



## MEGAWATFORCE

### EXPLOITING THE POWER OF OCEAN CURRENTS FOR A PREDICTABLE SOURCE OF ELECTRICITY

Submerged at minimal depths, the MegaWatForce underwater turbine will harness the power of ocean currents. The installation comprises a turbine, pump and nozzle, the latter speeding up the flow of water through the turbine thereby increasing the energy output of the system. A key feature is that no electricity will pass underwater: water under pressure will pass along a submerged pipe to where the electricity is produced, namely a turbine generator installed on shore or on a sea platform. Should the hydro turbine be required to supply electricity round the clock, water under pressure harnessed at peak periods of current strength can be stored in a reservoir situated on high ground before being converted into electricity. Hourly production levels for each site can be calculated based on installation location and on hydro turbine dimensions.

The project involves creating a life-sized prototype with a dual turbine/pump/nozzle system, a pipeline to shore and an electricity generator. MegaWatForce will be tested for technical and economic viability before being operated on an industrial scale.

Since 2005, conditions both regionally and nationally have begun to favour development of renewables, following recognition that fossil fuel reserves are declining and the cost of hydrocarbons rising, and following research into forms of energy generation that are free of greenhouse gas emissions. France's commitment within Europe to securing 20% to 23% of final energy consumption from renewables by 2020 cannot be met without drawing on all sources of green energy, including ocean energy.

The hydro turbine market is a major one and France possesses particularly advantageous sites for exploiting energy from powerful, coastal ocean currents.

#### Partners

##### Companies

Guinard Energies Nouvelles, Brest [[Project Developer](#)]  
Actimar, Brest  
DCNS, Lorient/Lanester  
Doris Engineering, Paris

##### Research centers

École Polytechnique Fédérale, Lausanne  
Ifremer, Brest  
UBO, Brest

#### Funder

Financé sans aides publiques

#### Labelisation

24/04/2009

#### Overall budget

8 250 K€