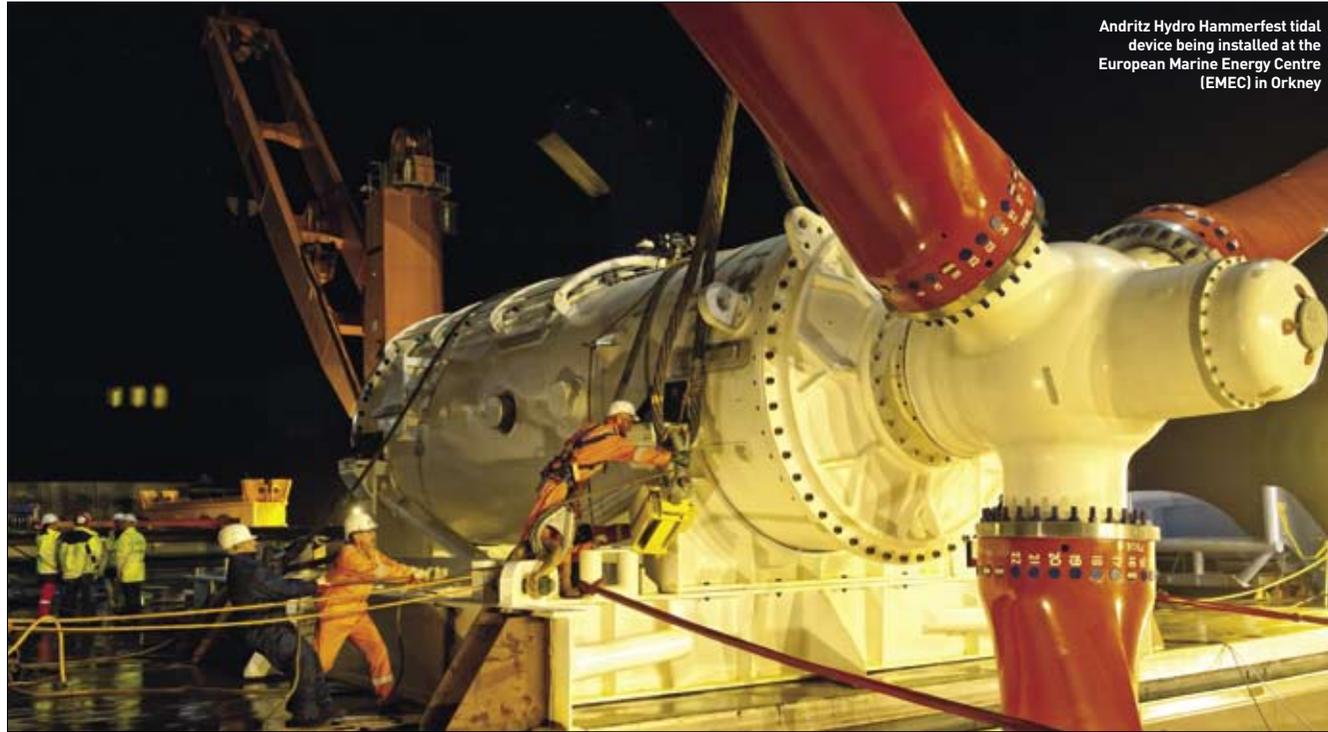


Andritz Hydro Hammerfest tidal device being installed at the European Marine Energy Centre (EMEC) in Orkney



# END THE UNCERTAINTY

Getting to commercial projects will require Westminster to make some bold decisions

By Calum Davidson

In Yorkshire there is a saying: 'Where there's muck there's brass'. Here in Scotland we are currently sitting on a goldmine – not of muck, but clean energy. The waves and tides around our coastline have the potential to create all the electricity we will ever need and a lot more besides, along with jobs and wealth to help sustain some of our most fragile communities.

I spend a fair bit of my working life promoting the huge opportunities that the marine sector offers Scotland and the Highlands and Islands in particular. Each time I visit places such as Orkney or meet with industry representatives, I am impressed with the progress that is being made – against some very difficult challenges.

So whilst it's easy to write about the progress of

world-leading developments happening here, it is important to raise the serious challenges that stand in the way of Scotland claiming her marine energy prize.

Proving the technology is commercially viable and securing investment are two of the biggest challenges the industry must overcome, as recognised by the Economy, Energy and Tourism Committee (EETC). In addition, marine energy developers face another critical barrier – the grid.

The cost of connecting to and using the grid to transmit electricity to consumers is currently pitched at such a level that it is discouraging and now holding back development, particularly in the islands.

For marine energy developers, the problem is acute. The majority of proposed wave and tidal development in the UK is dependent on connecting to the Scottish islands. The Crown Estate has granted

seabed leases for the Pentland Firth and Orkney Waters – equivalent to the capacity of Peterhead Power Station – two-thirds of which are dependent on island interconnectors. Further leases are even more dependent on island interconnectors – 92 per cent in the case of wave projects.

Why this dependence on the Scottish islands? Because that's where the resource is – a fact borne out by the proportion of marine projects seeking licenses around the Scottish islands. Capital costs for these projects are high and must be offset by locating where the most energetic waters are found.

The GB transmission charging methodology incentivises generators to build and connect close to demand centres. It has been very effective, particularly for generators which can transport fuel in the form of raw materials to be used nearer to demand, such as gas and coal. However, wave and

tidal power relies on converting energy to electricity at source. By their nature, these locations will be peripheral and away from the cities where demand is highest.

In short, there is a fundamental mismatch between the UK's carbon reduction target and the charging methodology designed to minimise transmission costs.

