Guidance on Turbulence in Marine Environments

The Guidance formulated from the Turbulence in Marine Environments (TiME) project has now been released. The project (operated by the TiME consortium consisting of partners Partrac, Ocean Array Systems, ABPmer, and IT Power) is funded by the Scottish Government and managed by the Carbon Trust through the Marine Renewables Commercialisation Fund (MRCF) Array Technology Innovation Programme. The Guidance was developed to improve the understanding of the effect of marine turbulence on tidal arrays in Scottish waters.

Turbulence was measured by Partrac in the challenging tidal environments of both the Sound of Islay and the Inner Sound, Pentland Firth, using novel methods and technologies so that each can be evaluated, and turbulence could be mapped across differing tidal energy development sites. ABPmer then incorporated the data in resource characterisation, Ocean Array Systems (OAS) has provided turbulence characterisation and hydrodynamic analyses, and IT Power has contributed their knowledge of engineering design, device performance and tidal turbine array modelling. The project team used this wealth of information and research to develop Turbulence Guidance through extensive engagement with the tidal energy industry.

The principle outcomes of the project are new methods that have been developed and tested to measure and characterise turbulence. Data from these new methods were then used to show that designing tidal turbines and array layouts to the true turbulence existing at different points in a site could lead to significant cost reductions.

Full details are in the Guidance documents, which will also be submitted to the wave and tidal knowledge network, a platform hosted by the ORE Catapult. The TiME project also is represented in a pre-conference workshop at the International Tidal Energy Summit (ITES) at the Hilton Tower Bridge, London, UK, on Monday 23 November 2015 (see).