



EDS HV Group

Everything we do is designed
to get you connected and keep
you connected to the grid

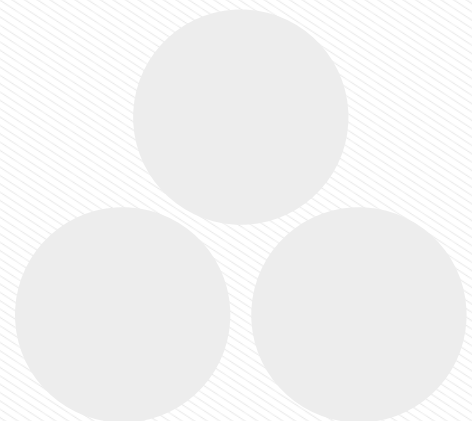
Expertise **matters**





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The story so far

- 1993



Marine Construction
EDS founded as specialist in HV jointing providing expertise to utilities in the UK and Ireland.
- 2008



Our first offshore adventure
We take our experience offshore and work on one of the first wind farms, Rhyl Flats.
- 2014



Transformation
We transition from a jointing company to a full high voltage service provider by forming the HV Management side of the business and launching the EDS control centre.
- 2016



Control Centre doubles in size
We double the size of our Belfast office as the demand for our control centre services keeps growing.
- 2017



Innovative status sealed
We are proud to be awarded over 1.3 million euros of funding to test an innovative cable monitoring solution. A remarkable achievement considering that only 71 of the 1534 proposals were funded, with EDS being 1 of only 3 UK based companies.
- 2017



Stability as we join the James Fisher family
We are acquired by FTSE 250 company James Fisher and Sons plc giving us the backing of a parent company.
- 2019



Longevity as we sign our first 15 year contract
We are proud to sign a 15 year contract with Equitix to provide operations and maintenance services on the OFTO assets at Greater Gabbard Offshore Wind Farm.
- 2020



EDS goes global
We are awarded a contract on the Formosa 1 project in Taiwan for electrical safety commissioning and consultancy.
- 2020



Our safety ethos is recognised
We are awarded an International Safety Award with Distinction from the British Safety Council.
- 2021



Wayne Mulhall joins EDS
Management team expands as Wayne Mulhall joins EDS to lead a new phase of expansion.
- 2022



EDS hits new highs
EDS hit new highs with contracts in Taiwan and UK and EU giving us our highest headcount ever, increasing our range of services to include WTG AT's and wrapped BOP services







Our impact



8GW
of renewable energy
generation managed
through our
control centre



12
transmission
substations managed
(up to 400kv)



British Safety
Council Awards
Distinction 2020



9,000+
terminations
without fault



20+
wind farms
energised



15+
cable repairs
completed

Three cores of excellence

Everything we do is designed to help your wind farm get connected and stay connected to the grid. Our 'Three Cores of Excellence' underpin our services to achieve this single-minded purpose.

Leadership
in safety



Operational
responsiveness



Solving complex
problems



Leadership in safety

We don't just follow the rules, we write them.

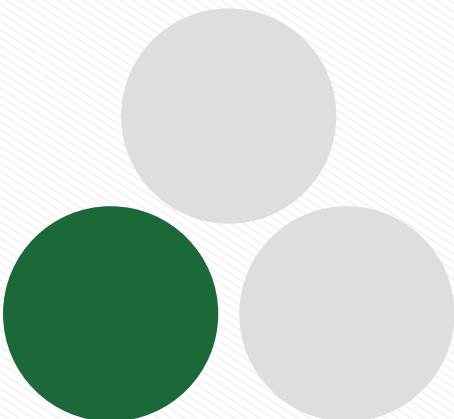
When time is of the essence, only excellence in safety can ensure highest standards are met and corners aren't cut. Our safety management systems are tailored to your unique requirements. We understand what it takes to balance risks like HV safety with the demands of offshore operations - we partner with you so that your team benefit from the experience we have built up.



Operational responsiveness

Every minute counts.
Our processes keep them
to a minimum.

The clock is ticking on your project and our service packages are designed to make sure that every minute counts. If your wind farm goes offline, our number one priority is to get you back up and running again. 24/7 monitoring and a swift operational response ensures that you get help, any time of the day or night.

