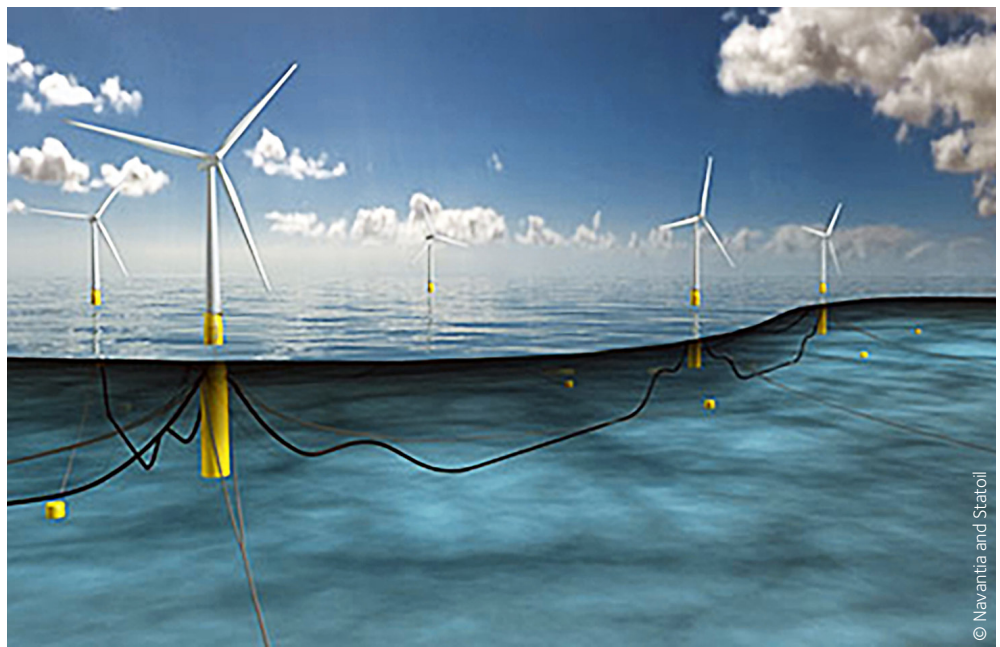




A series of steel rings form two watertight compartments which provide flotation and stability.



Each floating turbine is anchored by a series of mooring lines.

Into deeper waters

New technology generates energy from floating wind turbines



The world's first floating wind farm is currently under construction off the east coast of Scotland. The turbines float on the surface of the sea thanks to large steel cylinders which extend around 100 metres below the surface of the sea. The new technology, first demonstrated by the energy firm Statoil in Norway, will enable wind turbines to be deployed in deeper waters, vastly increasing the areas available to generate clean energy.

Floating offshore wind farms were only a concept until Statoil successfully demonstrated the technology would work in the Norwegian Sea. The company is now building the pilot floating wind farm which will be positioned at Buchan Deep, approximately 25 km east of Peterhead (Scotland).

The five floating turbines that make up the pilot project will be produced by Siemens and have a nominal capacity 6 megawatts each. Statoil's proprietary Hywind pitch controller is integrated into the turbine to mitigate excessive motion. Hywind also minimises energy losses due to aerodynamic or hydrodynamic movements, maximising output from the turbine.

Heavy plate creates floating foundation

The floating foundations – each with a diameter of 14.4 metres at their widest point – will be constructed using heavy naval plates (grades NV36D and NV36E)

from ArcelorMittal Europe – Flat Products. The foundations are being built by Navantia-Windar in Spain. ArcelorMittal Gijón (Spain) is supplying around 5,300 tonnes of the heavy plate for this part of the project.

“ArcelorMittal was chosen as the customer appreciates our short delivery times, and has confidence in the quality of our steels and ability to react swiftly to unexpected challenges which arise in a project of this size and scale,” says Luis Rodríguez Hevia, heavy plate account manager for ArcelorMittal Asturias. “ArcelorMittal Gijón is also close to the customer's own premises which will help to eliminate delays.”

Each foundation is composed of a series of ring sections with internal reinforcements. They form two watertight compartments and extend 100 metres beneath the sea surface. The lower compartment holds water and rock ballast, and is designed

to provide stability in severe weather conditions.

Bright new future for wind energy

The structure is floated into position and anchored to the seabed with mooring lines attached to anchors on the seabed. Construction of the foundation structures began at Navantia during January 2016. The last unit is expected to be delivered in February 2017.

Floating structures offer cost-effective clean energy generation in a wider range of locations. While monopile and jacket foundations can be successfully utilised in shallow waters (up to 50 metres deep), floating wind turbines can be deployed in deeper waters such as those found off Europe's Atlantic coast or in the Mediterranean Sea. The increased flexibility of floating turbines offers a bright new future for clean and renewable wind energy.

More info:

industry.arcelormittal.com/windtowers

www.navantia.es