BATTERY ENERGY STORAGE SYSTEM (BESS)

DEVELOPMENT IN FARNHAM, KENT, UK

Power

Value	Multi-million
Voltage	33kV
Capacity	20MVA
Client	Undisclosed
Duration	10 months

Project summary

This project covered the design, construction, and commissioning of a Battery Energy Storage System (BESS) compound. Works included detailed design and approvals, installation of civil and electrical infrastructure such as plinths for 11nr batteries and 6nr transformers, 700m of 33kV cabling, a 2-panel 33kV switchboard, auxiliary transformer, and fibre connections.

Pre-construction

JSM employees completed the detailed design which included cable schedules & calculations, protection drawings, Distribution Network Operator (DNO) substation design, auxiliary transformer design, battery sizing calculations & equipment schedule. Design approval was granted from the DNO and Client.

Construction

The compound construction included site clearance, earth grid installation, and plinths to house 11nr batteries, 6nr transformers, and the DNO and Client switchrooms, along with internal roads, walkways, and full compound fencing. In total, 700m of 33kV cable was installed both on and off-site. In line with DNO standards, 1nr 2-panel 33kV switchboard and ancillary equipment was installed and commissioned within a GRP enclosure, and an auxiliary transformer was installed to provide a LV AC supply. The BESS infrastructure included the installation of 11nr batteries with associated cable installation and terminations, as well as fibre cable and inter-battery connections.

Post-construction

Works included hot commissioning, energisation and providing As-Built records.

- Principle designer
- Designer
- Compound construction
- Compound earthing
- DNO switchgear & substation
- Installation of 11nr Batteries

- Civils
- 33kV Cables & Duct installation
- LVAC supplies
- Jointing & Terminations
- Hot and cold commissioning with Energisation

PROJECT CHALLENGES

CHALLENGE	SOLUTION
Coordination of works The non-contestable works being completed by UK Power Networks involved their contractor working alongside JSM within an already constrained site.	The programme of works produced by JSM included UKPN's non-contestable scope to ensure efficient coordination of works. Regular site liaison meetings were held between JSM & UKPN which resulted in a seamless delivery.
Plant installation Due to site constraints the 11nr batteries, each weighing 32ton, required a complex lift to their final resting position.	To ensure the ground was able to support the 300ton crane, JSM completed a temporary works design and constructed the ground reinforcement in accordance with the design.