

Installation: Global Tech I

The Project

Fred. Olsen Windcarrier's specialist jack-up vessels the **Bold Tern** and the **Bold Tern** in partnership with Global Wind Service (GWS) installed turbines at the Global Tech I wind farm in the German North Sea. The full scope of work was to transport and install a total of 75 towers and nacelles and 22 rotor stars in eight months. Fred. Olsen Windcarrier and GWS started on the project in January 2014 and completed the final turbine in late August 2014. Global Tech I was the third project in German waters for Fred. Olsen Windcarrier since the launch of the **Brave Tern** and her sister ship **Bold Tern** in 2012/13.

Global Tech I will occupy an area of roughly 41 square kilometres located approximately 180 kilometres from Bremerhaven and 138 kilometres northwest of Emden. Construction of Global Tech I started in August 2012. Once fully commissioned, the total output of the wind farm is 1.4 billion kilowatt hours per year - enough electricity to power 445,000 homes.

The Global Tech I wind farm features a total of 80 AREVA 5 megawatt M5000 turbines. Each turbine has a hub-height of 90m above sea level and has a rotor blade diameter of 116m.

The loading of the towers and nacelles took place at the offshore terminal at ABC Peninsula Docks of the logistics provider BLG in Bremerhaven. The excellent facilities and experienced GWS ground technicians meant that the process ran smoothly with a complete load out of four towers and nacelles in just over 24 hours. Pre-assembly and loading of the rotor stars was performed at JadeWeserPort in Wilhelmshaven. Great attention to the weather reports was paid during the load out of the rotor stars as wind speeds of above 8m/s meant that lifting operations could not go ahead.

Both vessels were equipped with a flexible deck layout enabling them to install either four tower and nacelles or two complete rotor stars in a single deployment. This set up allowed the vessels to work together and take full advantage of the fluctuating favourable weather conditions.

During the installation campaign, utilising the combined efforts and expertise of both Fred. Olsen Windcarrier and GWS, a new record was set of eight towers and nacelles installed in one week. This included 10 hour transfers for both vessels to and from Bremerhaven to the construction site - a distance of 180 kilometres.

The final two complete turbines were installed at the end of August 2014. By the end of the project, the **Brave Tern** had installed a total of 51 towers and nacelles and 10 rotor stars. And **Bold Tern** had installed a total of 24 towers and nacelles and 12 rotor stars. GWS supplied a total of 65 technicians to the installation phase of the project.

Comments

'Global Tech I was an excellent example of how the Fred. Olsen related companies can work together to deliver a market-leading performance executed to the highest safety standards under a single contract interface. We hope that this teamwork will be repeated in many projects to come,' said Lars Petersen Global Wind Service CEO.

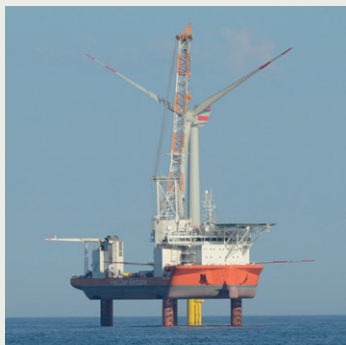
'Both vessels and all members of the crews and construction teams worked flawlessly on this project. We achieved many new company performance records and delivered on time and on budget for the client. We are very proud of this and we are very much looking forward to working in this way again,' said Even Larsen Fred. Olsen Windcarrier Head of Commercial and Projects.



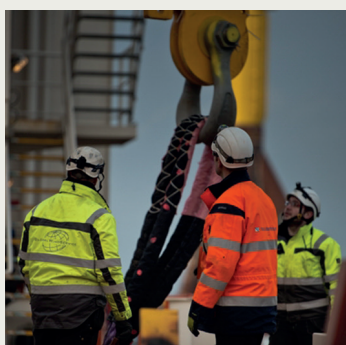
Bold Tern loaded with towers and nacelles
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Bold Tern loaded with rotor stars



First fully installed AREVA M5000 WTG



GWS technicians at work