

Your career in offshore wind



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Foreword

The UK is the global leader in offshore wind, and the industry is growing. It's a dynamic, innovative sector with plenty of opportunities for people looking for well-paid, long-term jobs that make a difference.

As a maritime nation, it's not a surprise that the UK has truly embraced offshore wind, backing schemes around our coastline and signing up to its economic and environmental benefits. In the UK alone, we expect the sector to treble in size over the next decade. Thousands of people support the construction, operation and maintenance of these clean energy power plants, and the variety of roles is immense. We are seeing cutting-edge technology being developed, including use of artificial intelligence and robotics. The sector is moving forward at a fast pace and needs people with different skills and differing levels of experience to continue to drive this innovation.

The ambition and scale of the industry make offshore wind an exciting place to work. In this industry, people are truly making a difference in the battle against climate change, supporting the production of clean, carbon-free energy which will benefit future generations for years to come. We are a young sector looking to attract enthusiastic, hard-working, committed individuals who care about what they do. If you think this describes you, use this guide to start your journey into an exciting career. ▶

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Offshore wind: an introduction

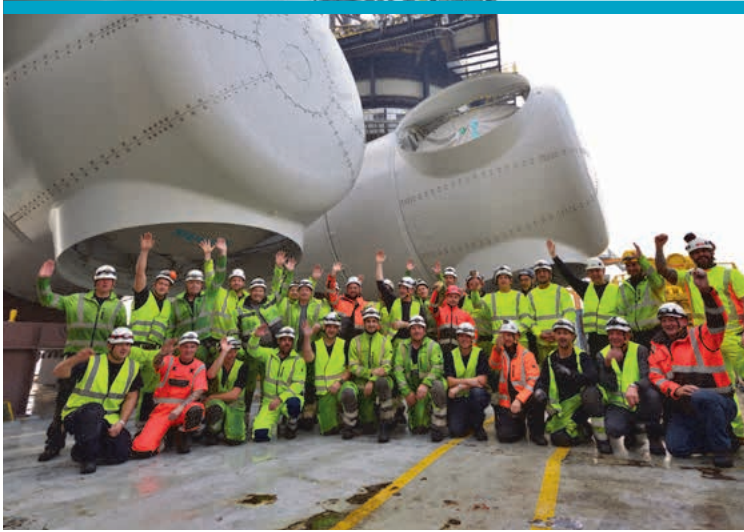
Harnessing wind energy has come a long way since its humble beginnings in turning mills to grind flour or pump water. Now, we use wind to turn generators, converting that energy into electricity that runs our homes, schools and workplaces.

The first offshore wind farm, Vindeby, was built in 1991 off the coast of Denmark. It consisted of eleven small 450kW turbines, each only 35m tall. Since then, wind energy technology has gone from strength to strength.

The world's largest wind turbine model currently stands at 220m tall, with the span of its three blades covering a surface bigger than that of the London Eye. Each rotation of these blades generates enough power to run an electric car for 40 miles, or power a household for a full day.

