

# TRANSMISSION & DISTRIBUTION







# THE CHALLENGE

**Our ambitious Net Zero 2050 targets represent a major challenge driving an unprecedented growth worldwide in renewable generation, including offshore wind and solar power, baseload generation in the form of clean nuclear power and peaking plants to manage network stability such as CCGT (including CCS).**

In addition, the demand profile is increasingly changing with the electrification of heat, connection of large-scale battery storage systems, electrification of oil and gas platforms, increasing uptake of electric vehicles, production of hydrogen and embedded generation.

Aging networks, design to support a fairly stable baseload, will now need to manage significantly different profiles of generation and demand which are distributed in largely different areas. The requirements of the future will need significant investment to unlock the potential of the aforementioned technologies in reaching Net Zero.

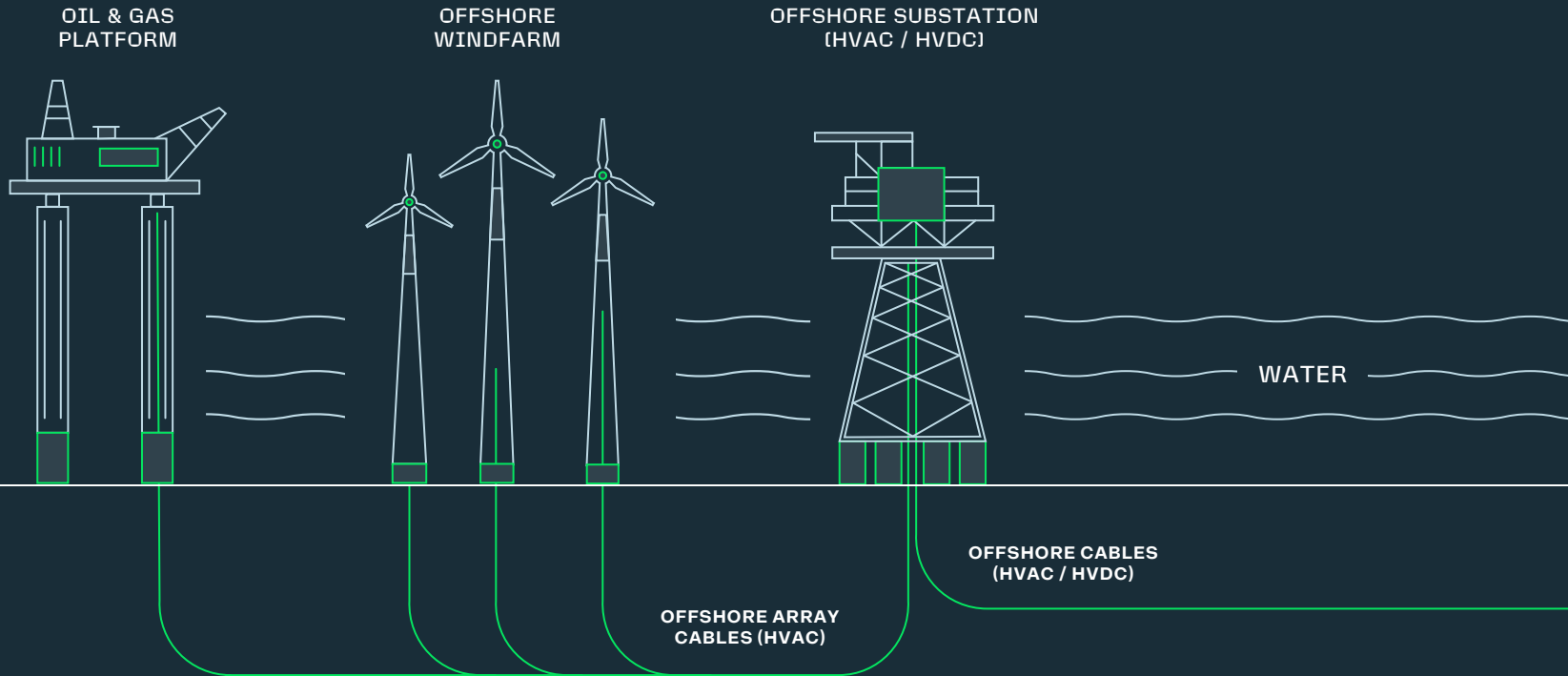
To facilitate the connection of generation and provide the demand with a reliable source of power, the Electricity Transmission and Distribution Networks have to evolve as quickly as the sources of generation and demand. As operation of the National Electricity Transmission System (NETS) becomes increasingly complex, we need to find new ways to identify and manage issues such as inertia and voltage oscillations.

Our team of experienced engineers are at the forefront of delivering design and engineering services for upgrade of transmission and distribution, connection of renewable and non-renewable and storage sources of power both onshore and offshore.





