

Oceanflow uses Siemens Technology for Semi-Submersible Tidal Turbine

- Siemens provides gear unit and inverter for tidal specialist
- Semi-submersible tidal energy unit the first of its kind
- UK-developed, world-leading technology

Oceanflow Energy's Evopod is a tidal turbine with a difference. A semi-submersible turbine design, it has shown excellent seakeeping performance in tests, and it incorporates Siemens gear and inverter units. As a floating, tethered device, it has lower deployment costs than seabed mounted devices, and it is claimed to impose less disturbance on sensitive seabed ecosystems.

In 2006 Tyne and Wear based Oceanflow developed and model tested the Evopod solution at Newcastle University's School of Marine Science and Technology (MAST), with support from One North East and the North East Business Innovation Centre (BIC). A key attribute of the Evopod platform is its suitability for operation in exposed deep water sites where severe wind and waves make up the environment.

Senior development engineer at Oceanflow, Mark Knos, described the unit: "We have created a dry environment where we can use a standard gearbox with suitable torque and speed range, which means we have a better supply line with Siemens back-up. We tested a 1/40th scale unit at Newcastle University and then a 1/10th scale unit at the Tees Barrage and Strangford Narrows in Northern Ireland and have had excellent results so far."

The latest Evopod ¼ scale technology demonstrator is rated at 35kW, and will be grid connected off the South Kintyre peninsula in a representative scale environment. A full size Evopod will be rated at 1.2mW, enough power for up to 800 homes, and will survive harsh exposed environments like the Pentland Firth.

The Siemens gear unit is a size 45 O2RC with a special flange to take the Genset. It features an input flange, input coupling and special output shaft. Siemens mechanical tidal engineer Des Walsh said Siemens was able to provide the complete concept for a turbine based on Oceanflow's innovative design.

The Genset was used with a Siemens Sinamics S120 drive and active interface modules to generate power at close to unity power factor with low harmonics. A Siemens three-phase power supply was used to generate all the on-board auxiliary power supplies. This power supply, together with the S120 drive, allowed operation over the wide voltage range expected due to transmission equipment impedances. The drive and control system was designed, assembled and tested for Oceanflow by Optima Control Solutions, a Siemens Solution Partner.

The reassurance of significant product support and a local supply chain provided by Siemens was also a major factor in the selection of the Siemens unit.

Mark Knos confirmed that Oceanflow was the first company to go through the complete process of permitting and leasing a grid connected tidal site for a commercial project in Scotland and it planned to install the unit later this year. Part of the funding for the project had come from the Scottish Government through their Wave and Tidal Energy Renewable Systems (WATERS) scheme. However, like many emerging tidal technology companies, more funding is required to up-scale both the current mono-turbine as well as a newer twin turbine design which will use the same modular gearbox/generator and inverters as the mono-turbine unit.

More information on Siemens technology for tidal applications is available from

desmond.walsh@siemens.com, or information on Oceanflow is available from info@oceanflowenergy.com

PHOTO-CAPTION: An illustration of the Oceanflow Evopod E35 unit, powered by Siemens

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Notes to editors:

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* Data includes intercompany revenue. Data may not be comparable with revenue reported in annual or interim reports.

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