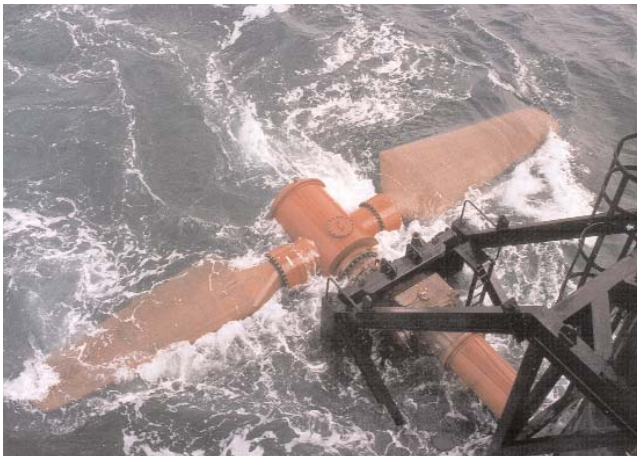




## SEACORE INSTALLATION SUPPORT for MARINE RENEWABLE ENERGY



**T**he Seaflow Project represents the first phase of an R&D programme intended to develop pioneering technology for exploiting the energy of marine tidal currents. The technology consists of rotors mounted on steel piles (tubular steel columns) set into a hole drilled in the seabed. The rotors are driven by the flow of water in much the same way that windmill rotors are driven by the wind, the main difference being that water is more than 800 times denser than air, so quite slow velocities in water will generate significant amounts of power. This project involves the development of an "underwater windmill" which can generate a maximum of 300kW in a 2.7m/s current (5.5 knots) using an 11m diameter rotor, (average output will be approximately 100kW as the currents are



usually not as fast).

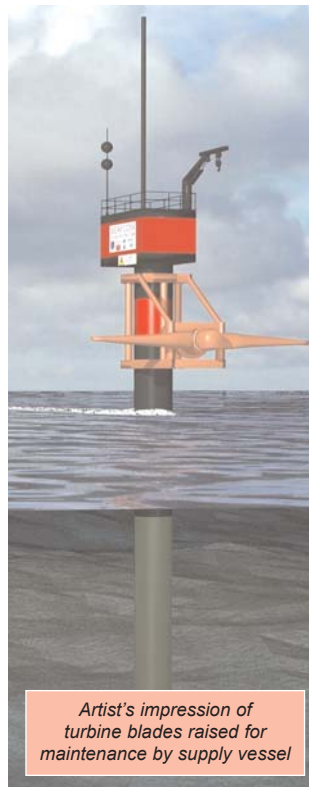
Maintenance of a turbine while it is submerged in fast currents would be well nigh impossible, as any divers would be "blown away" by the currents, so a key patented feature of the technology is that the rotor and drive train (i.e. gearbox and generator) can be raised completely above the surface using hydraulic jacks. Once raised, any maintenance or repairs can be carried out readily from the structure attended by a surface vessel.

The project involves the design, manufacture, installation, testing and demonstration of this turbine which will provide the essential information needed to design and build larger systems for commercial power generation which will follow during the next few years. The prototype experimental unit has been installed 1km off Foreland Point (approximately 3km NE of Lynmouth, Devon, UK) in April 2003 and will be extensively tested thereafter.

At Lynmouth the challenging sea and tidal conditions of the Severn Estuary have been successfully overcome for the creation of a foundation and the construction of the first Marine Current Turbine. As a member of the development consortium, supported by grant aid provided by the EU and the UK Government, Seacore has provided the practical marine expertise to see the project through to completion.

The operations have been carried out from Seacore's jack-up *Deep Diver* with crews transferred on a daily basis from Lynmouth by RIB craft. Manoeuvring the jack-up onto location and handling of the various elements through the fast moving water column, were operations that had to be timed to make best use of the limited 'tidal windows' presented by the strong tidal regime (the reason for selection of this particular site).

A steel monopile foundation has been installed using large diameter drilling techniques similar to those utilised for port structures, with 2.1m diameter piles grouted into drilled seabed sockets. The various elements of the construction, tubular pile, access leg, lift leg, collar (to support the drive train), top pod and drive train were placed in position by the jack-up crane, assembled and then commissioned.



Artist's impression of turbine blades raised for maintenance by supply vessel

### CONTACT DETAILS

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