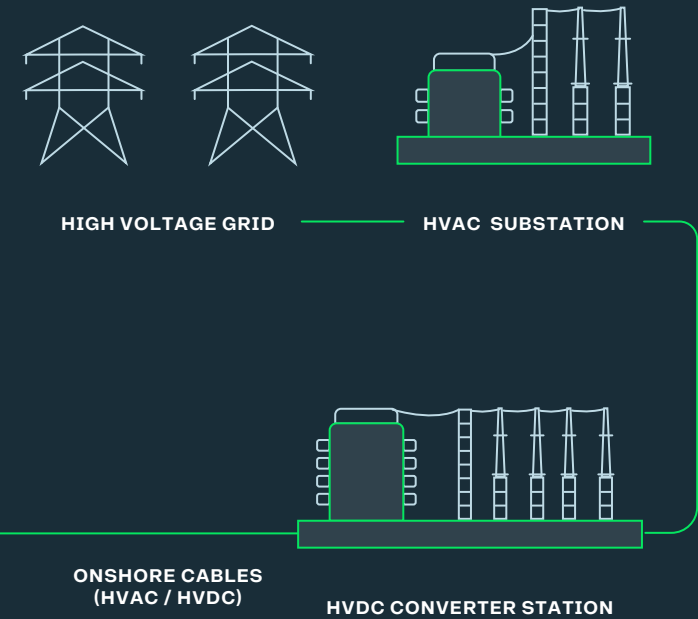
# OUR SERVICES



## TRANSMISSION AND DISTRIBUTION LIFECYCLE

### Services

- Onshore Substation Design
- Power System Design and Studies
- Power from Shore
- HVDC
- Transmission Lines and Onshore/Offshore Cable Engineering
- Offshore Substation Design
- Regulatory and Advisory Services





# OUR SERVICES

## ONSHORE SUBSTATION DESIGN

Since 2006 the electrical networks team at AtkinsRéalis, has provided transmission and distribution level substation design services to a large base of clients worldwide. The design services include Front End Engineering Design (FEED), detailed design and supervision of commissioning activities for 11-400kV substations.

We have a penetrating knowledge based upon real field experience, delivered by professional engineers with design expertise in High Voltage (HV) and Medium Voltage (MV) plant, Low Voltage (LV) and auxiliary equipment, protection and control, substation civil/structural design and earthing design.

## POWER SYSTEM DESIGN AND STUDIES

Power networks are dynamic in nature, requiring careful planning and development in order to balance performance with investment. The main goal of power system analysis is to ensure the system remains within the statutory technical limits for all existing load and fault scenarios and various network configurations, including planned and unplanned outages.

Long term and strategic planning, including load forecast scenarios, must consider costs, system losses and overall economic development of the system.

As part of one of the UK's leading engineering service providers, our power systems team have decades of experience in power systems analysis and design, High Voltage Direct Current (HVDC) systems, renewables, power electronics, protection co-ordination, power system applications and project management. We have undertaken a number of studies and network planning projects both in the UK and abroad.

### **Our capabilities include (but not limited to):**

- Load flow analysis.
- Short circuit analysis.
- Transient stability.
- Grid Code Compliance.
- HVDC/AC Dynamic Performance Studies.
- Black Start Studies.
- Insulation Coordination (lightning and switching studies).
- Protection co-ordination.
- Harmonics (G5/4 Assessment).

- Transmission and Distribution System evaluation and modelling.
- Generator Tuning and AC Type Studies for large international power systems networks.
- P28 Type Studies.
- P29 Assessment.
- Design Assurance.
- Feasibility Studies for asset replacement and system reinforcement.

### **Our highly skilled engineers are familiar with and operate a wide range of power systems software. AtkinsRéalis currently hold licenses for:**

- DigSILENT PowerFactory.
- ERACS.
- ATP-EMTP.
- ETAP.
- PS CAD.
- MATLAB/ Simulink.
- AutoCAD.

## POWER FROM SHORE

AtkinsRéalis has been at the forefront of consultancy services for the development of Power from Shore (PFS) capability of offshore oil and gas platforms. We believe that decarbonisation of the oil and gas sector could be an opportunity for investment in long-term sustainable assets. AtkinsRéalis has the multidisciplinary capability and pedigree to provide our clients with an end-to-end service to develop their PFS projects contributing to the Net Zero agenda. While PFS remains a fairly novel initiative in markets such as the UK, we have successfully applied our experience across areas, including onshore substation design, offshore substation design and owners engineer capability, providing our clients with the multidisciplinary service to enable such projects.

We offer a fully integrated electrical, geotechnical, and structural design, where AtkinsRéalis can draw upon a wide variety of in-house resources to provide one-stop-shop solutions. The multi-sector nature of our business aligns amicably to the multidisciplinary needs of any PFS project. Combined with our extensive experience of PFS studies to date, we deliver strong technical coverage across PFS projects from early design and feasibility stages through to tendering.