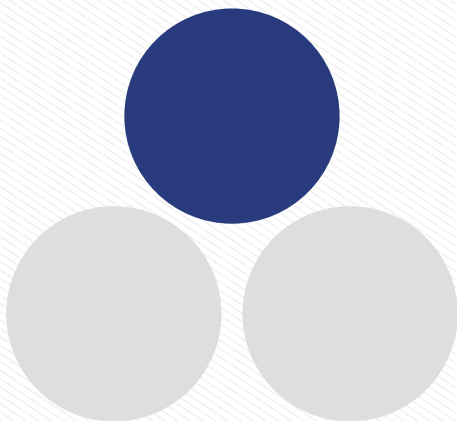




Solving complex problems

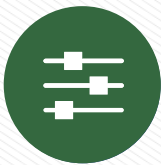
Projects and assets don't follow the textbook. Our specialist engineers help you move hurdles out of the way.

We help you tackle your most complex problems. Engineering is at the heart of all we do, and our team love to roll up their sleeves and work in partnership with you to come up with the right solution.



Core capabilities

Our service packages are underpinned by a set of core capabilities that help us to deliver outstanding service and sets us apart from our competitors.



Control Centre 24/7
Asset monitoring and control



Cable Testing
Innovative cable testing solutions



HV Maintenance
Up to and including 400kV asset maintenance and protection system testing



Digital Twin Platform
Aggregates data into one easy to use visual interface



HV Safety Management
Bespoke High Voltage safe systems of work



Project Management
Expert project management to ensure maximum efficiency and project deadlines are met



EHV Jointing
Extensive experience across a range of OEM joints and terminations up to 400kV



Fault Location
Expert fault finding, aided by the latest technology



Our service packages



Design and
Development



Installation and
Commissioning



Operations and
Maintenance



Decommissioning



Consultancy



High Voltage
Commissioning



Wind Farm Asset
Management



Terminations
& Testing



High Voltage
Operations &
Maintenance



Turnkey Fault
Location &
Repair

Wind Farm asset management



We help owners ensure that they maximise return on their investment through our approach to asset management, where every action is considered in the light of impact on availability of core equipment that transports generated energy to the grid.

Our wrapped service provides you with a single interface and the knowledge that all activities, whether subsea surveys, specialist topside maintenance or high voltage operations are all co-ordinated for maximum impact.

The Problem

Achieving maximum asset availability while trying to balance OPEX against long term asset risk is a challenge. Add to this the drive to minimise offshore transfers for safety environmental reasons, and it becomes quickly apparent that running offshore wind assets is not for the faint hearted. There are factors the asset manager needs to consider:

- How often do inspection and maintenance regimes need to take place without becoming a tick box exercise?
- What's my strategic spares strategy and how often does it get reviewed?
- How do I best make sense of the ever-growing number of data streams generated by the assets?

Why EDS?

EDS have a proven track record in delivering integrated solutions that maximise network availability. We bring strategic thinking to the management of your asset and develop a comprehensive maintenance & inspection programme that includes the high voltage network, ancillary systems (e.g. HVAC, cranes, lighting systems, diesel generators) and structural integrity (e.g. topside corrosion inspections, subsea surveys, cathodic protection diesel generator inspections.)

We take the headache away by managing the supply chain, through the application of robust vetting and approval processes, supported by a thorough approach to 3rd party induction and sensible monitoring.

This flexibility in our approach helps our clients maintain control over costs - allowing more to be achieved while risking less.

The Detail

- Development of asset management strategies
- Planned, corrective maintenance
- 24/7 Control Centre - system monitoring and control
- HV safe system of work
- HV maintenance and emergency call-outs, supported by 24/7 operational engineer standby regime
- Transmission Operator interface management
- HSE walkarounds and investigations
- Fixed planned operational activities
- Fixed planned operational activities
- Fault investigation and diagnostics
- Developing long term asset maintenance strategies to maximise network availability
- Subsea surveys
- Topside corrosion inspection
- Full ancillary systems management - HVAC, cranes, generators, fire systems, statutory inspections

Case Studies



Greater Gabbard OFTO

15-year operations and maintenance (O&M) contract for OFTO assets

A significant 15-year operations and maintenance contract for OFTO assets at Greater Gabbard. EDS' team of multi-skilled engineers and technicians are providing a full turnkey solution for two offshore platforms, the onshore substation and grid connection at the 500MW Greater Gabbard Wind Farm in Lowestoft, Suffolk, to help the wind farm fulfil its output potential.