This is something that must change, according to the marine energy developers looking to deploy the world's early wave and tidal energy arrays.

Martin McAdam, chief executive of Aquamarine Power, has often said that early-stage marine technologies cannot bear such a disproportionate cost of transporting clean energy to the south. He, along with other developers, maintains that transmission lines should be viewed as a national asset, to carry green energy from the edge of the UK to our main centres of population. Martin has shown that the Western Isles interconnector, for instance, would cost just a few pence per UK household if the cost was spread evenly.

Project TransmiT, Ofgem's fundamental review of transmission charging, has now entered its third year of deliberation. At the outset of the review, HIE persuaded the Regulator to treat grid connection costs with the same gravity as transmission charges as projects in the islands face some of the highest connection costs in Europe.

Recognising that this was a barrier to investment, Ofgem instructed National Grid to examine the issue under the auspices of TransmiT. The outcome (CMP192) led to a grid connection charging methodology that underwrites risk rather than cost. This signals a real step forward.

To date, there has never been a consented renewables project that has failed to be built – although there may be a first time if island transmission charges cannot be reduced from current estimates. In July we saw the first meeting of the group convened by National Grid to take the recommendations on charging from Ofgem's TransmiT conclusion document and try and work them into the Connection and Use of System Code (CUSC). History has shown that interests in different parts of the UK have quite different agendas, and presenting a co-ordinated message is critical.

With that in mind, a Team Scotland approach is being pursued by HIE, Scottish Renewables, Scottish Government, the European Marine Energy Centre (EMEC), and the local authorities representing Shetland, Orkney and the Western Isles. We have pooled resources to field two independent technical experts on the CUSC panel. With cost reflectivity being of paramount importance to the Regulator, real solutions have been identified to offer potential for reductions in charges (see panel).

There is the potential for substantial, cost-reflective reductions to be made in island charges through Project TransmiT which would go a long way towards making marine projects in these locations more attractive to investors. However, in the face of cost escalations for island interconnectors, will these potential reductions be enough?

## SCOTTISH PROPOSALS TO REDUCE ISLAND CHARGES:

- 1. An annual load factor (volume) based charge being applied to mainland GB which will stabilise charges for the North of Scotland. Some participants have argued that each charging zone must demonstrate a range of plant with the ability to generate at different times in order to qualify but this approach would be both complex and lead to unstable charges. Stabilising the North of Scotland charges at current levels beyond 2020 is our first priority on the CUSC.**
- 2. AC substations are not charged locationally. However, HVDC converter stations, which can make up around 40 per cent of the cost of island interconnectors, are. By removing elements of the converter station cost, which perform the same functions as AC substations, there is a realistic prospect of island charges coming down by around 15 per cent.**
- 3. Research has been commissioned to look at the potential for wind, wave and tidal technologies to 'counter-correlate' (generate at different times using the same wires) in far more detail than has ever been done. The findings are positive and show a real level of potential sharing on local circuits (islands). It is vital that this principle becomes enshrined in the charging methodology.**

*“There is a fundamental mismatch between the UK's carbon reduction target and the charging methodology”*

The Western Isles now face capital cost estimates of no less than £700m for a transmission connection to the mainland. That translates to charges of over £150/kW for island projects – eight times higher than their nearest mainland neighbours. With these early stage projects already facing investment challenges, even at 5 ROCs, it is not overstating the case to say the future of our world-leading wave and tidal sector is at an important crossroads. Make no mistake, we must reach an equitable solution to the issue of transmission charging.

Project TransmiT should help, and will likely deliver a partial solution to the island charging issue. It may not be enough, though. So the time is right to explore and evaluate the policy levers at the Scottish and UK Governments' disposal to develop a long-term solution to connecting the Scottish islands and the UK's Marine Energy Parks.

Immediately following the launch of the Pentland Firth and Orkney Waters Marine Energy Park in July, Greg Barker, Westminster Minister of State for Energy and Climate Change, announced the short-life working group on islands charging to explore potential solutions and offer clear recommendations to DECC via the Marine Energy Programme Board.

Going a step further, Ed Davey, Secretary of State, announced in October that DECC would establish and chair an Inter-Governmental Group which will determine the extent of the requirement for a policy solution and develop the detail of the preferred option for islands charging. HIE is represented on that group and is working to ensure that the 'needs case' features detailed, island-specific inputs to ensure that an accurate and realistic answer is found.

We are quietly optimistic that this will bring an end to years of uncertainty and conflicting views around island transmission charges. By establishing the group, DECC is committed to providing a definitive answer on the extent to which high transmission charges are holding back the development of the marine industry. Clearly we believe there is an issue to be addressed. Either way, an end to the uncertainty will give the industry the even-footing it needs.

So, there are tough challenges in the way of this national prize. The industry has a long way to go to become fully commercial, but significant progress is being made. You only need to look to Orkney to see the real prospects that this rapidly emerging industry offers. Of the 600 jobs supported by the marine sector in Scotland, half are in Orkney.

EMEC, which opened its doors back in 2004, remains the world's only grid-connected independently accredited wave and tidal test centre. It hosts the greatest number of grid-connected marine energy devices of anywhere in the world. All its test berths are contracted. The centre is now actively working with 14 clients looking to test the viability of their technologies.

The supply chain expertise that has built up around EMEC is the world's most experienced in marine energy device deployment. This expertise is now being exported globally. When it comes to technology, research, development, deployment and testing, Scotland remains in the lead, but much has to be done to ensure we stay there. Getting to the next stage of commercial projects will require civil servants and ministers in Westminster to make some 'bold decisions'.

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