## HVDC

Since the 1970s, we have established ourselves as a world-renowned consulting provider for current HVDC systems. Our journey with HVDC began while working on some of the most geographically challenging HVDC systems throughout Canada. We have since expanded our reach globally to some of the largest and most complex projects, like the multi-country Gulf Cooperation Council Interconnection Authority (GCCIA) HVDC link. AtkinsRéalis has also been involved in multi-terminal HVDC technology, having worked on one of the world's first large scale multi-terminal HVDC projects, the Radisson-Nicolet-des Cantons project.

Our expertise includes HVDC bulk transmission systems, overhead lines, and underground/undersea cables, back-to-back converters, and both LCC and VSC technologies. Our team consists of highly experienced HVDC specialists and project delivery teams supported by our network of world-renowned industry experts.

Our combined expertise in technology and project delivery ensures the power systems we design perform optimally and are cost effective. This in-depth knowledge of industry solutions allows our team to ensure that not only are systems designed to provide optimal performance, but more importantly the integration of complex technologies such as HVDC into a predominantly alternating current (AC) network is done in a cost effective, reliable and compliant fashion, with risks identified and managed in an effective manner.

### This is achieved through:

- Techno-economic analysis and impact studies.
- HVDC modelling and network model processing for the purpose of HVDC integration.
- Load-flow, short-circuit and dynamic studies to determine functional parameters.
- Harmonic impedance studies required by manufacturers and transmission network operators for filter design.
- Technology selection (LCC vs. VSC) and ground return vs. electrode optimization.
- Development of detailed ratings specifications
- Electrode Detailed Design and Specification.
- Detailed review of manufacturer studies and design against required performance.
- Supervision of RTDS testing of the control systems.
- Supervision of specialised equipment factory testing, such as thyristor valves, capacitors, reactors.
- Detailed validation of the user-defined load flow and EMT models.

As owner's engineer and technical advisors, we deliver the full suite of system studies, design studies, detailed specifications, request for proposal packages, technical evaluation of tenders, as well as the complete detailed design, procurement, Factory Acceptance Test (FAT) witnessing, installation, construction, and commissioning supervision for the balance of plant.

This includes surrounding transmission infrastructure, transmission lines and interconnecting AC substations, as well as the complete protection and control, SCADA and telecommunication interfaces.

In delivering these services, we work in close collaboration with HVDC manufacturers around the world. Our approach enables us to achieve win-win scenarios that are focused on our client's needs.

### We have established long-lasting relationships with industry-leading companies, including:

- **Siemens:** AtkinsRéalis has extensive knowledge of Siemens HVDC and FACTS products. In the Western Alberta Tie Line (WATL) HVDC project, AtkinsRéalis was the prime EPC contractor for two 1000 MW, +/- 500 kV monopole HVDC converter stations and lines (with a STATCOM at one side), and provisions for future expansion to a bi-pole HVDC transmission and the addition of a third terminal.
- **ABB:** AtkinsRéalis has an extensive history of working with ABB on several projects starting with the Radisson-Nicolet-des Canton project to the current Maritime Link Project. Throughout our relationship with ABB, our experts have spent time supervising ABB work at the centre of excellence in Ludvika (Sweden), and Vasteras (Sweden), for design review and equipment testing for both HVDC and FACTS projects. We have been the owner's engineer on several projects where ABB supplied the converter stations. The breadth of our relationship is further demonstrated on the Maritime Link project where AtkinsRéalis provided ABB engineering services for the 3 HVAC interconnecting stations.

- **GE-ELECTRIC:** AtkinsRéalis's relationship with the GE-Electric team dates back to the Nelson River Bipole I project (1972 completion) with English Electric, which was acquired by GE. Subsequently AtkinsRéalis has worked with GE-Electric on multiple projects worldwide and continue to work with them today on the Lower Churchill project. One of the most complex projects we have worked with GE-Electric team on is the GCCIA project, which consisted of a 400 kV double-circuit line linking 6 new GIS substations in Kuwait, Bahrain, Qatar, Saudi Arabia, UAE and on at 220kV to Oman. Bahrain was connected through a submarine cable and Saudi Arabia through three parallel connected 600MW 50/60 Hz back-to-back HVDC converters.

Our experts sit on international development committees (such as International Council on Large Electric Systems, CIGRÉ or Institute of Electrical and Electronics Engineers, IEEE) together with the vendor experts to develop the latest standards in our industry.

## TRANSMISSION LINES AND ONSHORE/ OFFSHORE CABLE ENGINEERING

AtkinsRéalis has been involved in several overhead lines, subsea and onshore cable projects. This expertise ranges from pre-feasibility analysis to a full owner's engineering scope, providing detailed specifications to support manufacturing and installation, as well as subsea design and installation oversight.