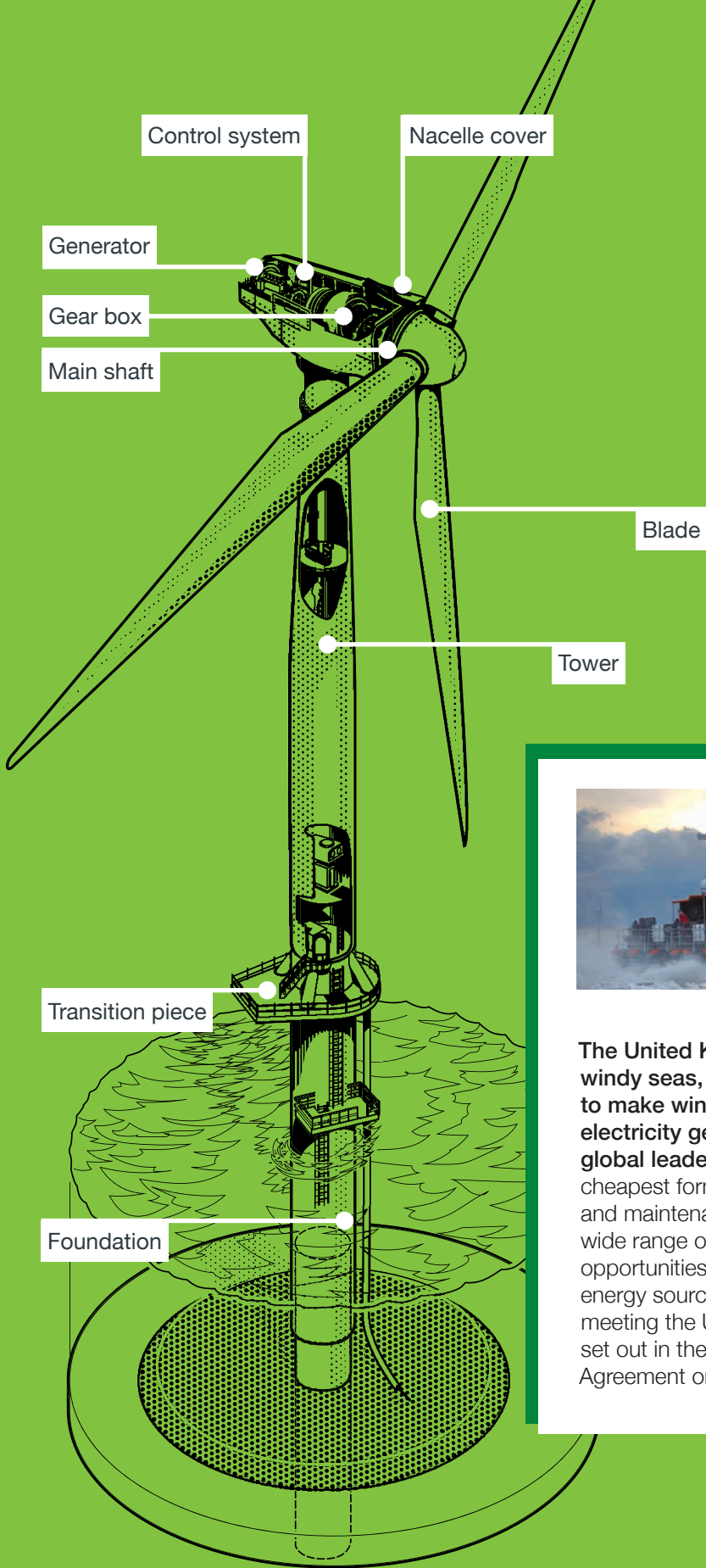
As well as turbines getting bigger, we have also seen new cutting-edge technology being developed including artificial intelligence and robotics. More of our power is coming from wind than ever. There are now over 4000 offshore turbines in operation across the world and the rate of growth is increasing as costs fall and more countries embrace offshore wind.

Modern wind turbines are truly giants of the seas. With stronger winds, away from the hustle and bustle of society, our seas are the perfect place for generating energy. What's more, the growing efficiency of turbines and the increasingly cheap price of their parts is driving forward technology and cementing offshore wind as a major international market.



The UK, surrounded by water, is a world leader, generating more power from offshore wind than any other country. With carbon targets to meet, many countries are now turning to offshore wind to help them reduce dependency on both imports and fossil-fuel derived energy.

The planning, construction and maintenance required for each wind farm requires talent from a wide range of academic backgrounds, and the growth of the industry means that there are more and more opportunities out there. A career in offshore wind means making a difference in a highly skilled sector which is here for the long term. This is where you come in. It's not just about growing an exciting new industry: offshore wind is helping steer our planet in a greener, safer direction. We want you to be part of it. ▶



The United Kingdom, surrounded by windy seas, has a fantastic opportunity to make wind energy a major part of its electricity generation. We are already global leaders in the industry. Wind is the cheapest form of energy, and construction and maintenance of farms can bring a wide range of investment and employment opportunities to coastal towns. Renewable energy sources such as wind are key in meeting the UK's carbon-emission targets set out in the internationally binding Paris Agreement on climate change.

