

BATTERY ENERGY STORAGE SYSTEM (BESS)

DEVELOPMENT IN BROADDITCH, KENT, UK

Team - Power | **Value** - Multi-million | **Voltage** - 33kV | **Capacity** - 21MVA

Client - Undisclosed | **Duration** - 10 months | **Date** - March 2023

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, plinths to house 6nr batteries, 3nr transformers and the DNO & Client switchrooms, internal road and walkways along with full compound fencing.
- In total, 460m 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.
- The BESS infrastructure included the installation of 6nr Batteries with associated cable installation and terminations. This also included installing a fibre cable and between battery connections.

Post-construction

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



Principal contractor

Designer

Compound construction

Compound earthing

DNO switchgear & substation

Installation of 6no
Battery containers

Civils

33kV Cables & Duct
installation

LVAC supplies

Contract lift

Jointing & Terminations

Hot and cold commissioning
with Energisation

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Project challenges

Challenge

Site earthing

The Point of Connection (POC) was via a 33kV Over Head Line (OHL), however the site was also to receive a 11kV connection in the near future. Consideration had to be made for the entire fault contribution and difference in fault clearance times for both voltage levels.

Solution

With 100% ground return for both 33kV & 11kV faults and a restricted site area, the earthing design achieved a safe 'Hot' site based on ENA E.R S36

Plant installation

Due to site constraints the 6nr 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.