Our team has also inspected several cable manufacturing facilities around the world and is well versed in the quality of product delivered by each manufacturing location. We provide a full range of services related to cable design and engineering, both onshore and offshore including transition from sea to land. At the pre-feasibility stage, services include studies, route selection and optimization, evaluation of alternatives and budgetary estimates to identify cost effective solutions, recommendations on civil construction techniques, as well as development schedule.

Our experts have worked on HVAC and HVDC cable transmission and distribution projects for major clients worldwide, while providing reliable, adaptive and innovative solutions. Amongst the more recent HVDC projects, AtkinsRéalis has carried out the full conceptual design, studies and detailed specifications of 18 km of undersea and underground cables at +/- 500 kV linking Egypt and Saudi Arabia.

Our recent experience also includes the conceptual design and specification for the Lower Churchill HVDC land-to-sea submarine cable interconnection transition stations in Newfoundland and Labrador, as well as full studies, design, supervision of procurement, installation and commissioning of the double-circuit of 42.5 km 400kV cable linking Bahrain to KSA. For National Grid Plc in England and Wales, AtkinsRéalis has carried out a number of onshore cable routing and overhead line projects including in relation to planning and consenting support.

## OFFSHORE SUBSTATION DESIGN

AtkinsRéalis' energy networks team has provided support on a wide range of offshore wind projects. Our experience ranges from design (concept and detail) through to technical advisory services. Through various FEED and Detailed Design projects, we have gained a valuable understanding of the requirements of offshore wind projects and offers a full multi-discipline service offering.

**AtkinsRéalis has provided a wide range of services to offshore wind projects worldwide, including:**

- FEED.
- Detailed Design – HV Plant, Civil & Structural, HV Cables, Earthing and LVAC Systems.
- Protection & Control design for offshore substations.

- LV systems design and specification.
- Subsea 220kV HVAC Export Cable Ratings.
- 33kV Array Cable design & specification.
- WTG 33kV Switchgear specification.
- Support for Request for Proposal process.
- Technical advisory services for offshore assets.

Please see our Offshore Wind brochure for case studies of our delivered projects.



## REGULATORY AND ADVISORY SERVICES

Decarbonisation of the energy sector offers an opportunity for investment in long-term stable assets or for carbon offsetting through acquiring regulated/non-regulated assets or companies.

**AtkinsRéalis provides technical due diligence services during the transaction process to enable the client to understand:**

- The condition and status of the assets.
- The opportunities to grow and the associated risks (technical, regulatory, legal and commercial).
- The lifetime O&M costs including replacement costs.
- The performance/availability/reliability of the assets/company over its existing life.
- The safety record/compliance issues associated with the assets/company.
- Any outstanding insurance, liability, snagging, regulatory compliance issues.

AtkinsRéalis has provided regulatory and technical advisory services on a multitude of projects across the globe. These services range from conducting in-depth technical investigations to offering advice to regulators on industry-wide issues. Throughout these projects, AtkinsRéalis maintains independence and fairness in our approach to both regulatory bodies and regulated entities.

**AtkinsRéalis' capabilities in these areas include:**

- Conducting independent technical reviews into regulated utilities' development plans.
- Acting as technical advisor to support the regulator with technical investigations and audits.
- Providing technical assessor services including price control reviews and annual information submissions.
- Providing expert advice and analysis of standards and codes.

## PLANNING AND ENVIRONMENTAL CONSENTING

AtkinsRéalis planning and environmental consenting team adopt a holistic and integrated approach to deliver joined-up outcomes from across the environmental disciplines. Our integrated approach has allowed us to confront the complex challenges of transmission projects and deliver innovative and multifaceted solutions comprising a range of benefits. This approach paired with our extensive experience in delivering transmission projects under a variety of consenting regimes allows our team to produce dynamic and robust consenting strategies bespoke to the visions and challenges presented by each project.

AtkinsRéalis seek to incorporate flexibility in consenting from the early stage of a project, through considering the needs, requirements, and late-stage outcomes of different aspects right from the start.

This "leftward shift" is considered vital in transmission projects, as it allows project teams to de-risk consent and maximise benefit at the earliest opportunity.

**AtkinsRéalis key capabilities in planning environment and consenting include:**

- Early-stage needs assessment.
- Masterplanning and engineering design.
- Planning and consenting.
- Environmental assessments and management.
- ESG strategies.
- Stakeholder engagement.
- Shaping design parameters.





# OUR EXPERIENCE AND CAPABILITIES

Delivered by our dedicated, in-house specialists, our project and technical staff support our clients throughout the project lifecycle in the development, engineering, design, construction and commissioning of transmission and distribution projects.







# HWUP (ONSHORE SUBSTATIONS)

## CLIENT CHALLENGE

AtkinsRéalis carried out optioneering and FEED design for National Grid Electricity Transmission (NGET) for the Hackney Waltham Cross Uprating (HWUP) - North London Reinforcement scheme. This scheme required NGET to uprate an existing 275kV overhead line route and substation equipment across six substations. This included a new gas insulated substation, multiple transformer replacements, and installation of quad boosters and MSCDNs.

