

IMPERIUM Substation control system capabilities



Capula is a leading systems integrator and supplier of substation control systems for the UK National Grid. Our technologies have been in operation at National Grid facilities since the early 1990s and are currently deployed at around a third of the country's substation sites. In 2016 Capula was named as a key supplier for National Grid's SCS upgrade framework, a program that will eventually involve the refurbishment and replacement of numerous control systems across the UK.

Technology

Our control technology offers a comprehensive feature set, innovative capabilities and a proven track record of performance and reliability. We combine commercial off the shelf technology (COTS) with our deep domain expertise and application engineering capabilities to provide scalable, flexible solutions for facilities of all types and sizes.

Capula solutions are fully type registered and approved to National Grid and International standards, and our full lifecycle approach to system design provides clear upgrade paths and backwards compatibility to promote system longevity.

IMPERIUM, our latest generation control system is a substation hardened control platform developed to meet the requirements of the current and future energy network. IMPERIUM can handle multiple protocols including GI74, IEC 60870-5-101, IEC 61850 and web client access availability.

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“I've found the Capula approach to be very proactive and focussed on customer delivery. Capula completed a full substation control system replacement with 8 weeks, with only one primary circuit outage. Traditionally, this work has taken 6 to 9 months with multiple circuit outages.”

Andy Chapman, National Grid's Assurance Engineer said regarding Capula's activities at the Hutton substation in Lancashire.



Design and delivery

We provide an end-to-end solution for substation control and automation, in new-build, refurbishment or system replacement projects.

- Site surveys to assess functional and communications requirements
- Design and production of panels, equipment layout and human machine interfaces
- Integration with legacy hardware
- Design of bay controllers, gateways, RTUs and the automation applications within them
- SCADA system design
- Automation solutions for transformer and load control and other key substation functions
- Software validation and testing capabilities for any size of substation with the National Grid portfolio, up to 80 bays and 120,000 I/O points
- Site installation, testing and commissioning
- Production of as-installed drawings, documentation, operation and maintenance manuals in accordance with National Grid standards.

Service and support

Our comprehensive, tailored service and support capabilities have been designed to maximise availability and uptime while controlling total lifetime cost.

- 24/7 on-site service and engineering support
- Management of complete substation configuration on our customer's behalf
- Service and replacement part inventory management including component lifecycle and obsolescence management
- A rotating programme of ongoing testing using our in-house rigs enables the provision of fully validated "hot" spares



Upgrade and refurbishment

Our understanding of customer's operational requirements together with our deep domain knowledge ensures a level of service that is unsurpassed. This has driven the development of an innovative approach to substation upgrade and refurbishment projects, designed to dramatically reduce both project delivery time and the need for primary circuit outages during control system modification or replacement.

- Refurbishment and upgrade designs that maximise the reuse of existing hardware infrastructure and minimise impact on existing plant layout
- Unique modular, mobile temporary Dual Central Control Unit (DCCU) Substation Control Units and Bay Controllers are pre-loaded with the appropriate configuration for the project site
- Our engineers can set up the equipment and connect it to the fibre network on the project site, allowing almost uninterrupted operation while the primary equipment is replaced
- In one recent case, this approach allowed our customer to replace a complex refurbishment programme involving multiple primary circuit outages with an eight-week project completed with only a minor outage