Environment and climate change

The growth of renewable energy as a source of power is part of a wider movement to end global reliance on fossil fuels.

For centuries, the world has been powered by carbon-emitting coal, oil and gas, polluting our air and water and leading to changing climate and melting polar ice caps, the results of which we are already seeing today. This is one of the biggest issues facing our planet; how we stand up to the challenge will be the question of our time.

Thankfully, you can play your part in solving these problems.

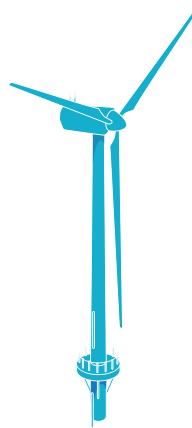
We now know how to turn energy created by renewable sources, like wind and solar, into clean and sustainable electricity. We also know that investing and supporting the development of these technologies can create jobs and opportunities for UK companies, delivering wider economic benefits for both local communities and the country. ▶



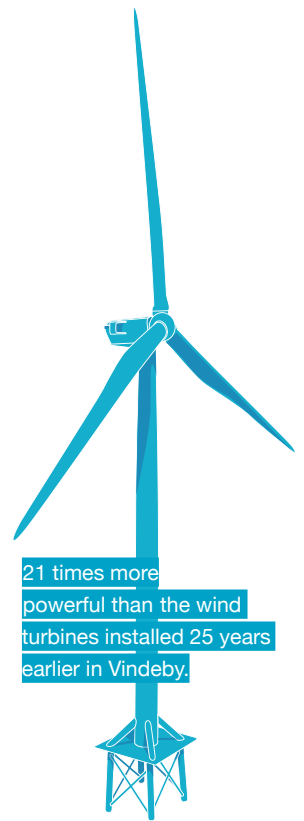
1991 The first offshore wind farm was built near Vindeby, off the coast of Denmark. Hub height and rotor diameter: 35m



2001 The first UK offshore wind farm was installed near Blyth, Vestas V66-2.0MW. Hub height: 62m. Rotor diameter: 66m



2011 Siemens SWT-3.6MW. Hub height: to 83m. Rotor diameter: to 120m — as long as a football field.



21 times more powerful than the wind turbines installed 25 years earlier in Vindeby.

2016 The next generation offshore turbine by MHI Vestas is the V164-9.5MW. It is bigger than any commercial turbine so far with a typical hub height of 105 metres.

How big is the offshore wind industry?

Wind farms in the UK



The UK has over 11,000 miles of coastline, yet only a tiny fraction of our seas have been allocated for offshore wind. Almost all the seabed off the coast is owned by the Government and managed by The Crown Estate or and Crown Estate Scotland which leases the seabed to developers with the eventual goal to build and operate an offshore wind farm.

Offshore wind is a growing part of the UK's electricity mix. By 2020 it will be supplying 10% of our power needs, and this is set to increase to 30% by 2030. That means growth in employment too.

More offshore wind farms means a growing supply chain and more sites which need maintaining. Some of the growth in jobs will come from the UK selling goods and services abroad too.

Bloomberg New Energy Finance anticipates that the global offshore wind market will grow to 115GW by 2030 – a six-fold increase in 12 years!



In the UK, there are 11,000 people directly employed in the offshore wind sector, and this is set to grow to 21,000 by 2030. For every person directly employed, one person is also employed 'indirectly', which means they work for companies which supply offshore wind companies.

Jobs in offshore wind are spread across the UK and especially focused along the east coast of Scotland and England. The average age of people in our industry is 38 and a quarter of our workforce is under 30, making our industry younger than the national average. It's great that we are attracting this young, ambitious workforce into offshore wind. Individual companies and the sector as a whole are looking at how best to train newcomers, increase diversity and improve gender balance.

Compared to the UK as a whole, our industry is also a skilled one with above-average levels of training and skills. There are significant numbers of technicians, engineers and professionals in our workforce. ▶

The lifecycle of an offshore wind farm

The lifetime of an offshore wind farm can be greater than 30 years, from the initial design work to the final decommissioning of a wind farm. There are different stages to this work, and different skills and companies involved at each of these stages.

