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## **Alstom and SSE Renewables create joint venture to co-develop world's largest wave farm off the coast of Orkney, Scotland**

Alstom and the leading Scottish marine developer SSE Renewables have signed a new joint venture agreement to develop the Costa Head Wave Project, an up to 200 Megawatts (MW) wave energy site located north of mainland Orkney, in The Crown Estate's Pentland Firth and Orkney Waters Strategic Area.

Alstom and SSE Renewables will work together to obtain the necessary permits and intend to populate the site with AWS-III wave energy converters, a technology currently under development by AWS Ocean Energy Ltd, in which Alstom acquired a 40% equity share in June 2011.

The Costa Head site is located in water depths of 60 – 75m approximately 5km to the north of Orkney Mainland. SSE Renewables and Alstom propose to carry out detailed site surveys and an environmental impact assessment (EIA), to develop the site with an initial phase of around 10MW, before moving on to install the full site capacity.

Established in 2004, AWS Ocean Energy is focused on the development and delivery of its AWS-III wave energy converter, a floating device with a rated power output of 2.5 MW. A 1:9 scale model of the AWS-III was tested in Loch Ness in 2010. Full scale component testing will commence in 2012 with the support of the Scottish Enterprise-administered WATERS fund (Wave and Tidal Energy: Research, Development and Demonstration Support), with a full-scale prototype planned for deployment at the European Marine Energy Centre in 2014.

Wave energy is a widely distributed renewable resource worldwide, with an estimated potential market of 200 to 300 Gigawatts (GW). Its proximity to densely populated regions of Europe and North America makes it an attractive new source of renewable energy. The AWS-III technology consists of a multi-cell array of flexible membrane absorbers which convert wave power to pneumatic power through compression of air within cells that are inter-connected. Turbine-generator sets are provided to convert the pneumatic power to electricity.

A typical AWS-III device will comprise an array of 12 cells, each measuring around 16m wide by 8m deep, arranged around a structure with overall beam of up to 60m. Such a device has a capacity of 2.5 MW whilst having a structural steel weight of less than 1300 tonne. The AWS-III will be slack moored in water depths of 65 to 150m using standard mooring spreads. Devices will be arranged in arrays or 'farms' of up to several hundred MW total rating. Each AWS-III will be connected to a central offshore substation via a high-voltage umbilical link. *"The selection of the AWS-III system for this exciting and ground-breaking project is a significant endorsement of our technology and team. We firmly believe that the AWS-III will become the established choice for utility scale offshore*

*wave power generation. We look forward to working with Alstom and SSE to deliver Costa Head*" said Simon Grey, Chief Executive of AWS Ocean Energy Ltd.

*"We are delighted to announce our agreement with SSE Renewables, one of the leading developer of marine energy in the world, to develop Costa Head, which is the largest wave energy site being developed today in the world. When completed, it will make a valuable contribution to the UK's renewable energy targets,"* said Jérôme Péresse, President, Alstom Renewable Power and Senior Vice President, Alstom Hydro. *"This project places Alstom at the forefront of the fast-developing ocean energy sector along with our offshore wind and tidal energy businesses. It demonstrates the strength of our offer as a leading supplier of clean energy solutions and of our involvement in all renewable energy sources in Scotland, the potential of which is considerable."*

SSE Renewables, the leading wave and tidal utility in Scotland, received exclusive development rights to the Costa Head site from the Crown Estate in 2010, and with partners is currently developing half of the 1.6 GW of wave and tidal sites leased by the Crown Estate as part of a commercial leasing programme for marine energy projects. *"We are delighted to enter into this partnership with Alstom on the Costa Head Project. As a leading global provider of energy solutions and developer of marine technologies and with their interest in AWS Ocean Energy they are a very strong partner to bring on board. This partnership represents a significant milestone for the Costa Head Project and we look forward to working together with Alstom on the successful development of this important wave site",* said John Thouless, Head of Marine Development at SSE Renewables.

#### **About Alstom**

*Alstom is a global leader in the world of power generation, power transmission and rail infrastructure and sets the benchmark for innovative and environmentally friendly technologies. Alstom builds the fastest train and the highest capacity automated metro in the world, provides turnkey integrated power plant solutions and associated services for a wide variety of energy sources, including hydro, nuclear, gas, coal and wind, and it offers a wide range of solutions for power transmission, with a focus on smart grids. The Group employs 92,700 people in around 100 countries, and had sales of €20.9 billion in 2010/11.*

#### **About SSE Renewables**

*SSE Renewables is the renewable energy development division of SSE. SSE is one of the UK's leading energy companies, involved in the generation, distribution and supply of electricity and in the storage, distribution and supply of gas. It supplies energy to around 10 million customers throughout the country, is independently-recognised as the best energy supplier for customer service and is the UK's leading generator of electricity from renewable sources. SSE Renewables is involved in the development of new renewable energy projects covering wind, wave, tidal, biomass and hydro electricity and is in the middle of an investment programme that will see £3bn invested in new renewable projects between 2008 and 2013.*

#### **About AWS**

*AWS Ocean Energy Ltd is a wave energy technology development company based in Inverness. AWS is progressing a rigorous Technology Qualification programme to deliver the AWS-III technology as a commercially viable product which will enable reliable, affordable and operable wave power stations.*

*Backed by Alstom, Shell Technology Ventures Fund 1 and the Scottish Investment Bank, , AWS has a staff of 27 the majority of whom form an experienced team of engineers and researchers who seek a collaborative approach to development where innovation and value are enhanced through shared experience and communication. AWS is the only company in the wave power sector which is directly backed by a major OEM.*

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