



Open sea test Facility For Wave Energy Converter And Floating Wind Turbine



SEM-REV is part of the experimental facilities of Ecole Centrale Nantes (ECN) developed to validate and to optimize both Wave Energy Converter and Floating Wind Turbine in real open sea conditions. SEM-REV is also one of the test sites coordinated by France Energies Marines. Using the well-known expertise of ECN in the scope of marine renewable energy, including numerical modeling, sea tank and wind tunnel, SEM-REV has been developed by the the CNRS Research Unit in Hydrodynamic, Energetic and Atmospheric Environment for the 4 last years, through public financial support. Consents have been granted, environmental monitoring is operational since 2009 and the test facility will be fully operational by mid-2013.

SEM-REV offers an area restricted to the site activities located 12 nautical miles off Le Croisic – west coast of France. It is equipped with an 8MVA electrical cable connected to the electrical grid and a set of environmental monitoring instruments. Four test slots are connected to a central subsea hub. Environmental and system operation control data are transmitted in real time through optical fiber. Operations are supervised from the ECN landstation of Pen Avel in Le Croisic by a dedicated team with all the required equipment to ensure operability, security and safety of data acquisition, energy converter control and survey.

The site is well situated nearby Saint Nazaire port which offers a wide range of facilities to support developpers in their operation and maintenance activities.

SEM-REV naturally fits within Ecole Centrale Nantes and France Energies Marines activities and capacities to assist developers from concept stages to the test of prototype.



SEM-REV CHARACTERISTICS:

- Water depth 35m to 40m
- Seabed Sand
- Export cable 8MVA – 20kV
- Wave 3 datawell buoys
- Current, tide 2 ADCP systems
- Wind 2 meteo-buoy
- Mean wave energy 12 kW/m
- Mean wind velocity 6.5 m/s (10m)

SEM-REV EXPECTED MAIN ACTIVITIES:

- Test performance and reliability of WEC and FWT and their related equipment.
- Provide environmental data to the developers.
- Analyze the impact of energy production devices (MRE) on the environment.
- Test specific procedures for installation, inspection, maintenance, repair and retrieval of MRE.
- Test resistance and reliability of new equipments, material and monitoring systems.
- Provide feedback to improve design recommended practices and rules.