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Turbine technology is turning the tides into power of the future

Lewis Smith, Environment Reporter

SeaGen Tidal System

The world's first deep-water device to generate electricity from the tides on a commercial scale is due to start operating within weeks.

A seagoing crane barge has lowered the 1,000-tonne double turbine into place and an operation to fix it to the seabed with 12 metre (40 ft) pins begins today.

The SeaGen Tidal System at Strangford Lough in Co Down, Northern Ireland, is designed to produce enough electricity to supply 1,000 homes.

The system, made by Marine Current Turbines (MCT) and assembled at the Harland and Wolff dockyard in Belfast, boasts two 16m blades which will be turned by the water streaming in and out of Strangford Lough at up to 8 knots.

Martin Wright, managing director of MCT, said: "By the middle of May we will have completed the bulk of commissioning. We'll start by turning the turbines by hand. After that we'll try with low loads and by July we hope she'll be fully commissioned."

"If this is successful, we are looking to build, at the end of 2010 or more likely 2011, a tidal farm. That would be off the Anglesey coast."

Mr Wright said that the current state of tidal energy technology was equivalent in aviation terms to the first biplanes. Developments are advancing rapidly, however, and firms based in Britain are playing a central role in the emerging industry.

As work on SeaGen was being carried out, the Government also gave approval for a prototype generator, developed by Pulse Tidal, to be tested in the Humber estuary, near Grimsby.

The £900,000 Pulse Tidal trial involves 11 metre hydrofoils that rise and fall with the tide like a dolphin's tail to generate electricity. The small prototype device is designed to have a capacity of 0.15 megawatts, but if successful an array of 1 MW devices would be produced to supply 70,000 homes.

Strangford Lough and Anglesey are among the best locations possible for tidal energy devices because of the speed and power of the tidal stream.

The holy grail for tidal energy experts, however, is the Pentland Firth, between the Scottish mainland and the Orkney Islands, where up to 3 million tonnes of water race though a narrow area of sea every second. Mr Wright described the Pentland Firth as "the big prize – the Saudi Arabia of tidal stream", but said the technology to take full advantage of the location was "a generation beyond us". Once attainable it could supply up to 15 per cent of Britain's electricity.

He added: "Tidal energy has the great advantage of being predictable and no other system can harness the power of the tidal currents in the way this one can."

Lunar Energy, another tidal energy technology firm, hopes later this year to begin installing the world's first tidal farm in Pembrokeshire. The eight turbines are expected to be operational by 2010.

An initiative to build a huge wind farm at sea will be unveiled today as the industry demands clear guidelines on where it can develop renewable energy. The power firm E.ON is applying to build a £700 million wind farm, big enough to supply 195,000 homes with electricity, five miles from the Yorkshire coast. Wind farms on land and at sea are expected to have to provide a significant proportion of Britain's electricity if it is to meet its renewable energy target, but wind farm developments have been put in doubt by the discovery that they can impair the efficiency of radars.

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