



Accelerating your journey to Net Zero

Blake Clough Consulting is a specialist energy consultancy with a focus on the electricity networks. We cover a range of areas relating to power systems analysis, feasibility studies, project engineering, innovation, regulation and technical strategy, with a strong emphasis on our customer relationships.

We are passionate about the decarbonisation of the energy system and the transition to "Net Zero" and aim to support our clients to accelerate this change as effectively as possible, whether that be local authorities, large network companies, or private developers.

Our work is underpinned by solid analysis and modelling, including techno-economic assessment, cost benefit analysis, power systems analysis and network modelling.

We have a significant track record in all technical aspects of offshore wind development, including power systems studies, electrical design, techno-economic analysis and project development.

Offshore Wind Consultancy

Typical offshore wind project work includes:

- Concept selection, feasibility studies and pre-FEED activities.
- Substation design for planning consent and FEED.
- Full sets of power systems studies for offshore wind farms.
- Supply chain and procurement activities.

Power Systems Studies

Our extensive and detailed power systems studies service for offshore wind farms includes the following:

- Load flow and reactive power capability study.
- Sensitivity analysis looking at potentially different configurations including different cable assumptions, 275kV versus 220kV etc
- Short circuit analysis (including impact of low fault levels & SCR)
- Preparation of Single Line Diagram (SLD).
- Energisation and P28 studies in PSCAD.
- Dynamic stabilities studies (frequency and voltage response, fault ride through, FFCI) both RMS and EMT.
- Power quality / harmonic studies and filter design.
- Protection coordination.
- Preparation of Control and Operational philosophies.

We are currently delivering large packages of offshore wind farm studies for various offshore wind farms in the UK, Ireland and internationally in locations such as South Korea.



We were appointed the Electrical and Cables Package Manager role for one of the Phase 1 ORESS Irish offshore wind projects.

Activities includes:

- Obtaining grid connection from EirGrid.
- Concept selection, analysis and pre-FEED activities:
 - Cost Benefit Analysis for various potential connection options.
 - Cost modelling (Capex and Opex) for the preferred option.
 - DIgSILENT modelling for the concepts (export cable sizing, array cable sizing, reactive power sizing and grid code compliance etc)
 - Analysis of potential cable options, costs and benefits, taking into account the landfall (HDD) and potential cable types (copper / aluminium conductor, stainless steel / galvanised steel etc).
- Participation on EirGrid grid code working group for developing Irish offshore wind grid code.
- Review and participation in development of EirGrid functional specifications for electrical equipment for offshore wind projects.
- Significant stakeholder engagement with the supply chain and OEMs to help define the procurement strategy and obtain costs.

We have also carried out load flow and reactive compensation, fault level and harmonic study pre-FEED power systems studies. These have involved engagement with EirGrid on an ongoing basis to understand the application of the new grid code and onshore interface specification, and to discuss any issues arising from these new documents.

Full package of studies for 500MW Offshore Wind Farm in South Korea.

We are currently carrying out the full package of power systems studies for FEED for an offshore wind farm located in South Korea. This has included a thorough review and understanding of the Korean grid code, as well as discussions around specific modelling methodologies such as power quality studies. Regional differences in ground and installation conditions are also being taken into account within the design.

Ongoing commitment to offshore wind farm in the UK

We have been involved in a number of activities for this 1500MW offshore wind farm:

- Internal design work to take the project from pre-FEED to FEED stages.
- Development of DIgSILENT models to understand, in detail, the differences between various proposed concepts, such as 220kV and 275kV 4-circuit options, and 3-circuit options with and without reactive compensation.
- Investigation and modelling of various HVDC solutions, including a curtailed symmetrical monopole solution and a non-curtailed bipole solution for comparison.
- Preparation of internal briefing note comparing HVAC and HVDC solutions for Outer Dowing and making a recommendation on the preferred solution.
- Development of an internal cost model to compare various concept designs, using up to date cost information gathered directly from the supply chain.
- Establishing FEED strategy for Electrical Package and Cables Package, including preparation of the Electrical FEED strategy and Cables FEED strategy documents.



Customer Focused

Our team is extremely customer focused, flexible and efficient. We are able to respond quickly and ultimately to deliver work in compressed timescales, to a high quality.

Our clients range from electricity network operators, regulators and public sector organisations through to private developers, both onshore and offshore, looking to develop projects connecting into the electricity networks.

We understand the specific challenges around offshore wind development, for example relating to the large recent increases in supply chain costs that have been seen across the industry. We therefore understand the importance of thorough cost-benefit analysis, the importance of achieving the best technical solutions and the relationship between other activities such as cables design with the power systems modelling.

