



Active Response IoT Monitor & LinkBox Switch

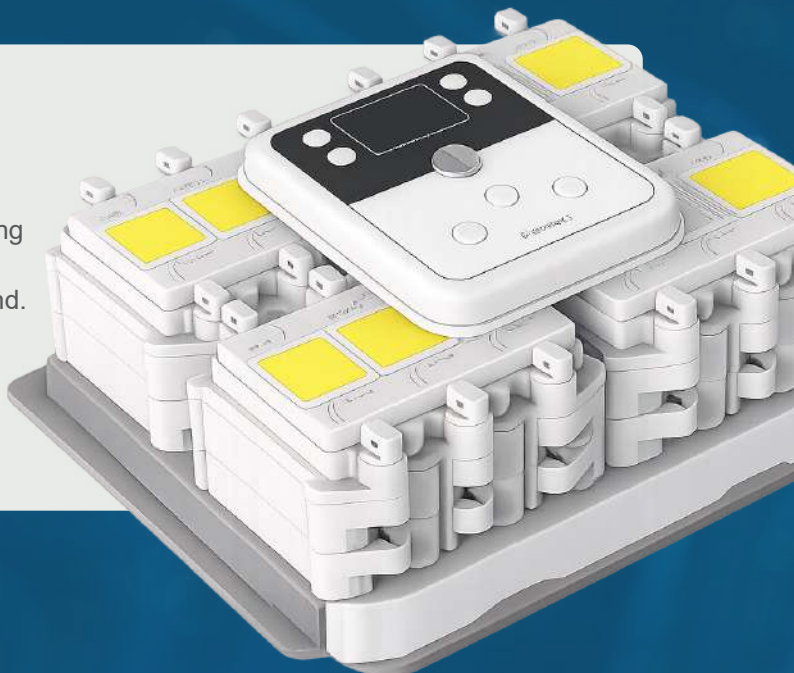
Electrical Substation Monitoring & Smart Grid Meshing



As part of the Active Response project, Captec developed LinkMonitor and LinkSwitch technologies to provide continuous electrical monitoring and compact, high-speed switching within existing underground link boxes, improving network visibility and supporting future automated network reconfiguration while reducing reliance on major infrastructure upgrades.

The Customer

A UK electricity distribution network operator serving more than eight million homes and businesses across London, the South East and East of England. The organisation invests in smarter network technologies to increase capacity and flexibility, improve reliability and long-term resilience, and support growing electricity demand.



The Challenge

- ▶ Electrification and growing EV charging demand required greater network visibility and more flexible use of existing infrastructure
- ▶ The Active Response programme aimed to make better use of existing network capacity by dynamically redirecting electricity, reducing the need for major infrastructure upgrades
- ▶ Underground link boxes installed decades earlier lacked operational monitoring, limiting insight into electrical performance
- ▶ Continuous monitoring and high-speed automated switching had to be integrated within confined underground enclosures and withstand demanding conditions

The Solution

- ▶ For Active Response, Captec adapted two complementary technologies for underground electricity link boxes:
 - ▶ LinkMonitor and LinkSwitch
- ▶ LinkMonitor measures voltage, current and power, securely transmitting operational data to the customer's central systems
- ▶ LinkSwitch reconfigures electrical connections in a fraction of a second while minimising electrical arcing
- ▶ Both compact systems combine low-power electronics, embedded systems, communications and precision mechanical engineering for integration within existing link boxes



The Outcome

- ▶ LinkMonitor successfully demonstrated continuous electrical performance monitoring, improving visibility of existing underground network assets
- ▶ LinkSwitch was prototyped, tested and validated, demonstrating compact, high-speed switching for future automated network reconfiguration within severe physical constraints
- ▶ Together, the technologies demonstrated how monitoring, secure data communications and precision mechanical switching could be integrated within existing link boxes, supporting greater network flexibility and utilisation with the potential to reduce reliance on major infrastructure upgrades



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