## OUR APPROACH

AtkinsRéalis worked closely with NGET to deliver multidisciplinary substation designs (including HV plant, civil, cable, and protection & control) and project management services located in both the UK and our Global Technology Centre to deliver an effective solution that delivered to Time, Quality and Cost to our client.

We ensured our designs were compliant with NGET standards and ensured planning DCO constraints were taken into consideration. AtkinsRéalis worked closely with NGET engineers and site operatives, and other consultants who delivered the overhead line (OHL) scope.

AtkinsRéalis survey and environmental team with input from our Planning and Consents team delivered a full scope of surveys, including:

- Underground service and unexploded ordnance searches.
- Geotechnical and geoenvironmental studies, and ground investigations.
- Civil condition assessments.
- Ground penetrating radar and topographical surveys.
- Flood risk and ecology assessment.
- Construction traffic management plans.

## OUTCOMES DELIVERED

- Optioneered optimised substation layout to locate two quad boosters and two MSCDN units on a constrained site, considering environmental impacts and OHL restrictions.
- Designed non-SF6 gas insulated substation with corresponding construction sequence to minimise need for circuit outages.
- Completed designs for multiple 3000mm<sup>2</sup> 400kV cables, routed through complex environments and water crossings.
- Complied with DCO and planning requirements.
- Utilised innovative 360° camera footage of each substation to reduce carbon and time impacts from site visits, allowing for virtual site walkdowns to be conducted.
- Optimised designs for transformer replacements and use of non-SF6 equipment.



# TINSLEY PARK (TRANSFORMER REPLACEMENT)

## CLIENT CHALLENGE

AtkinsRéalis undertook the Principal Designer role during Front End Engineering Design (FEED), detail design phase and construction phases in accordance with National Grid Electricity Transmission (NGET) project life cycle for replacement of Supergrid Transformer 2 (SGT2) at Tinsley Park 275kV substation. This SGT was identified as requiring replacement due to its asset health condition.

## OUR APPROACH

AtkinsRéalis worked closely with NGET to resolve several complex issues for this multifaceted project. This required a multi-disciplinary approach (including HV plant, protection & control (P&C), civils, surveys and project management) by holistic team coordination and execution of design drawings using Computer Aided Design (CAD) software.

In accordance with NGET standards and specifications, SGT2B was proposed to be replaced in-situ and the scope of works for this project included:

- Decommissioning, demolition, and disposal of existing SGT2B.
- Civil works required to accommodate new SGT.

- Installation of new Siemens SGT rated at 275/33kV, 120MVA, insulated with mineral oil.
- Supply and installation of busbar to connect new SGT to existing 33kV and 275kV bays.
- P&C works associated with the SGT replacement.

## OUTCOMES DELIVERED

- Reuse of existing civil structures to meet requirements of new SGT resulted in AtkinsRéalis redesigning modifications of existing plinths and bund area to suit loading and clearances.
- Space and clearance restrictions associated with rearranging 33kV busbar system were resolved by AtkinsRéalis through a coordinated design of an innovation 33kV busbar system.
- AtkinsRéalis coordinated a safe design and systems of works to limit impact to existing services (including cables, HV equipment, and skidding system) which interacted with the SGT plinth.
- Existing P&C interfacing arrangement did not meet current NGET standards, which was resolved by AtkinsRéalis redesigning a new interfacing arrangement, with an approach of reusing most of the existing equipment.

- Fire risk analysis was conducted to assess the impact of the new SGT, and the mitigations required. AtkinsRéalis advised NGET to reinstate a firewall.

Throughout the project AtkinsRéalis worked closely with NGET to develop a Carbon Interface Tool (CIT) and Project Sustainability Action Plan (PSAP) to ensure that NGET commitments of carbon footprint reporting, environmental and sustainability resolutions are met.

During site walkovers, AtkinsRéalis used innovative 360° cameras to record the site and equipment. The footage allows for 360° pan and tilt on video, including zoom on pictures. This footage was used extensively over the design period to deliver the scope. This provided cost saving benefits from the re-usability of the footage for the client and a reduction in staff mobilisation and demobilisation costs from a perspective of project delivery. The use of 360° imagery greatly increased efficiency of site visits, making virtual site walkthroughs possible and reducing the carbon footprint of the project.







# CENTRAL NORTH SEA (POWER FROM SHORE)

## CLIENT CHALLENGE

The client wished to explore the possibility of electrification of Central North Sea (CNS) assets taking into account reduction of carbon emissions of the O&G platforms, electrification options, regulatory and legislative risks and CAPEX and OPEX requirements.

