



IoT Remote Monitoring Sensor

Optimises Substation Performance



“Developing the KeLVN product for the customer’s project was a major step for Captec in the journey to providing easy-to-install monitoring and control for the electricity distribution industry.”

Steve Braithwaite,
Electronics Team Leader

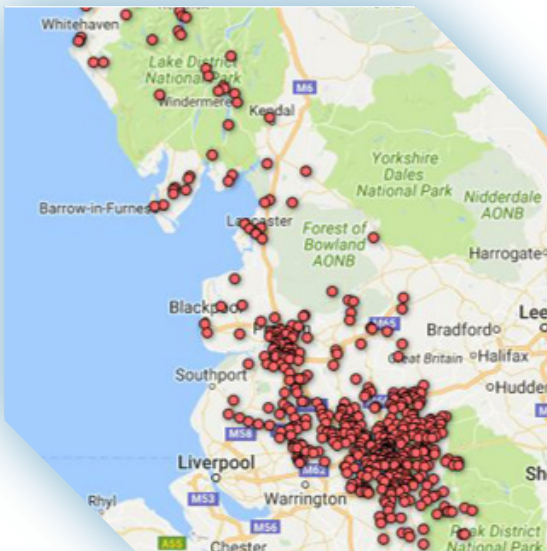
As part of their project, a UK DNO working with a major energy consultancy required the development of a battery powered wireless monitoring networked system that could be easily deployed on live, remote substations to monitor temperature, voltage, current and power.

Requirements & Issues

- ▶ Non-intrusive and fast all-weather installation
- ▶ Easy sensor mounting
- ▶ Long battery life required in each IoT unit
- ▶ Local radio connection from sensors to aggregation unit (Hub)
- ▶ Daily data reporting to central database
- ▶ Required to be physically robust
- ▶ Operate over a temperature range of -20°C to +85°C

The Solution

- ▶ Local low-power wireless network connects sensors to a wireless hub
- ▶ Battery powered design of sensors and hub, with a minimum 3.5-year lifetime. Avoids need for mains power supply
- ▶ Unsteered GSM GPRS based data backhaul unit (Hub) with optimised cell site selection
- ▶ Temperature sensor designed to meet IP67 electrical enclosure rating and future-proofed for easy addition of new sensor types
- ▶ Local temperature, voltage and current data collection sensors use flying leads to measure volts and current
- ▶ IoT units designed with magnet and cable-tie capability for easy sensor mounting



The Outcome

- ▶ 11,000 sensor points monitoring 520 substations installed for the customer
- ▶ Successful measurement tests over 3 years completed
- ▶ Learning and experience carried into future innovation projects



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