

Case Study

Complete secondary engineering for 132 kV BESS substation

Client: HV Testing & Design Ltd., UK (End Customer: SSEN, UK)
Level: 132 kV
Commissioned: 2024
Scope: Engineering Services

Introduction

As renewable energy integration increases, so does the need for faster and optimized substation engineering, designing, installation, and commissioning. With supply chain constraints growing, EPENAM offers unmatched solutions for EPCs, contractors, and installers. Recently, we provided secondary engineering services to a major EPC in the UK for their BESS power evacuation loop-in-loop-out substation. The Bramely BESS features a 132 kV substation with three line bays: two line-in-line-out with the utility grid and one towards the BESS transformer.

Problem Statement

Renewable integrations have necessitated smaller power evacuation substations that do not fit traditional EPCs and installers' financial models. Hiring new resources incurs high overhead costs and liabilities, with limited future vertical utilization options. Engaging existing resources for these substations increases operating costs and risks bottlenecks for concurrent larger projects. Bramely faced a similar issue, where HVT D Ltd. sought a cost-effective solution for a complete secondary design and engineering package for their 132 kV BESS substation.

Solution

EPENAM offers cost-effective, highly experienced offshore resources to cover margins in such cases. This solution was ideal for HVT D Ltd., who needed to manage costs for a small substation. EPENAM provided a comprehensive secondary engineering, design, and drafting solution package, ensuring the project's success.

Our package included complete panel engineering, from manufacturing IFC to site installation and commissioning schedules:

- GA - Genral Arrangement
- LA - List of Apparatus
- CD - Circuit Diagrams
- WD - Wiring Diagrams

The panel engineering included relay and control panels, metering panels, marshalling kiosks, CT and VT boxes, and other allied services. These panels featured protection relays from major vendors including Siemens, GE, and Artech. Major protections included:

- Main line differential using Siemens 7SL86
- Backup protection using GE MiCOM Agile P145
- Busbar protection using Siemens 7UT86

Additionally, we provided detailed cable core sheets, cable schedules, and cable block diagrams. We also provided interfacing documents for vendor equipment to ease the interfacing process. This included:

- Circuit Breakers
- Earth Switches
- Disconnectors
- CTs and VTs

Conclusion

EPENAM's highly cost-effective one-stop solution, powered by our experienced offshore resources, enabled HVT D to complete the project well within time and budget, increasing their margins. The quality of the report, timely delivery, and project handling were acknowledged by the customer.



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