Curative maintenance to be accounted for in compliance tests

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ABSTRACT

RTE, French TSO, is in charge of development, operation and maintenance of the HV network in France including HV connections of offshore wind farms.

Curative maintenance shall be taken into account at early stages of project that is to say when setting parameters of compliance tests. In order to better set tests parameters and cover repair loads, RTE has worked on the calculation method and proposed to upgrade the CIGRÉ's formula.

KEYWORDS

Offshore links, compliance tests, curative maintenance

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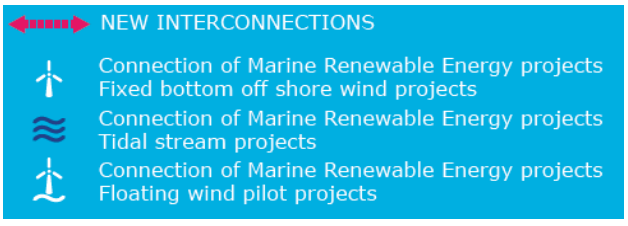
INTRODUCTION

As the French TSO, and in the context of the energy transition, by 2025 RTE will put into service more than 1000 km of submarine links and ensure their maintenance. These new electricity links will be connected to RTE's underground network and are classified by their technology:

- HVDC Interconnections
- HVAC submarine links

In addition to building these new submarine links, RTE will be in charge of operating and maintaining them, through predictive and curative maintenance.



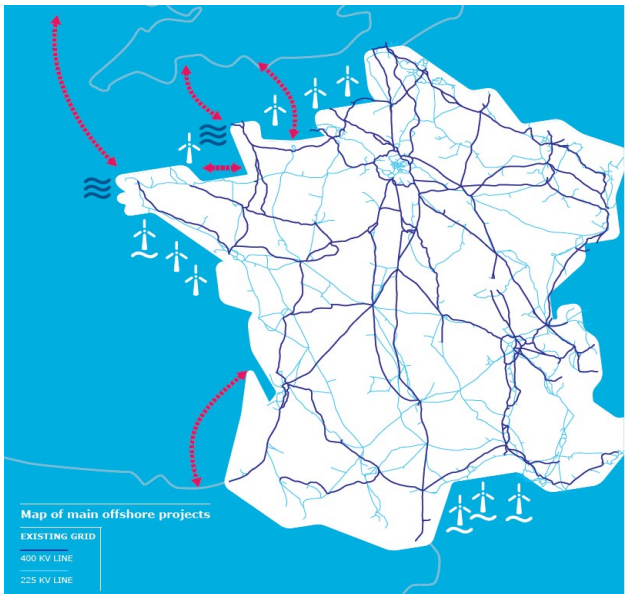


Figure 1 : RTE's offshore projects

MAINTENANCE METHODS

During an offshore repair, the repair cable portion is connected to the existing cable via two joints which, one after the other, must be assembled on the vessel's deck and then laid on the seabed.

According to TB 490 [1], repair joints can be divided into three main categories depending upon their handling characteristics:

- Fully Flexible Joint (similar design as factory joints, especially for medium/deep water)
- Flexible Joint with some mechanical restrictions
- Rigid Joint (often uses pre-molded or preassembled bodies)

The fully flexible joint has a weight similar to the cable. On the contrary, the rigid joint is much heavier and requires a lifting device that is often adapted to the design.

Three methods of repair joint installation can be distinguished :

- In-line method

The in-line method consists in over boarding the repair joint directly after the recovered cable while the repair cable is still on the vessel and is being laid down gradually.

- Ω method with quadran

The method consists in accompanying the laying of the cable with the help of a laying quadran. The cable is then loaded on this installation quadran and lowered to the sea floor.

- Ω method with lifting bar