

EUREKA EUROSTARS PROJECT 8176 TEHADP



NEW TURBINES UNLOCK TIDAL ENERGY POTENTIAL

Efficient turbine blades could help businesses in the renewables sector to exploit the immense untapped tidal energy potential of the oceans.

The pioneering Eurostars-funded TEHADP project investigated and developed new materials, manufacturing techniques and designs of turbine blades for use in tidal energy plants. The innovations have been tested in real-world conditions and are still in operation.

"A key strength of this project is that it allowed us to demonstrate our technology at full scale," explains project coordinator Tom Walsh from sustainable energy firm Atlantis Operations in the UK. "These new blades have been operational for a substantial period of time, which makes it easier for us to market the technology and find new customers."

Tidal potential

There is growing interest in the potential tidal technology, in part because tides are predictable and regular unlike wind or solar energy. Cost-effectively exploitation of this potential could open up kilometres of coastline to the harvesting of renewable energy. Certain obstacles however still need to be overcome.

"Tidal energy is still rather young," notes TEHADP project partner Dr Patrik Pettersson from Swedish marine energy technology developer Minesto. "In this project we wanted to see if we could develop new reliable, cost-effective tidal turbine blades (also known as

hydrodynamic absorbers, or HADs), because these have proven challenging for the industry to produce."



We were able to share information and create a better product

The Eurostars programme enabled the two technology firms – Atlantis Operations and Minesto – to work together efficiently on this issue. "Although we use similar technology we are not direct competitors," says Walsh. "Our turbines are attuned to different tidal speeds and are deployed in different locations. This meant we were able to share information and create a better product."

Bright future

Driving down manufacturing costs and improving the performance of tidal turbine blades will enable this emerging sector to better exploit this vast energy resource. Minesto's patented Deep Green Technology for example involves a turbine being 'pushed' through the water by a turbine-like wing. The TEHADP project has helped to bring this technology to the next level.

"We were interested in participating in this project because the wing is a key part of our Deep Green powerplant," says Pettersson. "This project has been essential in developing technical knowledge and gaining offshore experience. The project

supported Minesto's extensive ocean testing for nearly five years, during which time operational functionality and power production was verified and gradually improved."

Pettersson notes that Minesto doubled its workforce from 24 to 50 during the project. "We can definitely say that the Eurostars project contributed in very concrete ways to Minesto's technological development," he adds.

After the project, Minesto was able to finance, build, and begin testing on its first scaled-up powerplant off the Welsh coast. "The Eurostars project gave us the technical foundation to build this utility-scale powerplant," says Pettersson. "The design and manufacturing of the HAD of our current powerplants were formed by the results of this project."

For Atlantis Operations, the blades are still in operation in full-scale turbines off the coast of Scotland. The firm also just recently unveiled its latest product, a tidal power turbine system that includes the largest and most powerful single-axis turbine available on the commercial market.

"Right now, we are actively pursuing opportunities in the UK and France as well as several Asian countries," he says. "We are currently quite close to securing orders in couple of locations in Asia. All this project work has contributed towards this."

This project has received funding from the Eurostars-2 joint programme with co-funding from the European Union Horizon 2020 research and innovation programme



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OTHER PARTNERS

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TOTAL R&D INVESTMENT

€ 1.5 million

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COUNTRIES AND NATIONAL FUNDING BODIES INVOLVED



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