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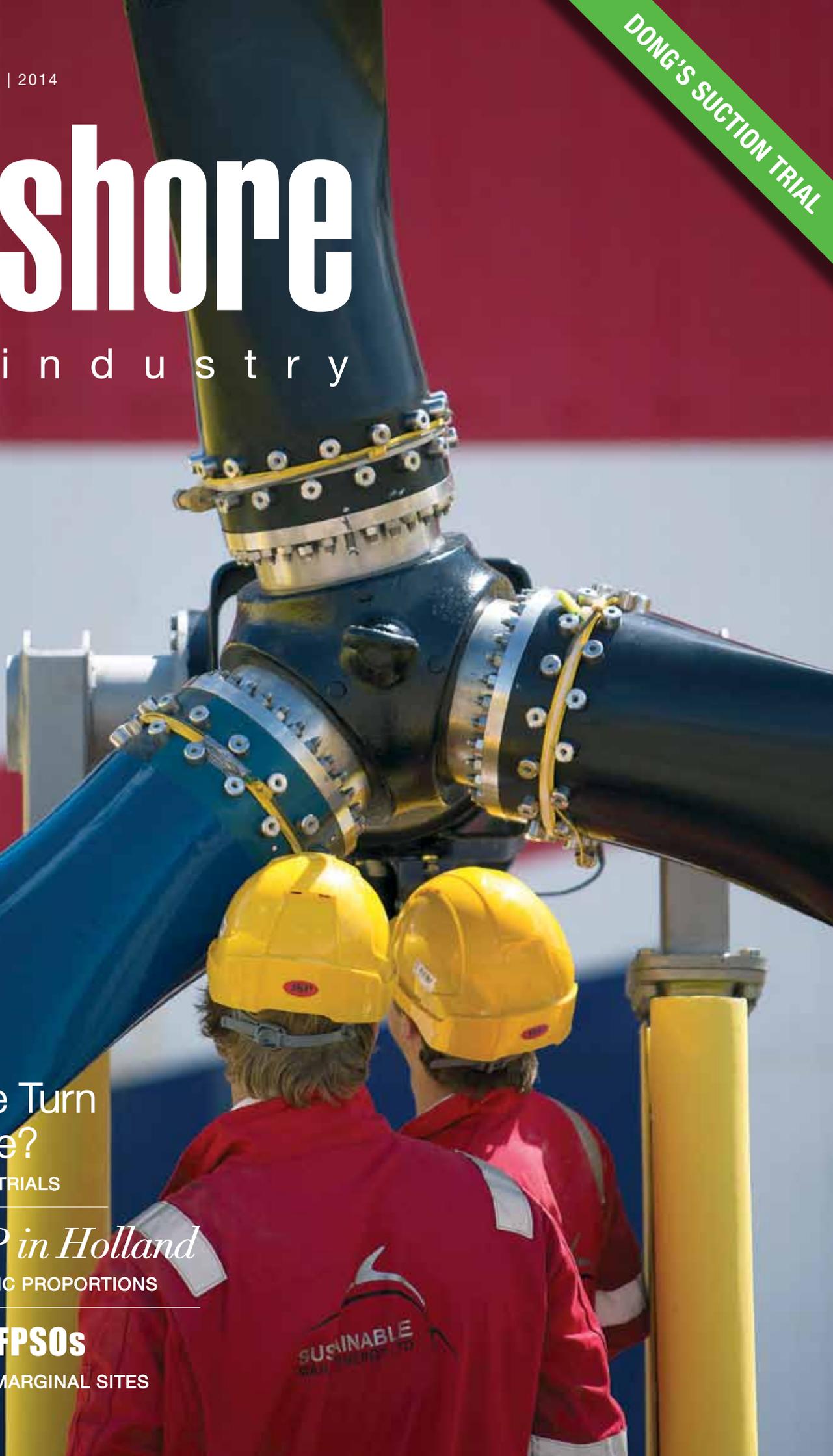




