

Oil & Gas diversification opportunities: Wave & Tidal



Wave and tidal stream are emerging energy technologies that have significant deployment potential, subject to successful commercialisation. Tidal stream is the more market ready technology and therefore presents more immediate opportunities for the Scottish oil and gas supply chain.

Key Facts:

- Scotland is playing a leading role in the commercialisation of wave and tidal stream energy, having hosted many of the world's wave and tidal devices at the European Marine Energy Centre in Orkney.
- MeyGen, the world's first large-scale tidal stream array, generated first power in 2016.
- The first 6MW phase of MeyGen is being built at a cost of £51m. The full 398MW project is predicted to cost in excess of £1bn.
- Around £450m has been spent across the UK wave and tidal supply chain as of 2015.
- Wave and tidal energy could contribute up to £4bn in UK GDP by 2050, subject to successful commercialisation.
- The global wave and tidal industry is forecast to be worth up to £76bn by 2050, subject to successful commercialisation.

UK Opportunities

Oil and gas supply chain companies can play an important role in the commercialisation of wave and tidal stream energy by bringing their experience and expertise to early projects. Scotland's tidal energy projects presents some of the most readily accessible opportunities for Scottish supply chain firms, with the phases 1B (6MW) and 1C (74MW) of the MeyGen project and the 10MW Sound of Islay project due to enter construction before the end of the decade. Elsewhere in the UK, the 30MW Perpetuus Tidal Energy Centre near the Isle of Wight is due to begin construction in 2017 and the Fair Head Tidal project off Northern Ireland is planned for construction in 2018. Across the UK as a whole there are over 40 wave and tidal sites at various stages of development, covering small-scale prototype demonstrations through to large-scale commercial arrays.

International Opportunities

Like the UK, France and Canada are also recognised as leading locations for the development of wave and tidal stream energy. The French Government has a target to install 100MW of wave, tidal and floating offshore wind capacity by 2023, and plans to lease up to 2GW of projects within the same timescale. Canada's Fundy Ocean Research Centre for Energy in Nova Scotia is testing a number of tidal stream devices, and there are plans to build a 300MW commercial array in the region. The US, Japan, Singapore and Chile are also pursuing plans for wave and tidal stream energy, but are less developed markets at present.

Discipline	Skills & Expertise Required
Development	Local knowledge and presence gives Scottish companies significant advantages during the development phase of UK projects. Opportunities include surveys and data collection, planning and consenting, project design, and stakeholder engagement.
Manufacturing & Construction	This phase has the highest market value, but is also the most competitive. The industry has a particular requirement for novel techniques and alternative materials that can drive cost reduction in the Design & Engineering, Balance of Plant and Installation sub-phases.
Design & Engineering	Opportunities include: blades and materials for tidal turbines, absorbers, convertors, HV switchgear and transformers, hydraulics, power-take off equipment, component fabrication and machining, assembly, and control systems.
Balance of Plant	Opportunities include: substations, cables, connectors, moorings, and foundations.
Installation	Opportunities include: site preparation, vessels, foundation installation, and device installation.
Operations & Maintenance	Scottish companies have a clear locational advantage for providing O&M services to UK tidal projects. Opportunities include: vessels for personnel transportation, health & safety management, inspection, performance monitoring, device repair, and quayside services.

Market Entry

While wave energy remains a pre-commercial technology, tidal stream energy is making good progress towards commercial-scale deployment. New market entrants from an oil and gas background should consider:

- Engaging with test and demonstration projects, which account for around half of global activity in the sector;
- Early dialogue with technology providers to prepare for the transition from prototypes to mass deployment;
- Working with Scottish universities, which are at the forefront of many technical innovations in the sector;
- Bringing expertise in cost reduction and quality control to early projects; and
- Exploring partnership opportunities with companies already active in the sector.

Further Information & Support

Scottish Enterprise (SE) has developed a range of information and support to help companies considering opportunities in wave and tidal energy. This includes articles and case studies, as well as an offshore renewables supply chain directory. SE also runs regular meet the buyer events and offers a one-to-one consultancy support service provided by technical and commercial experts. Further information is available from:

www.scottish-enterprise.com/marineexpert

Additional information on wave and tidal opportunities is available from:

- Wave Energy Scotland:
www.waveenergyscotland.co.uk
- The Crown Estate:
www.thecrownestate.co.uk