



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

CASE STUDY
13623

Kernow Solar Park Farm

Cornwall Council, delivering a capacity of 5 MWs



250
THOUSAND
£

2
MONTHS

RENEWABLE
ENERGY

1.5mw
SOLAR ARRAY

solarcentury

WESTERN POWER
DISTRIBUTION

Major design considerations:

The interconnection between the Newquay Airport 11,000V ring switchboard and the North site 1.5mw Solar Array inverter substation was made via a private wire 11,000V connection.

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

- ▶ 11,000V cable pull between Newquay Airport substation and Solar Farm
- ▶ 11,000V ring main unit and GRP substation building installation including cable installation, termination and earthing
- ▶ Construction of Substation Base
- ▶ Supply, installation, testing and commissioning of Elster A1700 tariff metering
- ▶ Extension of the Newquay Airport HV substation Airfield ring switchboard, and to provide import metering on the 11kv switchboard
- ▶ HV Cable Trenching Works
- ▶ Full installation test and commissioning

Project facts and figures:

- ▶ Totalled Installed capacity: 5 MW
- ▶ Solar farm Voltage: 11 kv
- ▶ Connection Voltage: 11 kv
- ▶ Length of onsite 11 kv cabling: 5 km
- ▶ Powersystems are a Lloyds registered (NERS) approved independent connection provider (ICP)



Kernow Solar Park Farm

Powersystems were responsible for the design, installation, testing and commissioning of the electrical infrastructure associated with the construction of the 5 MW solar park, Kernow Solar Farm, St Mawgan near to Newquay Cornwall airport.

The Kernow Solar park scheme saw the development of a 5 MW solar park at St Mawgan, near to Newquay Cornwall airport, producing an initial income of around £700,000 per year and enough power to run 1,000 homes.

The plan for the solar park was to supply power to the national grid, but also directly to the Council owned Newquay Airport. This was to help to reduce the Airport's carbon footprint and save money.

Both of the Point of Connections (POC) exported into the same WPD 11 kV network

Kernow Solar Park was a tangible demonstration of the Council's tenacity and leadership. At that time, they were leading the way with their own development, showing full commitment to a Green Cornwall Strategy.

The Kernow Solar park project aimed to generate renewable electricity equivalent to almost 5 per cent of the Council's carbon footprint.

The power supplied from the solar farm would greatly assist the Airport's aspiration to make their operations carbon neutral, helping them to become one of the UK's greenest airports. They were working towards certification through the Airports Council International (ACI) Carbon Accreditation Scheme and being able to source their electricity directly from the solar farm aimed to dramatically reduce their emissions.



11
kV



Powersystems partnerships:

The Solar Farm was constructed by Solar Century.

There is currently 1.5MW of solar PV connected between the Cornwall Airport Newquay and the solar farm via a private wire to the St Columb Major substation. This is sold to the airport at a slightly reduced rate of 15% on retail price. The private wire is rated to be able to take up to 6.7MW of capacity, and there is therefore the potential to increase the energy delivered to the Cornwall Airport Newquay.

There is also an additional southern grid connection to a second substation (St. Mawgan) which is currently where the remaining 3.5MW solar farm generation is exported to the electricity network using a separate PPA agreement.

What the client wanted:

Powersystems carried out the construction role for both the grid connection and private wire network and were appointed by Cornwall Council. 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.

How Powersystems have helped:

Powersystems engineers were involved with the;

- ▶ Interface with Western Power Distribution
- ▶ Switchgear installation and commissioning
- ▶ Transformer installation and commissioning
- ▶ Cable design, supply & installation
- ▶ HV testing
- ▶ SAP provision
- ▶ Renewable clean energy
- ▶ Reduction in the Carbon Footprint of Newquay Airport



Economic benefits

- ▶ During construction, materials sourced from local suppliers where possible
- ▶ Local companies/resource employed where possible
- ▶ Solar Farm could provide sufficient power for up to 1500 homes



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