## OUR APPROACH

AtkinsRéalis was asked to identify the extent and costs of the works necessary to provide optimised transmission connection for the platforms and to establish the regulatory framework for such a scheme. Three main development options were considered:

1. A connection to land (PfS).
2. Offshore connection to an interconnector.
3. Connection to offshore wind farms or electrified oil and gas platforms.

## OUTCOMES DELIVERED

### AtkinsRéalis was responsible for:

- A high-level engineering technical report that addressed each of the objectives.
- Identifying grid connection locations, substations and associated connection infrastructure.
- Identifying offshore distribution requirements and impact on existing platforms.
- CAPEX and OPEX estimation with key technical drivers and any relevant operating cost considerations.
- Advising on the delivered unit cost of electricity to the CNS and associated price risk where regulation is not defined.
- Production of a risk register to identify potential issues which could hinder or delay the project, dependent on the technology or connection option chosen.
- Ensuring efficient and continuous engagement with the client throughout the project.



# WESTERN ALBERTA HVDC TRANSMISSION LINE

## CLIENT CHALLENGE

The Western Alberta HVDC Transmission Line represented the first HVDC project in the province of Alberta, Canada. We were mandated under an EPC Contract to design, procure, construct and commission: two 1000 MW, 500kV Monopole HVDC converter stations, 350 km of 4000 MW. +/-500kV HVDC Transmission Line, 995 towers and 500kV and 240kV AC Substations. The HVDC technology used was Line Commutated Converter (LCC) and the project included installation of a STATCOM at the southern converter station to manage MVAR absorption and production.

## OUR APPROACH

With regard to the HVDC elements of the project, AtkinsRéalis was responsible for the engineering review and acceptance of the design of the converter stations.

## Key activities included:

- Review OEM's detailed design of the HVDC converter system and AC & DC distribution systems.
- Review protection and control system of converter stations.
- Design-build 350 km +/- 500 kV HVDC overhead transmission line.

## OUTCOMES DELIVERED

The converter stations were designed to facilitate potential future expansions of a second bipole (stage 2) and the additional of parallel valve groups and multi-terminal operation (stage 3).

Throughout the project, we emphasised the importance of the system studies and FAT to reduce field work, rework, and potential delays for systems that cannot be fully tested in the factory; therefore, the review of key PSS®E (Power System Simulator for Engineering) studies were exhaustively scrutinised. This approach ensured later stages of the project were not subject to unnecessary delays.







# BALTIC EAGLE (OFFSHORE SUBSTATION)

## CLIENT CHALLENGE

The client undertook the development of the Baltic Eagle Offshore Wind Farm project in the German Exclusive Economic Zone within the Baltic Sea with a capacity of 476 MW. The Wind Turbine Generators (WTGs) were grouped into several 66 kV array circuits, conveying the produced energy to the Baltic Eagle Offshore Substation (BEOSS) located within the project area. The energy export to shore was carried out by connection to the 50 Hertz Transmission GmbH offshore network at 220 kV.

The BEOSS preliminary location was on the mid-eastern boundary of the Offshore Wind Farm to reduce the export cable length without excessively compromising the array cable configuration. The client needed an electrical system design and management consultant to support its activities in the initial stages of specification and design management of the electrical systems within the BEOSS.

## OUR APPROACH

AtkinsRéalis produced a multitude of deliverables for the BEOSS, including, but not limited to:

- LV General System.
- Earthing and bonding.
- Lighting design specifications and studies.
- Cable sizing and schedules.
- Emergency Diesel Generator Sizing.
- Heat Tracing.

## OUTCOMES DELIVERED

The complete FEED design package was handed over to the client in keeping with the relevant European standards. Our work was then utilised as the foundation for detailed design.



# RIIO ET2 (REGULATORY SERVICES)

## CLIENT CHALLENGE

The Office of Gas and Electricity Markets (Ofgem), through regular price control submission, regulates Transmission Networks Operators' (TNO) CAPEX and OPEX expenditures and rate of return periodically, effectively providing a substitute to natural competition in a monopolistic market.

AtkinsRéalis was appointed to provide an independent technical review of RIIO-T2 business plans for the three UK TNOs: NGET, Scottish Hydroelectric (SHE) Transmission and Scottish Power Transmission (SPT).

## OUR APPROACH

AtkinsRéalis reviewed Investment Decision Packs (IDPs) and Engineering Justification Papers (EJPs) to determine the needs case and justification of the projects included within business plans from a technical perspective ensuring value for money for the consumer. Technical notes were produced taking into consideration:

- If a clear and unambiguous needs case was identified.
- The validity of the options considered.
- If the chosen solution was proportionate to the identified needs case.

- Risk to consumer (assessment of the risk of deferment of the proposed works).
- Available references.

Following initial review, AtkinsRéalis raised Supplementary Questions to request additional relevant information and clarification on any areas required. AtkinsRéalis also provided support to Ofgem on an ad-hoc basis between draft determination and final determination.

