

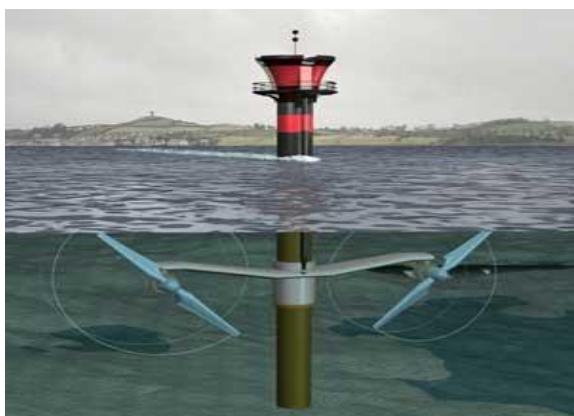
## REMO - Online remote condition monitoring of tidal stream generators

Tidal stream power is a very environmentally attractive renewable energy source whose exploitation is being underdeveloped by operation and maintenance problems which cause very low availability times; in some cases this can be as poor as 25%. The REMO project aims to provide an enabling technology for tidal stream energy, by reducing the projected life cycle maintenance costs of tidal stream energy by 50% and the generator downtime to a level comparable with wind turbines i.e. to achieve availability times of 96%.

This strategy will reduce present projected costs of tidal stream energy production down to levels comparable with life cycle wind turbine electricity costs (0.058/kWh), thus ensuring the economic viability of tidal generators. Energy providers will then be attracted to investing in tidal stream energy, so that its full economic potential and environmental advantages are realised.

### Project objective

The REMO system will remotely and permanently monitor the entire frequency spectrum of structural vibrations generated by all the rotating components of a tidal stream turbine, by combining a suite of accelerometer and acoustic emission sensors for the low and high frequency regime respectively.



The system will determine the vibrational signature of a healthy turbine and the evolution of that signature during the turbine life cycle. It will then discover any significant change in that signature that could be a symptom of a structural health problem at

any point in the life cycle, including the build-up of marine fouling and then issue an automatic warning. State of the art similarity analysis algorithms based on the Euclidian distance measure in multiple dimensions, will be used in both the time and frequency domain for optimally cost effective processing of all vibrational data involved in the state of health diagnosis.



The system will be validated by installing it on an in-service tidal stream generator developed by one of the SMEs who will also be an end user of the proposed REMO technology.

For further information, please visit our website at [www.remo-project.eu/](http://www.remo-project.eu/)

*This project has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration under Grant agreement number 314839.*