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Programme Area: Marine

Project: ReDAPT

Title: ReDAPT Project Achievements

Abstract:

A list of achievements from the ReDAPT project.

Context:

One of the key developments of the marine energy industry in the UK is the demonstration of near commercial scale devices in real sea conditions and the collection of performance and environmental data to inform permitting and licensing processes. The ETI's ReDAPT (Reliable Data Acquisition Platform for Tidal) project saw an innovative 1MW buoyant tidal generator installed at the European Marine Energy Centre (EMEC) in Orkney in January 2013. With an ETI investment of £12.6m, the project involved Alstom, E.ON, EDF, DNV GL, Plymouth Marine Laboratory (PML), EMEC and the University of Edinburgh. The project demonstrated the performance of the tidal generator in different operational conditions, aiming to increase public and industry confidence in tidal turbine technologies by providing a wide range of environmental impact and performance information, as well as demonstrating a new, reliable turbine design.

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ReDAPT Project achievements

The project achievements were:

- Successful deployment and operational testing of a 1MW Tidal Turbine system at EMEC, with over 1.2GWhr of electricity generated
- Delivered data, insights and lessons learned as key reference materials and for use by the industry, specifically:
 - Device performance – Achieved 3 months of continuous autonomous running in a real tidal environment
 - Successful deployment & retrieval in high-flow conditions proven to be safe, feasible and predictable
 - Environmental monitoring and resource assessment
 - Achieved a baseline CoE for an individual Turbine that will aid the industry in understanding its challenges
- Industry certification standards and protocols rewritten
- Validation and industry acceptance of key tidal flow models
 - DNV GL – Tidal Bladed; E.ON – far field flow (Mike-3D); EDF & University of Manchester – near field flow (CFD modelling)
 - University of Edinburgh – instrumentation & turbulence modelling
- Influenced the direction, growth and investment in the UK marine energy supply chain
- Produced a multi-Terabyte database of high Quality environmental data, which is in the public domain to enable a large numbers of PhDs and other studies
- Plymouth Marine Laboratory – Bio fouling survey, good groundwork, full results end 2016

Project participants and useful contact details:

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The Energy Technologies Institute:

- The ETI Website contains links to the Public Domain Reports;
<http://www.eti.co.uk/project/redapt/>

The UK Energy Data Centre:

- The UKEDC – database for ADCP measured flow data;
<http://data.ukedc.rl.ac.uk/browse/edc/renewables/marine>