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Pioneering methodology found to solve interoperability issues in DC transmission technology

Paris (France), 6th June 2018 – Yesterday French Transmission System Operator RTE (Réseau de Transport d'Électricité) announced the results of its pioneering tests on the interoperability of high-voltage alternate current/direct current (AC/DC) converters supplied by different world-leading manufacturers.



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This is the first attempt to systematically assess the interoperability issues of multi-vendor converters in high-voltage direct current (HVDC) systems and to suggest possible adaptations to the different vendors. To achieve this, RTE worked closely with manufacturer ABB Group, Spanish Transmission System Operator Red Eléctrica de España, Belgian Transmission System Operator Elia, as well as the University of Strathclyde and Ecole Centrale Lille.

For the first time, these investigations not only proved the existence of interoperability issues but also solved some of them. The results were presented to international manufacturers during a workshop in Paris on 5th June. They were developed over the last 4 years within Demonstrator No. 2 of Best Paths: the largest research project funded by the European Union in the energy field in the last decade.

In electric transmission systems, interoperability ensures smooth operation of different equipment (provided by various suppliers) connected together in the grid to transmit power to the consumers. So far in Europe, HVDC systems based on the recent voltage source converters (VSC) technology never experienced interoperability issues because the converters were provided by the same supplier. However, plans for multi-terminal HVDC or even DC grids are currently under consideration in Europe and they will require different suppliers to deliver the necessary equipment, which will result in interoperability problems.

Olivier Despouys, R&D Project Manager at RTE, said “The lack of interoperability for electric components will create a bottleneck in the development of the European energy infrastructures. In particular, international standards must be agreed with suppliers in recent domains such as HVDC transmission, which would sensibly reduce interoperability issues. This will enable the construction of future European ‘electric highways’ to match for example the demand of more green energy and electric vehicles.”

Moving from these observations, the experts of Demo 2 elaborated offline and real-time simulation methods to investigate if different converters were compatible, and if not to propose possible adaptations. They are currently drafting recommendations for transmission system operators and standardisation bodies to enhance interoperability of multi-vendor VSC HVDC converters.

During the workshop, participants visited RTE’s labs to see how the equipment to test interoperability works. For the first time ever, HVDC cubicles from different vendors were connected by RTE to the same real-time simulation set-up to investigate interoperability, as was displayed in a live demonstration.

The Best Paths project, approaching its end in September 2018, is holding 5 technical workshops, one per Demo, for dissemination of the final results; information and details on the past and future events can be found at:

- 11th May 2017 on “Real-time simulation of large offshore wind farms and interactions with power grids” in Trondheim (Norway)

http://www.bestpaths-project.eu/contents/publications/press-release_best-paths-new-demonstrator-for-large-offshore-wind-farms_4492.pdf 

- 5th April 2018 on “Innovative repowering of AC corridors “ in Budapest (Hungary)

http://www.bestpaths-project.eu/contents/publications/bestpaths_pr_180405_demo4-workshop.pdf 

- 9th May 2018 on “Upgrading multi-terminal HVDC interconnectors” in Codrongianos (Italy)

http://www.bestpaths-project.eu/contents/publications/bestpaths_pr_180509_demo3_finaldocx.pdf 

- 5th July 2018 on “Developing superconducting technology” in La Spezia (Italy)

<http://www.bestpaths-project.eu> 

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