



66kV 275kV 33kV 11kV 132kV 400kV

CASE STUDY
16162

Camster II Wind Farm

10 Wind Turbines with a connection capacity of 36 MW capable of powering 40,000 Homes

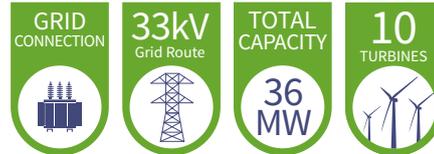
Introduction

Powersystems was appointed as Electrical Balance of Plant (EBoP) contractor for Camster II Wind Farm, responsible for the full design, installation, testing, commissioning and energisation of the electrical infrastructure for this 36MW onshore wind development.

Camster II expands the existing Camster Wind Farm following consent from the Scottish Government. The site comprises 10 Vestas turbines, generating at 33 kV and exporting clean energy to the SHEPD network - enough to supply approximately 40,000 homes.

Construction began in February 2024, originally planned for a 12 month schedule. Although all Powersystems works were completed on time, grid connection delays with the DNO pushed back energisation to December 2025. On 18 December 2025, Powersystems successfully energised the wind farm's switchgear, auxiliary transformer and full 33 kV array network.

ION (Interim Operational Notification) is targeted for 04/03/2026, with FON (Final Operational Notification) expected in March 2026, following final Dynamic System Studies with NESO.



Project Facts and Figures

- ▶ **33 kV substation: 1**
- ▶ **Auxiliary transformers: 1**
- ▶ **Wind turbines: 10 × Vestas 3.6 MW**
- ▶ **Installed capacity: 36 MW**
- ▶ **Grid connection voltage: 33 kV**
- ▶ **33 kV cabling: 4.8 km**
- ▶ **Homes powered: ~40,000**



Powersystems Partnerships

Camster II was delivered in partnership with:

Farrans Construction

Principal Contractor responsible for civil works, earthworks, roads and foundations.

RWE Renewables / Onshore Wind Ltd

Developer and long-term operator of the site.

SHEPD (Scottish & Southern Electricity Networks Distribution)

DNO providing the 33 kV grid connection and protection interface.

The project further strengthens Powersystems' long-standing relationships with both Farrans and RWE. With experience working across all UK DNOs and TNOs, Powersystems brought essential HV engineering capability to ensure a safe, compliant and timely energisation.



Camster II - Wind Farm delivering a connected capacity of 36 MW

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FARRANS
A SISK COMPANY

RWE



**Scottish & Southern
Electricity Networks**

Wind Generation Development

Wind remains one of Scotland's most significant sources of sustainable electricity. Camster II supports the national strategy to increase renewable generation capacity and strengthen regional supply resilience.

The development comprises:

- ▶ 10 × 3.6 MW Vestas turbines
- ▶ Turbines grouped into two 33 kV arrays
- ▶ Export via a new 33 kV wind farm substation
- ▶ Direct integration into the SHEPD 33 kV network

The project was designed for long-term operational efficiency, environmental integration and minimal landscape impact.

Scope of Works and Major Design Considerations

Powersystems delivered all electrical infrastructure, including:

33 kV & EBoP Systems

- ▶ 5 panel Schneider WS 33 kV switchboard
- ▶ 4.8 km of 33 kV cabling
- ▶ 33/0.415 kV auxiliary earthing transformer
- ▶ Substation earthing & WTG earthing systems
- ▶ LV, control, SCADA and communication cabling
- ▶ LV distribution systems
- ▶ Substation lighting and small power
- ▶ Fire & intruder alarm systems
- ▶ Compound lighting and control systems

Design Studies Completed

- ▶ Load flow study
- ▶ Arc flash assessment
- ▶ Harmonic analysis
- ▶ P28 flicker assessment
- ▶ G5/5 Stage 3 harmonic study
- ▶ Cable loss calculations
- ▶ Earthing design
- ▶ Fault level calculations
- ▶ Lightning protection risk assessment
- ▶ Wind farm protection study
- ▶ Full RMS (Grid Code) compliance study
- ▶ Regulatory and safety compliance checks

Project Timings

- ▶ Feb 2024: Powersystems mobilisation following completion of civil works
- ▶ Jan 2025: All installation, cold commissioning and substation energisation readiness completed
- ▶ Jan-Nov 2025: Programme pause due to DNO grid connection delays
- ▶ Nov 2025: Powersystems remobilised
- ▶ 18 December 2025: Successful energisation of:
 - Wind farm switchgear
 - Auxiliary transformer
 - Full 33 kV array network

Strong communication, rigorous health & safety processes and proactive planning ensured the project remained aligned with revised milestones.