Scoping →

Sites for offshore wind are identified through a process called ‘scoping.’ There are many elements involved in site selection, including – unsurprisingly – wind speed, as well as water depth, seabed conditions and the impact on local people and the environment.

→ Development

A formal consent application is required for an offshore wind site before it can be built. The process of planning a wind farm is usually carried out by a company known as a developer. The application will include details of the number and size of turbines, the location of the wind turbines, environmental impact assessments as well as a host of other considerations looking at every aspect of building and operating an offshore wind farm. These applications are submitted to the UK Government or Scottish Government depending on the location of the site. The applications can be up to 10,000 pages long and are full of details of the projected environmental and social impacts of the wind farm.





→ Installation

After a project has been granted its planning approval, there are a series of activities that take place in preparing a site and manufacturing components for installation. One of the first steps in installing a wind turbine is placing a foundation in the seabed. The most common foundation is called a monopile which is a steel tube and weighs 600 tonnes. A transition piece is put on top of this which connects the turbine's tower, hub and blades.

→ Operation & maintenance

For 20 years or more, the project will generate electricity for the UK's electricity system. The farm will require maintenance throughout this period to guarantee it is running efficiently and to prolong its lifespan. This can include routine inspections to look at the condition of blades, underwater cables and gearboxes




Decommissioning /repowering →

As the majority of offshore wind farms have been constructed in the 21st century, jobs in this area will grow in the 2020s and 2030s.

As the turbines come to the end of their natural life, the developer will decide whether to decommission or repower (with new turbines). If they are repowered, the cycle starts again. ▶

The main elements of an offshore wind farm

There are a number of different parts that make up an offshore wind farm both in the sea and on land. All of these different components come together to form a fully operational wind farm, with opportunities for you across the life of a wind farm.



Onshore electricity substation:
Interface between the wind farm and the nation's electricity grid

Operational headquarters:
the project control centre

Port and dockside facilities

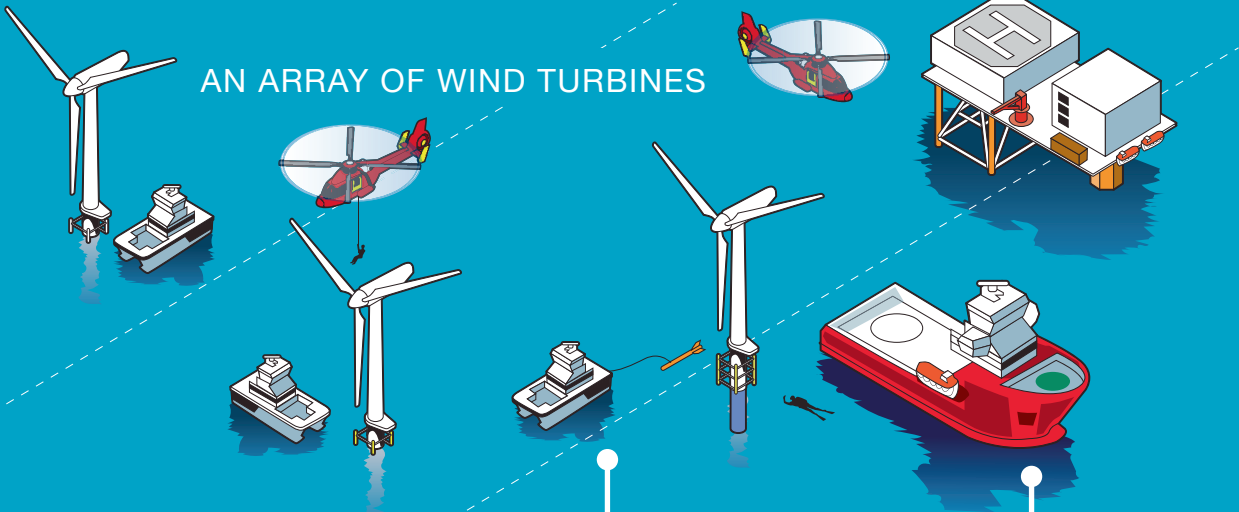
Jack up barge: a key vessel for installing foundations and turbines

