

Oil & Gas diversification opportunities:

Energy Storage



New energy storage solutions are being developed and employed across the electricity, heat and transport sectors as part of the global transition to low carbon energy systems. The energy storage market has potential to generate a variety of opportunities for the oil and gas supply chain as it grows and evolves, however, these may be challenging to identify in the early stages of the market.

Key Facts:

- Scotland is home to the UK's first large-scale battery, which was connected to the Orkney grid network in 2013.
- In 2016, National Grid awarded 200MW of contracts worth £66m to eight battery storage projects bidding in the UK's first Enhanced Frequency Response tender.
- The UK's battery storage capacity is forecast to grow to between 500MW and 1,500MW by 2020, up from 22MW in 2015.
- The UK is forecast to invest approximately £750m in energy storage projects between 2016 and 2024.
- Global non-hydro storage capacity is forecast to reach 45GW by 2024, up from 1.9GW in 2015, representing investment in the region of £35bn.

UK Opportunities

Pumped hydro currently dominates the storage market, accounting for 99% of all non-hydrocarbon based storage capacity installed on a global basis. However, new battery-based energy storage solutions are rapidly coming to the fore, driven by the requirement to integrate ever greater amounts of distributed and variable renewables generation, and the growing electrification of transport. The UK battery storage market is predicted to grow significantly in the next ten years as regulatory barriers are addressed and new routes to market emerge. These include the provision of ancillary services to the UK's electricity grid operators, building on National Grid's 2016 tender for the provision of super-fast frequency response services. Behind the meter storage solutions are also predicted to grow steadily as large commercial and industrial users install batteries in order to benefit from off-peak electricity prices, minimise their transmission network charges, and as backup power sources.

International Opportunities

Japan is currently the largest and most established energy storage market, with around 300MW of battery storage installations as of 2015. The US also has a very active energy storage market thanks to significant federal and state support, particularly in California, which has 73MW of battery storage and ambitious plans to deploy 1,325MW by 2020. Both Japan and the US are predicted to remain important markets over the next ten years, with Australia, India and China forecast to grow strongly over this period. Germany is the largest energy storage market in Europe and is forecast to invest an estimated £3bn between 2015 and 2024 under a moderate growth scenario. Italy is forecast to become the second largest European market, investing an estimated £1.9bn through to 2024, followed by the UK, which will invest an estimated £750m. Behind the meter applications, co-located with solar PV installations, are predicted to be the main drivers of growth in Japan, Italy, Australia and India, accounting for 70-90% of new applications in these markets. The US, China and the UK are predicted to make more diverse use of storage for ancillary services, renewables integration, and behind the meter applications.

Discipline	Skills & Expertise Required
Project Development	Large scale energy storage projects require complex multidisciplinary project and risk management expertise, similar to those of an oil or gas project.
Product Development	Whilst the battery manufacturing sector is very competitive, the oil and gas industry has a high degree of expertise in providing containerised rugged service solutions in a box that could be applied to containerised energy storage solutions.
Technology Development	The energy storage industry faces a range of innovation challenges on the road to commercialisation, and may be able to benefit from the innovation expertise within the oil and gas supply chain.
Services Development	The oil and gas industry has made significant progress in Smart well, Smart field and Smart platform development. The digital and data analytics expertise within the oil and gas supply chain may be applicable to the control and management of energy storage systems.

Market Entry

Entry into the energy storage market is likely to require either a focused approach in a niche area, or a broad understanding of the low carbon market and the role that energy storage can play. Many opportunities in energy storage are closely tied to renewable energy, therefore participation in the renewables sector may lead to opportunities in energy storage.

Further Information & Support

Scottish Enterprise provides a range of information and support for oil and gas companies considering diversification opportunities. Further information is available from:

www.scottish-enterprise.com/industry-support/oil-and-gas

Additional information on the energy storage market is available from:

- Scottish Renewables:
www.scottishrenewables.com
- The Electricity Storage Network:
www.electricitystorage.co.uk