

products across Northern Europe. DONG is a market leader in offshore wind technology and has built around half of the offshore wind farms operating today.

The company is heavily involved in the production and expansion of renewable energy in the UK. These include building three new major UK offshore wind farms. DONG Energy currently operates the offshore wind farms Gunfleet Sands (172MW), Burbo Bank (90MW) and Barrows (90MW). Find out more at www.dongenergy.com

E.ON

E.ON Group is one of the world's largest power and gas companies, a leading energy supplier in the UK, with around 8 million customers. E.ON has been involved in renewable energy since 1991. The company now owns and operates 22 wind farms in the UK, including the 60MW Scroby Sands offshore wind farm off the coast of Great Yarmouth and the 60 turbine Robin Rigg Wind Farm in the Solway Firth. Many more projects are in the pipeline. Find out more at eon.com

Masdar

Masdar, a renewable energy company based in Abu Dhabi, is a subsidiary of the Mubadala Development Company. Masdar specialises in developing and commercialising renewable and sustainable energy technologies. The London Array is just one of many projects that the company is working on, both in Abu Dhabi and internationally. Masdar is also investing in a number of innovative 'cleantech' companies to further develop technologies. The biggest project at the moment is Masdar City, a carbon-neutral, zero-waste cleantech hub that's fully powered by renewable energy. Read more about Masdar's activities at masdar.ae

Heavy lifting

With a global network of operating centres and a large fleet of heavy cranes, specialist transport and installation equipment, ALE combines exceptional project management with engineering intelligence to offer worldwide transportation and lifting services to all industry sectors. Founded in 1983, the company has grown into an international giant with a turnover of EUR150m.

For the London Array, ALE received four 130te transformers at Chatham Docks and transported them to the Cleve Hill site approximately 30 miles away, a route which included a tight railway bridge. In order to complete the transportation, ALE coordinated with stakeholders, including residents, the local authorities and the railway network operator. The company followed up on site with expert site handling as well as removal of unwanted materials.

Renewables business development manager Angus Hamilton told Premier Construction, "The work we do may seem like a logistical nightmare but we thrive on the challenge - it's what we do every day! We have bases and well-established transport networks across the globe with all the major heavy industries, of which renewables is showing some of the biggest growth. As such, our expertise is highly sought-after".

Alongside the London Array in the UK, ALE has recently been active on both the Walney and Greater Gabbard wind farms, taking responsibility at the latter for the transportation of all 140 of the turbines from a base at Harwich Port. Find out more at www.ale-heavylift.com

Modular & Portable Buildings Ltd.

With clients demanding eco-friendliness at every step, a green solution to site buildings was required. In stepped Modular & Portable Buildings Ltd to install a two storey, recycled Portakabin Duplex building consisting of 22 modular sections. The installation took just two days, with the majority of refurbishment carried out at the company's base in the North-East.

Director and co-owner Ben Foreman says, "Right now, people are looking to cut costs, have a positive effect on local economies and protect the environment. We specialise in re-using second hand units, which can save up to 70% of the cost and 90% of the

carbon. We also use local sub-contractors on site, so we have a positive impact wherever we go".

The company's hire division offers another eco-friendly alternative when buildings are needed temporarily. Find out more at www.modularandportablebuildingshrie.co.uk

The veterans of the offshore wind industry

The first company to design an offshore wind farm, COWI's offshore wind consultancy is renowned for its innovative solutions, as well as for setting the industry standard for wind turbine gravity foundations. The firm, previously successful at sites such as Thornton Bank in Belgium and Nysted/Rødsand II in Denmark, is continuing a framework relationship with the contractor and has teamed up with IMS GmbH, the German market leaders in the design of steel marine structures, to form COWI-IMS JV. The JV is responsible for carrying out the detailed design of the steel foundations.

On the London Array, water depths - varying between 0 and 25 metres - and unstable sea bed are among the challenges facing the 20-strong design team. Jan Rønberg, COWI's market director for wind developments, spoke to Premier Construction:

"It's a highly diverse area with a wide range of water depths and differing soil conditions. We are dealing with sand profiles, stiff London clay profiles and mixtures including gravel layers. We also have layers prone to liquefaction. Our designs have included a new conical grout connection as a response to studies that have shown that, on other wind farms, cylindrical grout connections have not offered the desired level of stability.

"In order to be successful, we are drawing on our extensive experience of monopile, jacket and gravity-based structures and making the most of our ability to follow the contractor's lead and respond quickly and precisely to any requests for modifications".

The expert input of Jan and his colleagues is behind some of the largest foundations ever built, with a length of up to 85m. Find out more about this and other projects at www.cowi.com

The recon team

Before a project of this scale can commence, extensive hydrographic and geophysical surveys must be carried out. The proprietary engineering designs and environmental application processes on the London Array development hinged on early seabed mapping surveys carried out by Osiris Projects.

Osiris Projects' work involves acoustic scanning to determine surface conditions and highlighting potential hazards as well as seismic profiling for determining the shallow geological conditions.

During the summer of 2004 their specialist inshore vessels collected over 3,600 km of high resolution survey data, mapping the site completely. Contracts manager Patrick Clark says, "At the time, this was a huge survey. Challenges such as operational logistics, shallow water, strong tides, drying banks and the sheer data volumes meant we needed a pioneering solution".

Osiris Projects remain one step ahead of the competition as they prepare to launch a new semi-SWATH DP1 survey catamaran, 'Bibby Tethra', which has the sea keeping ability of an offshore vessel at a fraction of the cost. Patrick adds, "In our sector, you're reliant on technology. We pride ourselves in being innovators". Visit www.osirisprojects.co.uk

Taking care of the cables

Pipeline Engineering's £7.75 million contract will see the firm supply a proprietary system to protect, export and array cables between the 175 offshore wind turbines and three substations.

The company's proprietary PEFLEX® cable protection system (patents pending) protects against abrasion, impact, fatigue and cable over-bending while facilitating quicker deployment and reducing installation costs. Pipeline Engineering is currently constructing a purpose-built manufacturing cell for the project that incorporates the latest lean manufacturing processes at its existing facility in Catterick, North Yorkshire.

Pipeline Engineering is a subsidiary of CIRCOR International (NYSE: CIR). Paul Coppinger, president of CIRCOR Energy