## OUTCOMES DELIVERED

Based on the five criteria stipulated by Ofgem and the methodology developed between AtkinsRéalis and Ofgem, a Red Amber Green (RAG) scoring system was used to inform the risk of investment to the consumer. This reflected the requirement, timing, range of options considered, and cost of the investment justified within each EJP/IDP. The scoring system has been used by Ofgem in their decision-making process on whether to allow the capital cost within the maximum allowed revenue of the licensees.







# GREENLINK (ADVISORY SERVICES)

## CLIENT CHALLENGE

Greenlink is proposing an electricity interconnector between Great Island (Ireland) and Pembroke (South Wales). The project will transfer power using a HVDC electrical link. As an EU Project of Common Interest, it is one of Europe's most important energy infrastructure projects.

To enable the HVDC link, two new converter stations will be installed: one connecting to the 220kV EirGrid transmission network in Ireland and the second connecting to the 400kV National Grid transmission network in the UK. The selected HVDC solution is a 500MW with Voltage Source Converters (VSC) configured as a symmetrical monopole.

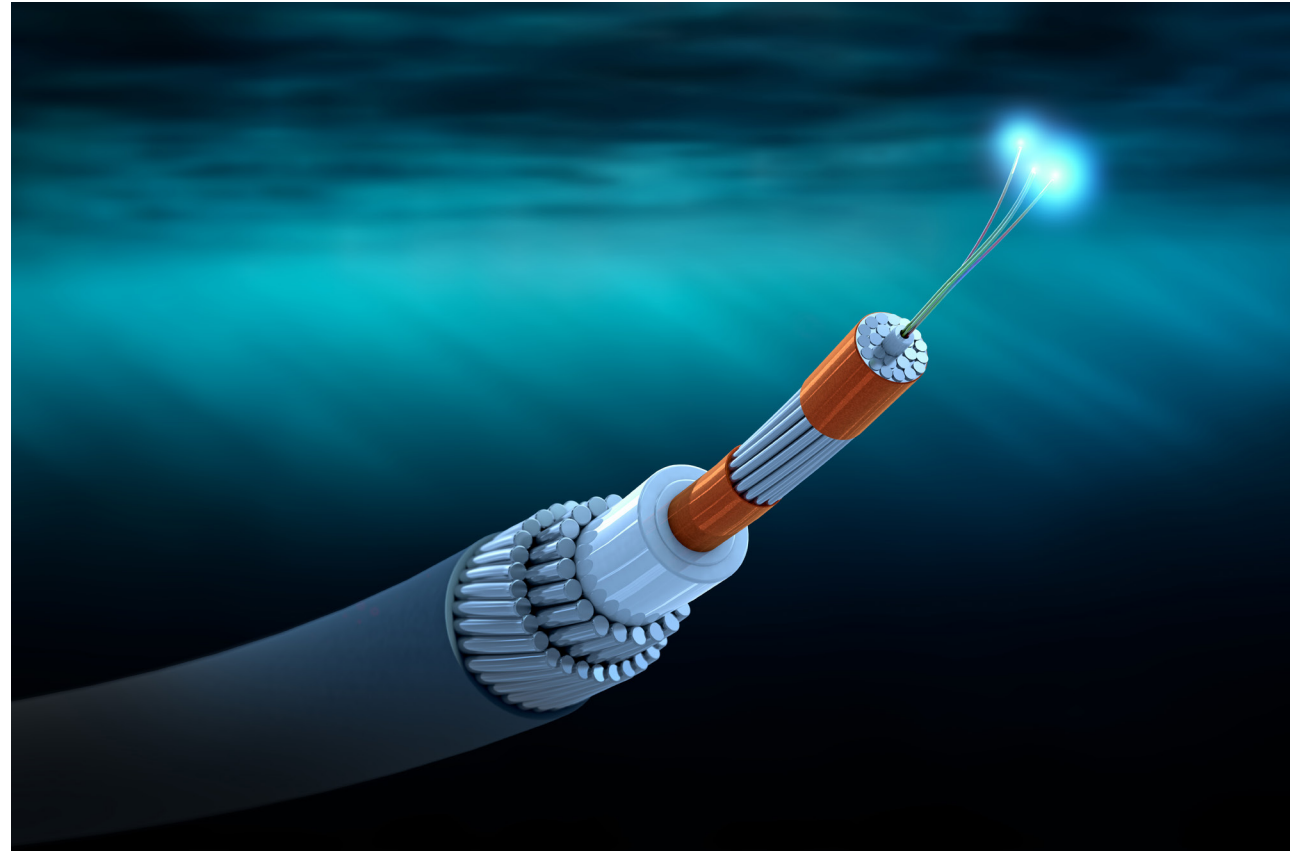
## OUR APPROACH

When Greenlink engaged the market for potential investors/buyers, AtkinsRéalis was appointed as technical and environmental/planning advisors and carried out full technical due diligence on:

- Connection agreements and status in Ireland and GB.
- Benchmarking of cost of cable, HVDC converter stations.
- Assessment of project delivery plan.
- Independent assessment of link design.
- Independent assessment of availability and reliability of the proposed solution.
- Assessment of planning and consents status.
- Assessment of environmental impact assessment studies carried out to date and further requirements.