Photo courtesy of Schottel

SCHOTTEL SHOW POTENTIAL OF TIDAL ENERGY

# Turning the Tide

OVER THE LAST MONTHS, SCHOTTEL HAS BEEN INVOLVED IN A NUMBER OF TRIALS OF TIDAL TURBINE EQUIPMENT. THE TESTS ARE AIMED AT DEMONSTRATING THE FEASIBILITY of tidal turbine technology as a cost-effective source of renewable energy. Initial results have shown great promise, in terms of energy generation and impressively low costs of installation.

Coinciding with the trials, Schottel has founded a new subsidiary – Schottel Hydro, comprising of three segments: hydrokinetic turbines, semi-submerged platforms and components. For 4 months, or 260 operating hours, Schottel tested its hydrokinetic turbines in Northern Ireland’s Strangford Lough. The Strangford Narrows between the 150km<sup>2</sup> body of water and the Irish Sea were considered an ideal test location, due to the presence of strong tidal currents. The long period of testing allowed Schottel to collect data related to a large number of tidal cycles.

## Impressive Results

Schottel, supported by Queen’s University Belfast and the European Marinet programme, attached the turbine with a rotor diameter of 4m to a moored barge. It was mounted on a lifting frame at the stern and lowered down into the operating position for testing. They had equipped the barge with a range of measurement devices and sensors to monitor test results. The turbine shaft rotations, torque and power output were recorded for use in the performance assessment. Load cells measured the resulting thrust force, while detailed measurements of

flow conditions were also taken.

The testing methods and characterisation of turbine performance have been developed according to the latest standards of the International Electrotechnical Commission.

Results were impressive: this one turbine generated 50kW at a rated water velocity of 2.75m per second. This is equal to 10 hours of production generating enough electricity to supply an average household for an entire month.

### Wealth of Support

Sustainable Marine Energy (SME) is carrying out another test off the Isle of Wight, England. The tidal technology company is using its unique PLAT-O platform together with Schottel turbines for the trial. The location of the trial was selected for a variety of reasons, as Jason Hayman, Managing Director at SME explains. "There was a lot of local support for the project from the Yarmouth Harbour Commission, which is providing the site. The Isle of Wight also offers access to a wealth of skills and expertise relating to the maritime industry that has supported the design, development and build of PLAT-O. The waterfront workshop facilities available to SME in East Cowes has meant that PLAT-O can be easily assembled and launched on site."

### Increasing Cost-Efficiency

When Mr Hayman explains the installation process that was used in the Isle of Wight project, the cost-saving implications become very clear. "The platform is towed to site, submerged and then

tethered to four screw anchors. Essentially, PLAT-O is taut moored and positioned mid-water column in the maximum tidal velocity. The platform uses buoyancy to resist the thrust and drag forces induced by the tidal energy converters and the structure. The operations do not require vessels with heavy lift capabilities and, therefore, the vessels used are low cost with their charter rates in the region of GBP 2,000 per day rather than the GBP 100,000 per day for the vessels usually used for the installation of other forms of offshore renewable energies."

### Power Generation

The prototype PLAT-O hosts two Schottel turbines, each rated at 50kW, though, for the purpose of the tests, the turbines are not expected to generate their maximum output, as Ralf Starzmann, Research Engineer at Schottel explains. "The maximum output could be 100kW, but

it's expected that the test site at Yarmouth, Isle of Wight, will generate around 35kW. The energy generated will be dissipated by a load bank. Future installations will feature a sea cable to shore and enable full utilisation of the turbines' capacity."

i. [www.schottel.de](http://www.schottel.de)



Jason Hayman,  
Managing Director at SME



Ralf Starzmann,  
Research Engineer at Schottel



Installation does not require complex, heavy lift vessels, offering great cost reduction potential.

Photo courtesy of Schottel