London Array OFTO

5 Year operations and maintenance (O&M) contract for OFTO assets

A successful five-year contract for EDS at London Array's 175 turbine offshore wind farm, managing London Array's HV network from a 24/7 control centre and providing continued operations and maintenance support.

Fault & emergency



We help wind farm operators and OFTOs to get their network back up and running quickly and efficiently after a fault with swift expert fault finding followed by a carefully managed repair.

The Problem

You know the stats - the average repair costs over £10m, with 3-5 months to get the cable back to service and cable failures contributing to 77% of the losses made by wind projects. So, we are more than aware that if something goes wrong, the cost to the business and damage to your reputation can be catastrophic. If you get a fault you want it sorted quickly and efficiently - by experts who know what they are talking about.

Why EDS?

By choosing EDS you employ the expertise of a team of experts who have played a critical role in either diagnosing and/or repairing all recent cable faults in UK waters.

There is no 'one size fits all' when it comes to Cable Fault Diagnosis, but we are fortunate to employ the best in the business, meaning that we not only diagnose quickly, but also mobilise our team and implement an expert solution immediately.

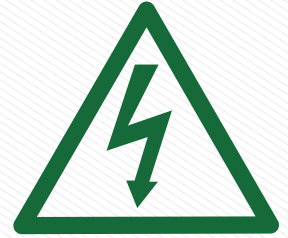
By also managing safety from the system for the repair works, EDS's full turnkey solution minimises downtime and gets your network back online.

The Detail

- Expert fault finding
- 24/7 Control Centre meaning a quick response to any failure
- 70+ highly skilled and trained technicians, including SAPs and Control Engineers to manage Safety from the System
- Deployment of the latest technology (e.g., DAS, Damped AC), ensuring pinpoint fault location, both onshore and offshore
- A flexible approach to the problem, getting your business back up and running ASAP with minimal disruption
- Expert post failure analysis. A full and thorough analysis, leaving you with an independent technical report, including forensic breakdown, helping you to establish the origin of the fault



High voltage commissioning



We help Developers to safely and efficiently energise their wind farm by providing highly skilled engineering staff, coupled with expert project management and accurate data management systems.

The result is a successfully energised wind farm, where the Commissioning Manager leaves knowing that everyone was kept safe, everything has been commissioned to the highest standards and an organised and trusted reference system is being handed over to the O&M Manager.

The Problem

Commissioning a wind farm has the potential to become very chaotic very quickly. With multiple contractors on site, working to different processes, it is essential that someone is taking a birds eye view, knitting together the interfaces to ensure safety is maintained and key information isn't lost. This kind of oversight is essential to hitting project deadlines.

Why EDS?

EDS ensure that all pieces of the jigsaw fit seamlessly together. We are your eyes and ears on site, bringing years of experience to the table to provide assurance of safe energisation. We have designed our service to ensure that the commissioning process is smooth and well planned, rather than a headache to be endured. We bring highly skilled and experienced people, with a resource strategy that we can flex up and down depending on your needs. We also bring together and oversee different contractors, providing strong leadership for the duration.

Handover to O&M is seamless, with an assurance of no corners cut and no short cuts taken. We even provide onsite training for your personnel to give you peace of mind as you move into O&M. The legacy of our work is assurance of a site commissioned to the highest quality, with all the documentation captured so that even years down the line, you'll not be left scratching your head for

Commissioning can be split into two distinct elements:

High voltage safety management - We implement the EDS high voltage safe system of work (safety rules), tailored to your project needs, and send a project team to manage the energisation of the wind farm. This is all supported by the EDS high voltage control centre, from where safety operations are coordinated and the HV system is monitored 24/7.

High voltage commissioning management - Our project team support you with commissioning management, providing oversight of the installation and commissioning practices of contractors, signing off commissioning documentation, capturing information critical to project completion and handover.



