

Cleve Hill Solar Park - Power systems support

Client: Cleve Hill Solar Park, WIRCON GmbH

Location: Kent, UK

Date: ongoing

Cleve Hill Solar Park, located on the north Kent coast, close to the village of Graveney, will be one of the largest Solar Parks within the UK.

Rated at 300MW and connecting at 400kV the project requires substantial HV equipment and to comply fully with National Grid requirements for a large transmission connected power station.

The ITPenergised Technology team have supported the HV electrical design of the project and the National Grid connection application process.

Our Role:

- **Electrical design studies, including load flow, short circuit, reactive capability and harmonics, including impedance loci consideration**
- **400kV HV design and substation layout**
- **Preparation of National Grid connection application**
- **Connection offer review**

A detailed model of the project was developed using specialist modelling software DigSilent PowerFactory including representation of the transformers, cable systems and solar inverters.

The model was used during the design studies to design a cost effective solution for grid code compliance avoiding the use of multi million pound reactive compensation equipment and minimising circuit breaker ratings and costs.

A detailed harmonic study was undertaken at an early stage allowing mitigation options to be investigated and designed which avoided the use of expensive filter solutions.

Developing an early stage HV electrical design for the 400kV connection has allowed the substation to be sized and drawings and boundaries prepared for the planning consent process.

Outcome:

The HV design supported by the detailed studies has enabled Cleve Hill to finalise equipment ratings and specifications for procurement, providing a robust cost optimised strategy for grid code compliance and ultimately reduce project risk.

