineers were able to ensure that the installation of enabling technologies caused the minimum possible disruption to customers. The majority of equipment was installed using LV back-feeds, live-line techniques and generation to avoid planned supply interruptions where possible.

Project trials

The trial sites serve around 67,000 customers in Manchester, Wigan, Wigton and Egremont. These sites were chosen as they are representative of the company's geographic area and different customers.

The trials will take place over a two-year period using a two-week-on/two-week-off test regime. This will enable one year's worth of Smart Street data to be compared with normal network operation, so the project team can calculate the overall benefits of Smart Street and understand any impact on customers.

The trial regime will examine the following areas:

- LV voltage control
- LV network management and interconnection
- HV voltage control
- HV network management and interconnection
- Network configuration and voltage optimisation.



Bringing energy to your door

Customer engagement

Before the technology installation began, the company launched a campaign to inform customers in the trial areas about the project. A customer focus group was held to help decide the best way to communicate information to the 67,000 customers served by the trial circuits. The company issued an information leaflet to customers and subsequently contacted around 1500 customers who live close to any new equipment installed as part of the project.

The Smart Street team also committed to contact any vulnerable customers living in the trial areas, by telephone and by the normal written procedures, if their home would be affected by unavoidable planned outages to install equipment. This proactive approach was designed to manage the specific needs of individual customers. However, because of the careful design of the installation programme, all technologies were installed without any need to interrupt customers' supplies.

Engineers were able to ensure that the installation caused the minimum possible disruption to customers.

The next part of the campaign will be to hold a series of focus groups to collect qualitative information from customers to understand whether they observe any changes in their electricity supply as a result of the trials.

Find out more about Smart Street at www.enwl.co.uk/thefuture.