## OUTCOMES DELIVERED

The project allowed the client to estimate the technical and planning risks associated with the project to carry out their final investment decision process.



# OUR LOW CARBON TRACK RECORD

Over 100 years ago we made our mark while the energy sector was undergoing a major transformation.

Today, as a new energy paradigm emerges, our clients recognise us for our sustainable project execution and tangible contributions to improving people's lives around the world.

Our teams are based in the UK, Europe, Middle East, Canada and the United States.

Across the globe AtkinsRéalis has 36,000 engineering and project management staff with over 3,000 working on low carbon energy projects. Our experts deliver offshore wind, hydroelectric, carbon capture, hydrogen and power distribution projects.

## LEADING INDUSTRY BY EXAMPLE

### INDUSTRIAL DECARBONISATION

We support energy intensive industries to develop their roadmaps to Net Zero through specialist engineering advice. We assist our clients in understanding their current energy demands and greenhouse gas emissions and utilise our in-house tools, methodologies and expertise to identify viable technology interventions to achieve targeted levels of emissions reductions.

**Julie.Gilmour@atkinsrealis.com**

### CARBON CAPTURE

We delivered SaskPower's groundbreaking Integrated Carbon Capture and Utilisation initiative in Saskatchewan, Canada. We have completed feasibility, concept and FEED studies for carbon capture projects for Drax, Energy Technologies Institute, SSE, National Grid, the Department for Business Energy and Industrial Strategy (BEIS) and the International Energy Agency. AtkinsRéalis is the owner's engineer for the pioneering Whitetail Clean Energy project on Teesside in the UK.

**Julie.Gilmour@atkinsrealis.com**

### LOW CARBON HYDROGEN

We work closely with our clients to support them through all stages of their projects. We have provided concept design and optioneering for TAQA, EDF and the Energy Technology Institute as well as being appointed owner's engineer for SSE. Our services cover hydrogen production from electricity, heat or reforming fossil fuels with carbon capture and storage as well as hydrogen storage and distribution networks.

**Rachael.Eatwell@atkinsrealis.com**

### ENERGY STORAGE

Our energy storage team specializes in the subsurface storage of hydrocarbons and clean energy products such as hydrogen and compressed air. As owner's engineer for Nord West Kavernengesellschaft (NWKG), we provided technical and project management services across NWKG's operational assets. We are a long-term delivery partner to SSE Gas Storage and have advised the Energy Technologies Institute on salt cavern behavior when operated in a hydrogen storage system.

**Christopher.Mcmichael@atkinsrealis.com**

### NUCLEAR

We work alongside our clients to provide unparalleled support throughout the entirety of the nuclear lifecycle. We are working on projects to realise the benefits of nuclear generation in a low carbon energy system, including for hydrogen generation and direct air carbon capture. We are also heavily involved in the future of nuclear power developing small modular reactors (SMRs) and fusion projects.

**Jason.Dreisbach@atkinsrealis.com**

### WIND & RENEWABLES

We carry out design, geotechnical, environmental, asset integrity and life extension work on offshore and onshore wind turbines for developers in the UK and globally. We provide transmission and distribution services for offshore wind connectivity to the grid and we integrate renewable energy with hydrogen generation projects.

**Rupert.Green@atkinsrealis.com**





WORKING  
TOGETHER  
TO PROTECT  
TOMORROW

# DIFFERENTIATORS BRINGING VALUE TO OUR CLIENTS

## FULLY INTEGRATED GLOBAL TECHNOLOGY CENTRE

Our advanced global technology centre located in India is fully integrated with our day-to-day client delivery and held to the same high-quality standards and systems across our organisation. Our focus on investing in the best tools and data processing capabilities and a team that has delivered hundreds of projects all over the world provides our clients the opportunity to achieve lower costs, and longer working hours - seamlessly.

## LOCAL COMMUNITIES AND SUSTAINABLE DEVELOPMENT

We are committed to leaving behind a positive and sustainable legacy for the communities in which we work. We have a demonstrated track record of our commitment to community engagement, particularly in industrial work locations, delivering:

- Skills training and mentoring programs
- Involvement in our local community's organizations
- Traditional knowledge and community studies
- Assistance in education and health services
- Permitting and approvals

NET ZERO  
CARBON.  
NET ZERO  
EXCUSES.



[engineeringnetzero.com](http://engineeringnetzero.com)

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