Development of a three-terminal ready HVDC interconnector between France and Great Britain via the island Alderney: the FAB project

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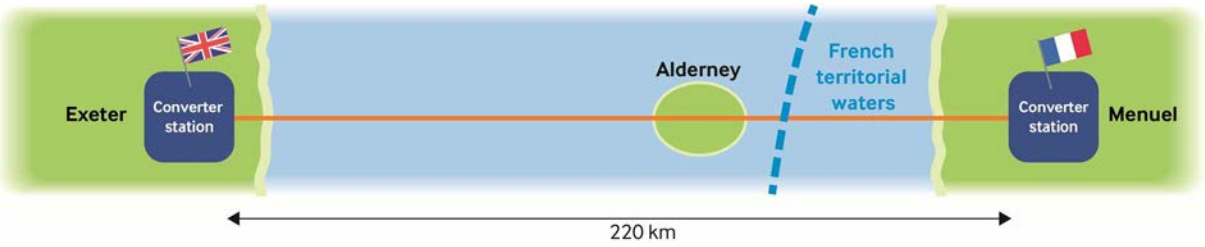
The need for strengthening of cross border capacities between European countries is widely recognised. In October 2014, an interconnection target of 15% for 2030 was adopted by the European Council as a part of EU's 2030 Climate and Energy Policy Framework. More specifically, according to the TYNDP[1] 2014, at least 7 GW additional interconnection capacity between France and the British Isles is needed before 2030.

The France-Alderney-Britain (FAB) project, a 1400 MW DC interconnector project, was selected as a Project of Common Interest (PCI) by the EC in October 2013. It will contribute to increasing the interconnection capacity between France and Great Britain. Moreover, the link will cross the channel island of Alderney (which is currently electrically isolated), hence creating an opportunity for for a future project that would connect to the onshore DC cable running across the island. This would allow renewable generation in Alderney waters - the location of one of Europe's best resources for tidal-stream power - to be evacuated to Britain and France.

The cable, which will link converter stations in Menuel (France) and Exterer (UK), will be approximately 220 km, of which around 170 km offshore and 50 km onshore.



RTE, the French TSO, develops the project together with FAB Link Ltd, a joint venture company, 50% owned by Transmission Investment LLP and 50% owned by Alderney Renewable Energy. Technical specification of the cable and the converter stations, followed by the launch of an invitation to tender, will be achieved in 2016, with a Final Investment Decision foreseen by the end of 2017.

During the Front End Engineering Design stage of the project, both companies have been working to overcome the challenges associated with the development of an interconnector with the following main original features:

- cable laying in high energetic and low sedimentary areas between France and Alderney;
- an embedded three terminal function with two functions in one single infrastructure, cross border trade and evacuation of renewable energy.

The paper hence deals with the main design issues associated with these features:

1) Designing cable and cable protection in order to cope with the challenges linked to developing a submarine cable in a high energetic area with strong tidal currents and severe wave climate.

2) Determining optimal capacity for the “three-terminal ready” structure, ensuring:

- a high level of interconnection capacity, while at the same time granting a smooth accommodation both on French and British on shore networks;
- the right level level of modularity, in order to facilitate the development of tidal generation in Alderney, while maximising economies of scale through a high capacity link;
- adequate design of control system in order to manage bidirectional flows with intermittent generation.

[1] - The Ten Years Network Development Plan published by ENTSO-E