

Development of a three-terminal ready HVDC interconnector between France and Great Britain via Alderney

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ABSTRACT

The France-Alderney-Britain (FAB) project, a 1400 MW DC interconnector project, aims at increasing the interconnection capacity between France and Great Britain, while allowing renewable generation in Alderney waters to be exported to Britain and France.

After a general introduction of the project, the paper explores the issue of cable design and protection in order to cope with the challenges linked to developing a submarine cable in a high energetic area with strong tidal currents, the Alderney Race.

KEYWORDS

VSC, France-Great Britain, interconnector, installation, tidal, HVDC, submarine.

INTRODUCTION

The need for strengthening of cross border capacities between European countries is widely recognised. The European Council hence recently set an interconnection capacity target of 15% by 2030. The additional capacity needed between France and Great Britain was estimated to around 4 GW by 2030 by the TYNDP 2014¹.

Already in February 2012, the French and British Governments declared that it was necessary to strengthen interconnection capacities between France and Great Britain, mentioning FAB as one of the projects contributing to reaching the goal. At the same summit, a Memorandum of Understanding was signed by the different promoters of the France-Alderney-Britain (FAB) project in order to launch the first feasibility studies. FAB was subsequently selected as a Project of Common Interest (PCI) by the European Commission (EC) in October 2013. In 2014, the project was selected by the Connecting Europe Facility for receiving financial assistance for studies during its development phase.

The project is being developed by Réseau de Transport d'Électricité (RTE, the French TSO) together with FAB Link Ltd, a joint venture company, 50% owned by Transmission Investment LLP (TI) and 50% owned by Alderney Renewable Energy (ARE). Both partners signed a Joint Development Agreement in October 2013.

THE PROJECT

The FAB project is an HVDC subsea and underground link, that will be approximately 220 km long, of which around 170 km offshore and 50 km onshore.

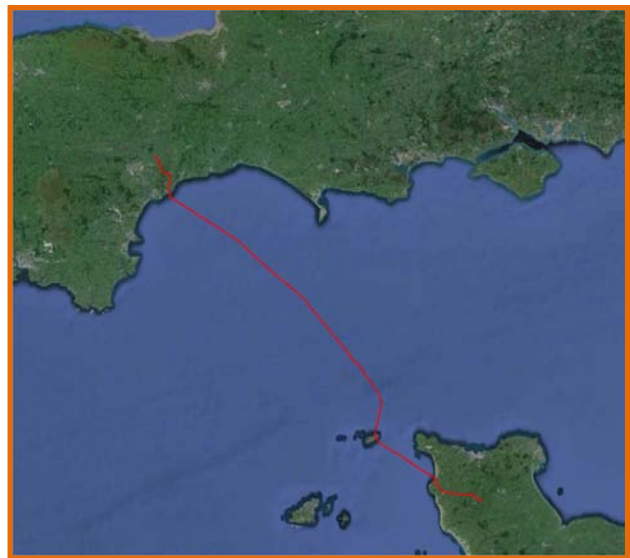


Figure 1: Overview of the project

The link will cross the Channel Island of Alderney, a UK crown dependency and part of the Bailiwick of Guernsey. Alderney waters are identified as the location of one of Europe's best resources for tidal-stream power. Alderney is currently electrically isolated, and any tidal generation exceeding 2 MW would have to be exported. The FAB project therefore creates an opportunity for a tidal project that would connect to the onshore DC cable running across the island. This would allow renewable generation in Alderney waters to access markets both in Britain and in France.

The purpose of FAB is hence twofold: it aims not only at strengthening interconnection capacities between Great Britain and France, but also at facilitating transmission of tidal energy from Alderney waters. This combination of two functions in a single piece of infrastructure is in this case economically superior to the traditional approach where one cable would have the sole purpose of connecting Britain and France, while further cables would connect individual tidal arrays to only either Britain or France (not both).

¹ The Ten Year Network Development Plan published by ENTSO-E