Offshore electricity substation:
collects electricity from the wind
turbines and sends it onshore

AN ARRAY OF WIND TURBINES

Crew transfer, maintenance
and monitoring vessels

Construction/
cable laying vessel





Careers in offshore wind

There are thousands of people employed in offshore wind, and each person has taken a slightly different career path. Many people come into offshore wind from other sectors, as many of the roles or skills are transferable. But the average age of people who work in our sector is below the UK average, which means opportunities for school leavers and recent graduates. The information included in the following pages will outline some of the roles in offshore wind and the types of routes that can be explored to kick start your career in offshore wind.



What can I do with a scientific background?

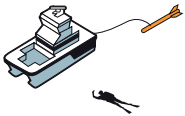
Science is key to wind farms at every stage, but the planning and development stages in particular draw from a wide range of scientific disciplines in order to determine the potential effects of a wind farm in a specific location.

Consents Coordinator

The consenting stage is a long process which may require a Consents Coordinator to liaise with engineering teams, regulatory authorities and other scientists to ensure the Environmental Impact Assessment is completed to a high standard. To conduct the scientific aspect of the consenting process, developers will often use specialist consultancy companies who employ a wide range of scientists.

Environmental Scientist

Environmental Scientists play an important role in the process, assisting with the maintenance, preparation and operation of survey equipment, monitoring and interpreting data, sampling and processing of macrofauna. Marine biologists analyse the potential effects of a wind farm – both the installation and operation of – on surrounding marine life, including fish and mammals.



Geophysicists and Oceanographers

Geophysicists, on the other hand, look at the logistics of securing a turbine into the seabed. The majority of wind turbines are installed into the ground. This means that there needs to be an extensive mapping of the shape and depth of the seabed. Physical and Chemical Oceanographers are also required, to determine how the condition of the water might effect the turbines.

Interested?

Pursuing science subjects now will be a plus. There are lots of undergraduate degrees available, with further postgraduate courses to further your specialities.



What can I do with an engineering background?

Engineers from all backgrounds make up a significant proportion of the offshore wind workforce. Engineering consists of design, building and the use of mechanics and machines – such as wind turbines! Engineers are involved with offshore wind farms at each stage of their life cycles.

Engineers and Installation Managers

Behind the scenes, Mechanical Engineers and Electrical Engineers play an important role in the design of wind turbines, exploring ways that they can generate more electricity at higher levels of efficiency. They will also be onsite to test electrical components of the turbine (including generators, motors and communication systems) during installation and operation, working closely with Junior and Senior Wind Turbine Installation Managers. Design Engineers also play an important role in developing and research various elements of a turbine, cables, foundations or substations.

Installation and maintenance of turbines requires management of a wide range of machinery, some of which will be controlled remotely by engineers onshore. The mechanisms and technology involved in this will be designed, tested and operated in roles such as a Controls Systems Engineer.

Operations Supervisor

Throughout the wind turbines' life cycle, an Operations Supervisor will oversee the engineering operations and ensure a safe and efficient working environment, and direct other engineers to issues with the turbines.



Interested?

Engineering requires a good grasp of maths and science subjects. Some employers may want graduates or postgraduates. There are also roles through vocational routes, including Higher National Certificates and Higher National Diplomas.





What can I do with a construction background?

Construction roles are required throughout the building and maintenance of the wind farm, and speciality in a wide range of skills is required, including but not limited to: welders, platers, crane operators and scaffolders.

Health and Safety roles

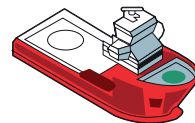
A background in construction is also helpful if you're interested in Health and Safety. Working on boats, from the air (and actually in the sea!) can be both difficult and dangerous, and companies always place the highest priority on employee safety.

Training Coordinator

There are also opportunities to help those around you be the best they can be, with roles like Training Coordinator, making sure that construction workers and technicians have the most up to date and efficient ways to work and are held to superior standards.

