

WAVES IN THE NORTH SEA: POWERING OUR FUTURE?

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Ocean waves contain huge amounts of energy which almost haven't been exploited up to now. Along the West European coastline the wave power resource is varying between 30 and 70kW/m crest length (Thorpe, 1999). These huge amounts of wave power increase the potential energy capture on the one hand but hamper installation on the other hand. Furthermore the survivability of conversion systems could be in danger in these severe wave conditions.

The wave climate in the North Sea is less aggressive due to the sheltering effect of Great Britain. The wave power resource and potential areas for installation of a farm of Wave Energy Converters (WECs) in the North Sea will be discussed during the presentation.

Wave energy is a renewable energy type that is becoming more and more important. Many conversion principles have been invented and are currently being developed, tested and improved. Research on power optimization, structural design, etc. is going on while interest of private investors is increasing.

Although many concepts have been invented, only a limited number of systems have already been built in prototype size and have experienced real sea trials. Even fewer have reached a commercial stage. Among them is the Pelamis the converter which is probably most ahead of the others. This system, sometimes called 'sea snake' consists of four hinging cylinders that produce electricity via a hydraulic intermediate stage. The Portuguese consortium Enersis will shortly install three units of 750kW each in front of the Portuguese coast. Some other systems that have experienced sea trials – mostly at scaled size – are Wave Dragon, FO³, Wave Star, AquaBuOY, OPT Power Buoy, Pico power plant, Limpet device,... Some of these systems will be treated more in detail during the presentation.

References

Thorpe Tom. 1999. An overview of wave energy technologies: status, performance and costs.
Wave power: moving towards commercial viability, 30 November 1999, Broadway House,
Westminster, London.

Website Pelamis: <http://www.pelamiswave.com>.