

## PRESS RELEASE

### **EU research project PROMOTioN presents final project results: Technologies for a meshed HVDC offshore wind transmission grid in Europe are ready for use – political will and action at all stakeholder levels is needed now**

- *The successful development and testing of technologies for a meshed HVDC offshore wind transmission grid such as HVDC circuit breakers, HVDC gas insulated substations, HVDC system control, and HVDC system protection systems within the project is completed - technologies can be commercially marketed immediately*
- *Focus: a full-scale pilot project at sea along with the initiation of the development of common system operation guidelines and grid codes for standardisation of technologies are now absolutely necessary to respectively enable and demonstrate the benefits of multi-terminal HVDC networks*
- *Politics must push the development of the required technical, regulatory, and economic frameworks necessary for the organic step-by-step development of meshed offshore HVDC networks*
- *Pragmatic regional collaboration and coordination must be initiated at all stakeholder levels to implement PROMOTioN recommendations to create a level regulatory playing field including agreements on technical compatibility, asset classification, governance, market models, planning and permitting systems, support schemes, decommissioning, and conflict resolution*

**Berlin/Arnhem, 21 September 2020.** The EU-funded Horizon2020 project ‘Progress on Meshed HVDC Offshore Transmission Networks’ (PROMOTioN) presented its research results at a final online conference today. The event, titled ‘North Sea Grid for the European Green Deal: How to unlock Europe’s Offshore Wind potential - a deployment plan for a meshed HVDC grid’, marks the culmination of over four years of practice-oriented research and full-scale technology demonstrations on integrated offshore HVDC transmission grids by 34 international project partners who represent the whole industry value chain.

The project has demonstrated that the necessary technologies for a meshed HVDC offshore wind transmission network are ready for use, but that political will and more European cooperation are needed to develop the regulatory and technical frameworks necessary to implement them. As a first step, real full-scale cross-border pilot projects at sea should be launched to gain practical experience and demonstrate the real-life benefits of multi-terminal grid development. In parallel, work on developing a uniform grid code and operation guidelines should be initiated.

A stronger European and cross-border expansion of offshore wind energy improves energy security, reduces environmental impact, and has the potential to trigger necessary investments during the COVID-19 pandemic. Coordinated, multi-purpose, interconnected HVDC transmission infrastructure is the most socio-economically optimal way to integrate this offshore wind energy into the existing transmission infrastructure. Joint European offshore wind and transmission projects can thus be an essential component of the Green Recovery plan.

Andreas Feicht, State Secretary at the German Ministry of Economy and Energy and Keynote Speaker of the conference, said: “The PROMOTioN-project played an important role in providing input on how offshore wind and the necessary grids and market rules have to be established in Europe. We invited PROMOTioN researchers to contribute to the discussions in the North Seas Energy Cooperation under German Presidency, earlier this year. The results of the PROMOTioN project are therefore very timely: the project partners' work on developing a common vision for a North Sea offshore grid, the necessary technical standards, and the regulatory and economic framework provides valuable input for our political discussions in the North Seas Energy Cooperation and in the European Council, as well as domestically.”

Catharina Sikow-Magny, European Commission Director of “Internal Energy Market” – DG Energy and Keynote Speaker of the conference, added: “Offshore Renewable Energy is at the core of the transformation of the energy sector and of reaching the European climate goals. Offshore wind is likely to impact the decarbonisation of the wider economy through increased electrification of other sectors as well, such as heating and transport. Europe needs strong coordination and cooperation on planning processes beyond national borders to be able to tap into the potential of offshore renewable energy. The comprehensive work by PROMOTioN on offshore meshed grids provides valuable input to the Commission’s work.”

### **PROMOTioN project shows next steps to develop a meshed offshore HVDC transmission network**

As the European Union aims to fully decarbonise its economy by the middle of the 21<sup>st</sup> century, offshore wind energy plays an important role in that endeavour with a potential of 450 GW until 2050, of which 200 GW alone would be located in the North Sea. Traditionally, offshore wind farm export links and interconnectors have been realised as point-to-point connections. But as we become increasingly dependent on wind power generation and interconnection capacity with other countries, meshed offshore grid topologies are being considered to enable efficient, economical, and reliable transmission offshore. Due to the high power levels and long distances involved, high voltage direct current technology, also known as HVDC, is likely to be employed, requiring converter stations both on- and offshore.

Since 2016, the project partners have been working on solutions at technical and regulatory levels that were once considered obstacles on the way to such a meshed offshore HVDC transmission network. The project partners have developed and tested reliable HVDC network protection and control solutions, worked towards technology interoperability and standardisation of testing of key components, outlined recommendations for an EU-wide regulatory and financial framework, and developed a deployment plan as well as a roadmap for implementation until 2050. Furthermore, the project has conducted full-scale demonstrations of HVDC system control, HVDC system protection, HVDC gas-insulated switchgear, and HVDC circuit breakers. These technologies are crucial to ensure a safe, stable, and reliable operation of a meshed HVDC transmission network.



*The project results show especially that:*

- Hardware based technologies such as HVDC circuit breakers and HVDC gas insulated substations are ready for use and can be manufactured industrially immediately
- Software based technologies such as HVDC system control and HVDC system protection have been proven to work and to be interoperable, and are considered ready for a real world pilot
- Further research is outlined to improve performance and whole system integration
- The next step is to develop full-scale pilot projects at sea. Such a development would accelerate the much needed uniform DC grid code and specify system operation guidelines, agreement on high level technical system characteristics (such as operational configurations, voltage levels, system earthing, and converter configurations)
- Clear support and affirmation from politicians regarding the regulation and market models of the meshed grid and more cooperation at a European political level as well as at the level of network operators is absolutely necessary
- UK and Norway ideally should be included in the development of joint offshore wind transmission grids in the North Sea and Irish Sea.

### **Final web conference features high-level speakers from politics, industry and academia**

At the final web conference today, the project partners showcased the results of their years-long research on technical, economic, legal, financial, regulatory, and system planning issues concerning meshed offshore HVDC transmission networks and other relevant project aspects to over 400 participants. The event featured keynote speeches by key policy makers and government decision makers, panel discussions with representatives from the whole offshore wind sector, the HVDC equipment industry and Transmission System Operators, and experts from academia. Additionally, high-level speakers representing transmission and offshore wind sectors weighed in on the results and delivered their own thoughts on the opportunities and challenges ahead.

### **About PROMOTioN**

The PROMOTioN project aims to tackle technical, regulatory, financial, and legal challenges to the implementation of offshore meshed HVDC transmission networks. The consortium consists of 34 partners ranging from all major European HVDC equipment manufacturers, TSOs, and academia to test labs and consultants. This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 691714



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