Design Engineers and Electrical Technicians

A vital part of a wind farm is connecting the turbines to each other and then to bring the electricity generated back to shore to be exported into the electricity grid. Cables carry electricity from the turbines to substations, and from substations back to shore. There are a variety of roles that focus specifically on cables including Design Engineers and Electrical Technicians.



Interested?

There a wide range of options for anyone interested in construction, but one of the most popular routes is through hands-on experience, which you can get through vocational courses and apprenticeships.



What can I do with a business or economics background?

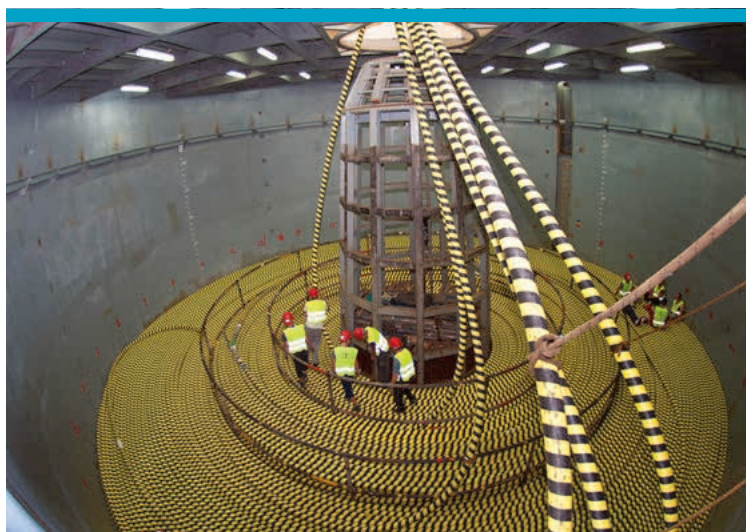
Each developer in offshore wind aims to run their company in a smooth and profitable manner. There are plenty of business and economist roles which contribute to this.

Investment Analyst

Investment Analysts are employed by large investors or work as consultants and advise on project cost, viability, construction risk, long term returns and ensure the offshore wind farm is a sound investment proposition.

Project Economist

A Project Economist may be employed to ensure that projects are running efficiently and identifying when there are savings to be made.



Sales Manager

When a developer comes to buy or build the many components of a wind turbine, a Sales Manager will ensure that they are getting the best deal, in both cost and quality. These roles involve buying hundreds of millions of pounds worth of technical equipment.



Offshore Coordinator

Once the wind farm is up and running, an Offshore Coordinator will organise the maintenance tasks, monitoring the weather and vessel and technician available to ensure that the work can be completed in a safe and timely manner.

Project Planner

A Project Planner will develop and maintain the project programme.

Interested?

A degree in a business or economics subject would be helpful for these kind of roles, but it is not a requirement for all the posts. Universities offer a wide range of business degrees, but there are also vocational courses and certificates which can be undertaken.



What about careers in stakeholder management?

Public Affairs Officer

As a Public Affairs Officer, your job will be to represent the developers in Westminster. Talking to politicians about, for example, why they should support an offshore wind project in their area and explaining the benefits of offshore wind.

Policy Manager

A Policy Manager will work closely with their organisation and with government on the policies that impact the wind energy industry. This could involve drafting responses to government or regulator consultations on specific issues within offshore wind.

Stakeholder Advisors

Stakeholder Advisors act as representatives to government and local businesses. Their role has a focus on creating and developing relationships with stakeholders both locally and nationally. ▶



Interested?

A degree-level qualification or equivalent is usually required. Strong communication skills are essential for these roles including experience of presenting technical information to a wide range of audiences.



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Our members are building our future energy system, powered by clean electricity. We bring them together to deliver that future faster; a future which is better for industry, billpayers, and the environment

We are a UK membership body with a mission to ensure increasing amounts of renewable electricity are deployed across the UK.

We support over 400 members to access UK markets and to export all over the world. Our members are business leaders, technology innovators, and expert thinkers from right across industry.