The Detail

Note: these can be configured according to your project needs

Owners Engineer

- Commissioning Management
- Factory Acceptance Testing
- Commissioning client reps at each project phase
- HV system design reviews

HV Safe System of work

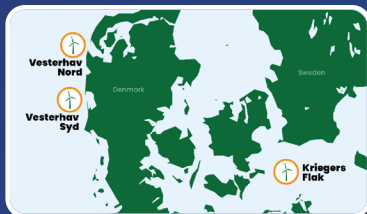
- HV Safety Rules - branded and tailored to your requirements
- SAP, CP and Persons training courses

- Management of authorisation database for all site 3rd party personnel
- Operational Engineers
- Fully authorised SAPs, APs, CPS in line with project needs
- Lead Commissioning manager, Lead HV safety manager

Control Centre Services

- 24/7 remote alarm monitoring supported by fast site response
- Fully authorised HV control support, driving co-ordination of all site switching activities

Case Studies



Krieger's Flak and Vesterhav Syd

High voltage network commissioning and safety

EDS provide high voltage network commissioning and safety management, plus full management of all Senior Authorised Persons (SAPs) on-site at three of Vattenfall's Danish wind farms.



Horns Rev 3

High voltage consultancy during the installation phase of the project, including pre-site engineering support, HV system review and high voltage safety management

EDS completed work at Denmark's largest offshore windfarm, Vattenfall's Horn Rev 3. The scope of work included pre-site engineering support, HV system review, high voltage safety management and consultancy support, plus training of Vattenfall's O&M team.

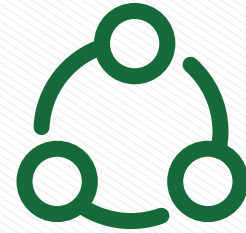


Formosa 1

Facilitation of commissioning and energisation of the wind farm, which included safe system of work, providing safety rules, and training local staff under these rules

Electrical safety Commissioning and Consultancy work at Formosa 1 (Phase 2) Offshore Wind Farm provides skills to local people, enabling them to safely and efficiently run their own HV network.

Terminations & testing



We help Developers and tier 1 contractors to hit programme targets, without compromise to safety and quality. We can do this because of our dedication to excellence in project management, the quality of our personnel and our focus on engineering.

Our aim is to ensure that your cables are terminated and tested to the highest standard, right first time, reducing the chance of return visits and future outages. Our record of 9,000 terminations without failure is a testament to our approach.

The Problem

Most claims in offshore wind are related to High Voltage cables, despite the fact these make up just one tenth of the CAPEX. Inter-array cable terminations have become a particular pain point, with design issues and poor workmanship leading to costly faults and sometimes even replacement campaigns.

At worst, these issues can impact developers deep into the operating lifecycle of the wind farm, reducing generation output. Even if caught early, project programmes move to the right and generation and handover targets are put at risk often leading to unpleasant contractual disputes.

As project timescales tighten, and quality resource is in demand, the challenge is to find the best approach to hit deadlines without compromise to quality.

Why EDS?

What makes the difference when working with EDS is our partnership approach, our depth of engineering expertise and our focus on excellence in project management. Expert planning is key to success, but it's our ability to help you navigate the curve balls mid-project, by drawing on our in-house engineering that gives assurance of meeting critical programme milestones. And because our projects are supported by bespoke software reporting, you'll have access to real-time status so that no matter how far the goal posts have moved you'll always know your position in the field.

Of course, quality of workmanship is a must and that's why our betting process is core in quality assurance. Our in-house experts assess each team member before site mobilisation, and we emphasise multi-skilled personnel to maximise flexibility.

The Detail

We provide a full terminations and testing package to support your cable installation project. Our pre-engineering services include desk top cable routing design review and practical review through use of turbine 'mock-ups'.

On the ground execution includes cable pull-ins, cable routing, containment build-routing, installation and testing. Our teams are trained in offshore operations and multiple manufacturers and can facilitate:

- Containment Design reviews
- TP Mock-up
- EHV jointing up to 400kV
- XLPE and EPR experience
- Fibre Testing: advanced OTDR testing
- Power core testing: All standard electrical testing including VLF and Damped AC
- Bespoke digital reporting for seamless back-to-back KPIs
- Wide range of qualifications and experience on various subsea joints
- Provision of client representation and on-site supervision

Case Studies



Triton Knoll

Installation and termination of high voltage cables

A critical cable Termination and Testing contract out on the 90 wind turbine offshore wind farm development, Triton Knoll. The project involves the installation and termination of high voltage cables between the offshore foundations and the turbine switchgear.



