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Marine generation sites should be considered now - Underhill

Felicity Wolfe - Mon, 23 May 2016


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New Zealand should start looking at where it could install marine generation ahead of the technology reaching commercial viability, Energy Efficiency and Conservation Authority chief executive Mike Underhill says.

Marine energy remains more than a decade away for New Zealand, he says, but the country should use that time to identify where the best currents are and where the best areas for connection to the grid would be.

Starting conversations about marine devices now would also help ñtake the heat outòof environmental and cultural debates when the price of the technology comes down and consents are sought, he says.

Speaking at the Aotearoa Wave & Tidal Energy Association conference last week, Underhill said there are plenty of lessons to be learned from local projects which failed to be commercialised.

Of six devices accepted into the governmentôs Marine Energy Development Fund between 2007 and 2011, only the Azura Wave device has continued development.

Underhill says all the MEDF projects were independently assessed as having a high probability of commercial success before gaining a share of the $8 million government funding.

Focus

But he says none succeeded because each venture focused on overcoming technical issues. Instead it was largely commercial and community issues which made the projects fail.

There was a lack of understanding, Underhill says, of the connection New Zealanders have with "foreshore and seabedò The developers did not understand the need to work in with the Treaty of Waitangi. Connecting the devices operating in remote locations back to communities was also a problem.

Addressing those issues and identifying the right areas now will ease the technologyôs commercial implementation, Underhill says.

The Azura Wave unit, being progressed by US firm North West Energy and Taranaki-based EHL Group, has nearly completed a trial in Hawaii.

That was funded by the US Department of Energy and the developers are seeking to develop a full-scale 1 MW version to trial in Hawaii next year, EHL business development manager Armin Howard told delegates. He says the prototype has achieved 96 per cent availability the past year and survived

7.5-metre waves in a hurricane.

Marine implementation

The conference held in Wellington last week was AWATEAÕs tenth. Keynote speaker Andrew Dagley of Atlantis Resources says the MeyGen project underway in ScotlandÕs Pentland Firth will have a capacity of at least 398 MW when completed in the early 2020s.

The project [2], being carried out by Atlantis, is utilising both its own turbine technology and 1.5 MW HS1000 Andritz Hydro machines. Dagley, the firmÕs Asia Pacific head, said at £51 million the four turbines being installed in MeyGenÕs first stage is the ñmost expensive project I have ever worked onò

But the firm is continually looking for ñlow-hangingòcost efficiencies to bring down the installation expense.

The project has also benefited from lower oil prices which have reduced exploration and development work, making service vessels cheaper.

ñThey have been bidding very competitively,òDagley told *Energy News*.

Jack-up vessels are being utilised as work stations and improvements to the pitch of the turbines will reduce maintenance costs going forward, he says. The use of a single cable to connect the array also reduces vessel movements and costs, he says.

Attaching multiple turbines to a central post will also reduce installation costs and, due to a ducting effect created, is expected to increase their overall efficiency, he says.

While the firm has its own turbine designs, he says Atlantis is ñtechnology agnosticòwhen it comes to developing sites. The Andritz Hydro turbine is similar to the Atlantis one and has been thoroughly tested, Dagley says.

Atlantis is also in a joint venture with Canadian firm DP Energy to build an array off the Nova Scotia coast. Dagley says that project is likely to begin next year.

It is also working on developments in China and India and Dagley also hopes to secure agreements in Japan and Indonesia.

ñChina is a massive market,òhe says. ñChina is a big area of focus for us.ò

Aquaculture opportunity

David Campbell, managing director of Scottish firm Albatern says the offshore aquaculture industry is interested in its wave energy devices.

The firm is continuing to reduce costs and increase the size of its arrays. While the technology is expensive, AlbaternÕs wave units can be competitive with an ñinefficient diesel systemò, he says.

ñItÕs by focusing on the areas where energy costs are higher that we can reach commercial viability at an earlier stage.ò

Fish farms usually use diesel generators and their energy costs are second only to their feed costs, Campbell says. Albatern is working with a Scottish aquaculture firm to create a wave energy solution which he says will add to the environmental credentials of its end-products.

There will be similar opportunities in New Zealand as the aquaculture industry looks to move further offshore, he says.

He believes the wave devices could also be an effective solution for small island nations looking to move from diesel-powered electricity to renewable solutions. Marine generation, which is more predictable than solar and wind, could reduce their reliance on batteries, he says.

In some areas of the world, marine energy would fit well with other renewables. In the Philippines, for example, the wind and wave patterns energy tend to complement each other, Campbell says.

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