

Emotron control floating windmills



New wind energy technology – SeaTwirl –use Emotron Regenerative Drive

SeaTwirl's new design will totally change our view of how offshore wind turbines will look like in the future. SeaTwirl is a floating wind turbine built for the ocean. These wind turbines are easier to build, install and will require less maintenance than the traditional offshore wind turbines. The ambition is to provide the most cost effective product for production of renewable energy. A vertical wind turbine can absorb wind energy independent on wind direction. There is no need for any yaw or pitch mechanism to face the blades to or from the wind. Fewer moving parts imply relative low maintenance costs and less downtime. Offshore the wind is stronger, the wind blows more hours and the winds are more uniform. A floating wind turbine can be placed at new areas in the world with deep waters that previous wind power have been limited from. SeaTwirl can therefore take wind power to a new level of functionality, scale and cost effectiveness.

A floating wind turbine, Sea Twirl, was installed outside Lysekil in Sweden 2015. 3 pcs, 15 kW generators / motors work together with an Emotron AC drive from CG Drives & Automation, to be connected to a substation to the network.



Technology

SeaTwirl is a floating vertical axis wind turbine placed offshore. The vertical axis wind turbine is mounted on an underwater structure that reaches deep down under the water surface. The underwater structure contains a buoyancy part and in its lowest point weight part. This makes the structure stable. The full body from the wind turbine in the top to the lowest underwater weight part is rotating as one piece and all its weight is carried up by the water.

To translate the kinetic energy into electrical energy a generator is placed around the rotating tower. The generator is placed above the sea level and is held at place using anchoring to the bottom of the sea. Since Sea Twirl is using an anchoring method it may be placed on deep waters.

Regenerative Drives

Emotron Active Front End (AFE) regenerative drives offer the option of feeding energy back to the mains and are rated for four quadrant operation with 100% power in both directions.

The AFE units are delivered as complete IP54 classified solutions and are based on Emotron standard AC drives. Emotron AFE produces typically less than 5% THDi compared to 30-50% in conventional drives, thereby fulfilling the IEEE-519 standard.

For SeaTwirl project a VFXR46-146 is used mounted in an 800 mm wide cabinet with a HMI panel placed in front door for faster and easier access. Modbus TCP/IP communication is used for data collection and monitoring of actual values. By using this technique, SeaTwirl got a reliable and cost effective drive solution.



IN BRIEF

Customer

- Myrén & Co – SeaTwirl

Challenge

- Place – out at seas –in tough weather conditions
- Long motor cable

Solution

- Emotron VFXR-146, power 75 kW

Benefits

- Reliable
- Cost effective
- Low Harmonics, THDi less than 5%
- 100% regenerative power, both directions

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