What the Client Wanted

Onshore Wind Limited and RWE required a project partner able to deliver:

- ▶ A safe, reliable and modern 33 kV electrical system
- ▶ Full EBoP design and engineering assurance
- ▶ Grid compliant protection and SCADA integration
- ▶ Minimal environmental impact
- ▶ HSEQ excellence
- ▶ A flexible, collaborative approach to grid connection delays

The project supports their commitment to sustainable energy generation and long-term community investment.

How Powersystems Helped

Powersystems provided full EBoP capability, ensuring:

Technical Excellence

- ▶ Accurate design and modelling
- ▶ Robust cable, protection and earthing engineering
- ▶ Fully grid compliant electrical infrastructure

Efficient Project Delivery

- ▶ Optimised installation sequences
- ▶ Adaptation to revised energisation timelines
- ▶ Commissioning completed to industry-leading standards

Safety & Quality

- ▶ "Safety First" embedded throughout
- ▶ SAP supervision for all HV operations
- ▶ Full compliance with SHEPD requirements

Collaborative Working

- ▶ Close coordination with Farrans, RWE and SHEPD
- ▶ Proactive issue resolution
- ▶ Transparent communication and project reporting

Powersystems Responsibilities Included

- ▶ Full HV/LV installation
- ▶ Protection & control design
- ▶ Point-on-wave commissioning
- ▶ SCADA integration
- ▶ Cable installation & containment
- ▶ SAP services for energisation

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Design Works

Design was central to ensuring compliance, safety and reliability. Powersystems completed:

- ▶ Full 33 kV substation design
- ▶ 33 kV protection scheme design
- ▶ LV systems and battery charger design
- ▶ GA drawings for the substation
- ▶ HV & LV network modelling
- ▶ Cable sizing and loss assessments
- ▶ SCADA architecture design
- ▶ Client drawing reviews
- ▶ Control and signal wiring design

Installation Works

Powersystems installed:

- ▶ Substation & compound earthing
- ▶ WTG earthing systems
- ▶ 4.8 km of 33 kV cabling
- ▶ LV and control cabling
- ▶ WS switchboard
- ▶ All protection and control panels
- ▶ 110V DC battery chargers
- ▶ Lighting and small power systems
- ▶ All 33 kV joints and terminations

Commissioning Works

Commissioning included:

- ▶ Hot & cold commissioning of 33 kV switchgear
- ▶ Functional commissioning of the auxiliary transformer
- ▶ VLF testing on all HV cables
- ▶ Protection scheme testing
- ▶ SHEPD interface commissioning
- ▶ LV inspection & certification
- ▶ Full functional testing of all systems

Energisation Works

Powersystems SAPs delivered:

- ▶ Pre energisation checks
- ▶ Supervised energisation of 33 kV switchgear
- ▶ Energisation of auxiliary transformer
- ▶ Energisation of WTG arrays
- ▶ Issue of all associated safety documentation



The Results

The Camster II Electrical Balance of Plant works were completed in December 2025, with all systems energised safely, on budget and in line with the revised programme.

This project represents another successful partnership between Powersystems, Farrans Construction and RWE Renewables, contributing to Scotland's expanding renewable energy fleet.

Environmental Benefits

- ▶ 36 MW of clean energy powering ~40,000 homes
- ▶ Supports Scotland's sustainable energy strategy
- ▶ Low-impact electrical design with efficient, modern equipment
- ▶ Long-term reduction in carbon-intensive generation

Economic & Social Value

Over its 25 year lifespan, Camster II will:

- ▶ Deliver a community benefit fund
- ▶ Support around 500 jobs across Scotland, including 150 in the north
- ▶ Provide sustained investment to the regional economy
- ▶ Strengthen local supply chains and skills development



Powersystems UK Limited Badminton Road, Yate, Bristol BS37 5GG

T 01454 318000 E enquiries@powersystemsuk.com W powersystemsuk.co.uk

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