POWERSYSTEMS
HIGH VOLTAGE SPECIALISTS
An Employee Owned Business

CASE STUDY 15252

Bryn Blaen

Wind Farm Project - Renewable Energy

4.0 MILLION £

12 MONTHS

RENEWABLE ENERGY

24% CONNECTED

Bryn Blaen Wind Farm

Powersystems were responsible for the design, installation, testing and commissioning of the electrical infrastructure associated with this project. This consisted of a 66kV grid connection which was adopted by Western Power Distribution, as well as the electrical works for 6No Enercon 2.35 MW wind turbines, an onsite substation and a substation at the point of connection.

Bryn Blaen wind farm is a 14.1MW capacity wind farm located in mid-Wales, developed in 2 phases, over 24 months. The wind power generation site began generating clean renewable energy in November 2019.

Bryn Blaen is one of a number of windfarms that have been developed in Wales over the last few years, helping to introduce clean, renewable energy, utilising the countries natural resources to combat climate change and secure energy requirements within the UK. The completed site produces enough electricity to power over 8,400 homes.

The site connects onto the Western Power Distribution's 66 kV electricity network via a radial, which in turn supplies a ring circuit that feeds Brecon, Builth Wells, Glasbury and Llandrindod wells. The highly experienced Powersystems engineers, work with every Distribution Network Operator in the UK on ICP projects, connecting and, exporting to the grid at both 11kV, 33kV, 66kV and 132kV.

The electrical work was undertaken in partnership with Jones Bros Civil Engineering on behalf of the client, Njord Wind Energy.

66 kV

33 kV

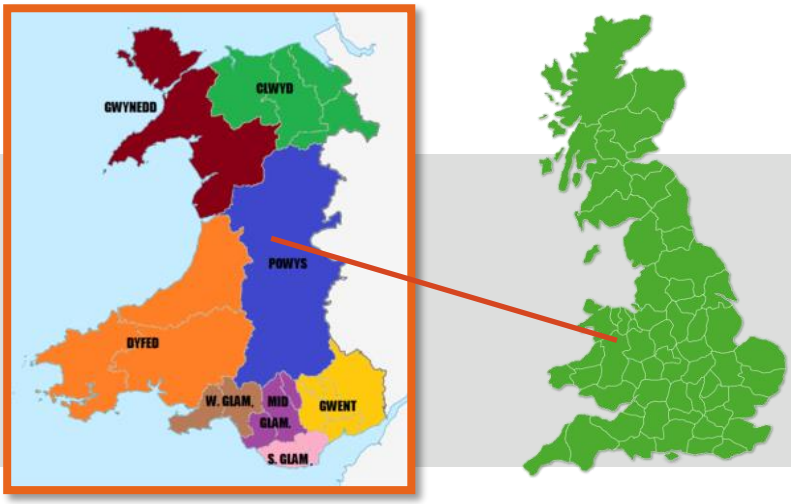
Major design considerations:

The site for wind turbines on the land north of the village of LLangurid in Powys was carefully considered. A number of factors needed to be justified in the development of the initial proposal, these included; low population density, wildlife and its use of the area, including the breeding territories of birds, and foraging paths of bats, accessibility of the site, local, regional and national planning policy as well as wind speeds. Approximately 7 km of new tracks were required to access the turbine locations. The tracks needed to be a minimum of 5m wide, considering junctions, bends and passing places and at turbine base locations where wider working areas were required. Local materials were imported from nearby quarries for this construction.

Project facts and figures:

WESTERN POWER DISTRIBUTION
Serving the Midlands, South West and Wales

- Number of turbines: 6
- Wind turbine capacity: 2.35
- Totalled installed capacity: 14.
- Length of offsite 66kV cabling: 13km
- Length of onsite 33kV cabling: 6km
- Windfarm Voltage 33 kV
- Connection Voltage 66 kV
- 66/33 kV high impedance 20 MVA transformer
- Powersystems have connected 24% of all UK windfarms



Powersystems UK Delivering Greener Power Solutions

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How Powersystems helped:

As a Lloyds accredited contractor, Powersystems were appointed to design, supply, install, test and commission the new Bryn Blane wind farm Substation, and the WPD Substation as well as lay 13 km of 66 kV cable with joint terminations every 500m route for adoption by Western Power Distribution (WPD).

Powersystems carried out the principle contractor role on phase 2 of the project at the request of the client. Powersystems were utilised as the conduit between the client and WPD in gaining design approval for the substation, connection works and receiving WPD sign off for the build.

- Interface with Western Power Distribution
- Switchgear installation and commissioning
- Transformer installation and commissioning
- Cable design, supply & installation
- HV testing
- SAP provision
- Backup generator supply

Scope of works:

The major items of electrical plant that Powersystems designed, supplied, installed, and commissioned were:

- Design of a new 66kV substation/compound for the client and DNO to connect to the local 66kV network
- Design of new 66/33kV substation/compound and onsite electrical distribution
- Supply and install 66kV equipment for the compounds, inc. circuit breakers, disconnectors, etc.
- Design, supply and install a 66/33kV 20MVA Transformer
- Supply and install of a 2 panel 33kV switchboard
- Design and build transformer protection panels
- 66 & 33kV Cabling and terminations
- All necessary building fit-out works comprising Lighting and small power with intruder and fire alarm systems
- Install low voltage, control, signal and communications cabling works
- Full installation test and commissioning

The results:

- Fraisthorpe wind energy project was officially opened in August 2016
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Economic benefits:

- During construction, materials sourced from local suppliers where possible
- Local companies/resource employed where possible
- Wind farm could provide an annual payment of approximately £90,000 annually to be spent on community projects. This figure is based on £5000 per MW of capacity per year whilst in operation, creating a development fund of £2.25million

Environmental benefits:

- Renewable Clean Energy
- Extensive management of sensitive upland habitats for important species of birds and to ensure the survival of upland communities that have been threatened

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For more information

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