Mermaid

Termination and testing of the export cables

EDS conducted Termination and Testing of the Export Cables at SeaMade Offshore Wind Farm. Teams acted swiftly prior to the COVID-19 restrictions taking force to ensure the project was completed on time whilst posing no risk to the teams already located on the platform.



Elia Mog

Testing, Jointing and termination works

EDS completes testing, jointing and termination works for ELIA's modular offshore grid (MOG), establishing a connection between the offshore submarine cables and the onshore substation cables, marking a hugely important step for the renewables industry in Belgium.

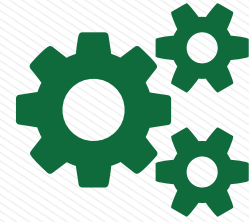


Hohe See

Installation, termination and testing work

EDS successfully completed the Installation, Termination and Testing work at EnBW's offshore wind farm, helping to establish a cable connection between Hohe See offshore wind farm in the German North Sea and the high-voltage direct current offshore grid system, BorWin3.

High voltage operations & maintenance



We help wind farm generators to maximise their HV network availability and save money by designing and executing excellent operations and maintenance programmes.

Electricity network O&M programmes centred on safety and effectiveness in execution with savings of up to 70% on your annual HV Network Management costs with our unique O&M programmes.

The Problem

You want to maximise your asset availability and ensure that you can continue to generate clean, green energy. It's a delicate regime in place, at the same time as minimising downtime. You know that data is the key (and you have plenty of it), but you need some help to turn this into an actionable maintenance plan.

Why EDS?

EDS have years of experience in developing maintenance regimes. We don't just churn out maintenance activities, instead we bring strategic thinking and sound engineering analysis to Operations & Maintenance alongside a tried and tested methodology to managing your asset, and then develop a detailed plan of protective interventions to keep your asset running smoothly for years to come. The plan is then delivered by our skilled engineers who care as much about your asset as you do. At the same time, we train up your staff, enabling you to take care of some aspects of your windfarm, saving you up to 70%. All of the above is supported by our 24/7 control room, to ensure eyes are on your network at all times.

The Detail

Not just maintenance activities, instead a carefully thought-out programme developed with a robust set of data and sound engineering analysis, delivered by highly skilled and professional engineers.

- EDS control room so there are always eyes on your network
- Network of site SAPs and a team of fully authorised and experienced control engineers, available 24 hours a day, 365 days a year meaning you can flex resource when needed
- Condition monitoring & condition assessment strategy
- Asset management reporting framework
- Development of asset management policies
- Industry recognised condition assessment techniques such as dissolved gas analysis
- Partial discharge monitoring and trip coil profiling
- Training for your own staff

Case Studies



EOWDC (Aberdeen Bay Wind Farm)

Operations & Maintenance (O&M) contract to provide asset management at 132/66kV Blackdog substation

EDS' Operations and Maintenance contract for Vattenfall's Blackdog Substation at the European Offshore Wind Deployment Centre (EOWDC) included inspections and maintenance of the primary electrical assets and secondary auxiliary systems.



Rhyl Flats Offshore Wind Farm

Operations and Maintenance services contract

Substation maintenance works were completed at RWE Renewables offshore wind farm, Rhyl Flats, in just two days, whilst adhering to COVID-18 government guidelines.



North Hoyle Offshore Wind Farm

Operations and maintenance (O&M) services contract

Operations and Maintenance services were conducted at North Hoyle Wind Farm, providing full turnkey services, network surveillance, high voltage (HV) safety management and marine coordination, all from its 24/7 control centre.

Our project history





Our locations

Enquiries +44 (0) 17086 231067 | enquiries@edshv.com | edshv.com

Headquarters

EDS HV Group
James Fisher
Gordon House
Sceptre Way
PR5 6AW

Ireland Regional Office

EDS HV Group Northern
Ireland
Sketrick House
Jubilee Road
Newtownards, Co.Down
BT23 4YH

Northern Regional Headquarters

EDS HV Group Sunderland
Office OG1
Washington Business Centre
2 Turbine Way
Sunderland
Wearside
SR5 3NZ



