

“Broad Shoulders: Trail Blazing the UK Wave Energy Project”
Mr Iain Russell
Wave Dragon Wales Ltd

The subject attracted a near-capacity audience that was treated to a very interesting and enthusiastic presentation on the latest developments in this exciting technology.

Differential heating of the earth creates winds which, when they pass over open water, transfer some of their energy in the form of waves. This transfer in effect “concentrates” solar energy to power levels of between 20 and 100 kW/metre of wave crest length. It has been estimated that the potential worldwide contribution to the production of electricity is between 10 and 50% of the total annual energy demand. Installations will be several miles offshore in order to minimise energy losses due to breaking waves and friction with the seabed, In Europe, the greatest potential is along the western coastline where the waves have the greatest distance to travel and pick up energy.

The Dragon Wave concept, developed by Hans Christian Sorenson, consists of a floating, slack-moored structure that allows waves to flow up and over a ramp that elevates the water to a reservoir above sea level. The head of water so created is subsequently released through a series of turbines, thus generating electricity. In theory, this simple concept offers potential long life combined with low maintenance. A 1:4.5 scale model has been operating in a Danish fjord since 2003 and has accumulated almost 20,000 hours operational data. It has been shown that the system can produce a smooth power output, but can only operate when there is sufficient wave energy available.

Whilst further work will continue in Denmark and future projects are planned for Portugal, plans are now well advanced to install a pre-commercial demonstrator Wave Dragon off the Pembrokeshire coast with a rated capacity of 4 –7MW. The structure weighs about 30,000 tons and has a span of 300 metres between the arms that guide the waves into the ramp. It is hoped that it will be commissioned in 2008 and will run for 3 – 5 years and should generate enough “green” electricity to supply 2500 – 3000 homes. If successful, the aim would be to link about 11 such devices to create an annual capacity of ~80MW. Much depends on successful negotiations with a myriad of approval bodies and NGO’s concerned with both offshore and land-based facilities by August of this year. However Mr Russell was confident that this would be achieved. Further information about Wave Dragon can be found on www.wavedragon.net

Given on Wednesday 18 April at the Cirencester Parish Centre