

Kentish Flats Offshore Wind Farm – Case Study

Spring 2005

Offshore wind energy is expected to be a major contributor towards the UK Government's 2010 target for renewable generation.

Offshore Wind Energy – a growing industry

The centre of offshore wind development in the UK is in the East of England and one of the flagship projects is the Kentish Flats Wind Farms, 10km off the coast of Herne Bay. With a design life of 20 years, it is estimated that the project will reduce national carbon dioxide emissions by as much as 223,000 tonnes.

Major Installation Challenges

One of the major challenges involved in the project was determining how to lay the necessary subsea power cables that would transmit power from the 30 wind turbines in the shallow waters that surround the Kentish Flats site.

Global Marine Systems Limited, a leading provider of sub-marine cable installation and maintenance company, was brought in by the project contractor NEC Micon UK for its specialist knowledge in this area.

NEG Micon UK Ltd is a wholly owned subsidiary of Danish company Vestas Wind Systems A/S, Denmark and an important player on the international wind power market, employing approximately 1500 people worldwide. With almost 20 years of experience in the business, The company has pioneered the development of wind power technology.

Calling in the experts

Global Marine Systems Limited was sub-contracted by Vestas for the all important Phase One of the project - the installation of the three export cables that reached the shore from the turbines. Each cable was 8-10km long in order to reach one of the three groups of ten turbines and weighed 30 kilos per metre.

There were several challenges for the company. The water was particularly shallow so Global Marine deliberately grounded the cable laying barge at low tide on a number of occasions which would enable them to continue operations as the water returned on the high tides. Furthermore, the company was on a tight deadline – the mobilisation began in December but work needed to be completed in January 2005 in order to protect the spawning ground of a local herring population which the cable route ran through. This part of the project was successfully completed by 31st January – in time for the deadline.

Phase Two involved the installation of the infield cables between the turbines. The 30 turbines were connected by Global Marine Systems in three blocks of ten, daisy-chain style; each block of ten is connected to an export cable. These cables were

surface laid, and then buried using Global Marine's subsea remotely operated vehicle (ROV) 'Otter'.

Benefits

The Kentish Flats project will have an important role to play in helping to achieve the British Government targets in relation to climate change and the commitments of the Kyoto protocol.

The project alone will displace an estimated 4.4 million tonnes of carbon dioxide over its 20-year life time, compared to conventional fossil fuel generation. Furthermore, placing wind turbines at sea is an advantage for the environment - the power output of identical turbines is up to 25 per cent larger offshore than on land.

"We are pleased that Kentish Flats, as the first of our projects abroad, is now in commercial operation", says Project Director at Elsam, Hans Buus, and he continues, "Throughout the entire process we have maintained a good and close cooperation with authorities and suppliers, and we will use this experience in our future offshore projects in the UK".

Ian Gaitch, Renewable Energy Manager at Global Marine comments, "The renewable energy market is strategically important to us and we are very pleased to have been instrumental in the Kentish Flats wind farm installation. We have worked closely with NEG Micon at every stage to ensure the project's success. This is now the third offshore wind farm project we have been involved in; no other marine engineering business has more experience in this sector."

Facts and figures

Kentish Flats Wind Farm is in the outer Thames Estuary, 10km off the coast of Herne Bay and it will generate energy for approximately 90,000 UK homes. The 30 V90-3.0 MW turbines, with a capacity of 90MW, will provide clean electricity into the national grid when the project is completed during the summer of 2005. This latest wind farm moves the UK closer to meeting the Governments target of 15% of all electricity to be generated from renewable sources by 2015. The wind farm has a design life of 20 years and it is projected that each year it will reduce national carbon dioxide emissions by as much as 223,000 tonnes.

For more information on Global Marine's capabilities please contact Ian Gaitch, Sales Director for Global Marine Systems, Energy, ian.gaitch@globalmarinesystems.com

For further information on Global Marine Systems, Energy projects, please visit our website: globalmarinesystemsenergy.com