

FIT FOR THE FUTURE: SUITABLE TECHNOLOGIES FOR MESHED HVDC OFFSHORE GRIDS

PROMOTiON Kick-off Stakeholder Event, 29th June 2016, Brussels, Mitsubishi Electric Europe

Mitsubishi Electric Europe

History

- ↗ Mitsubishi Electric Corporation : established in 1921 from a shipbuilding company
- ↗ Mitsubishi Electric Europe: first European office opened in 1969 in London

Locations

- ↗ Head Quarter Europe: the Netherlands
- ↗ Power System Group: London UK

Products and Services:

- ↗ Building Systems
- ↗ Air conditioning Systems
- ↗ Transportation Systems
- ↗ Semiconductor Devices
- ↗ Energy Systems

Transmission & Distribution Systems



Transformers



Switchgears

Power Generation Systems



Static Var Systems



Instrumentation and Control

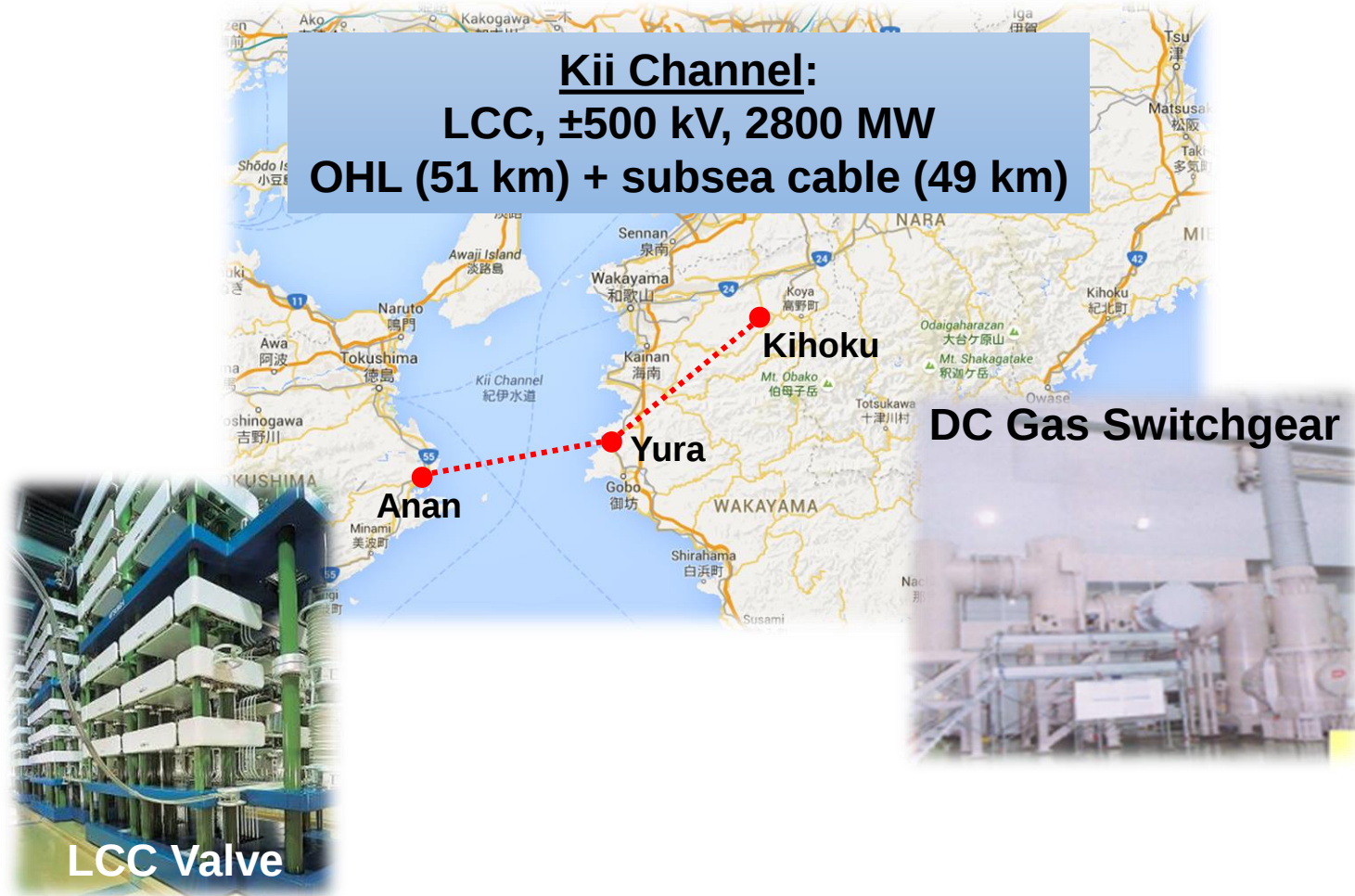
Mitsubishi Electric Europe

HVDC Experience



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HVDC Experience



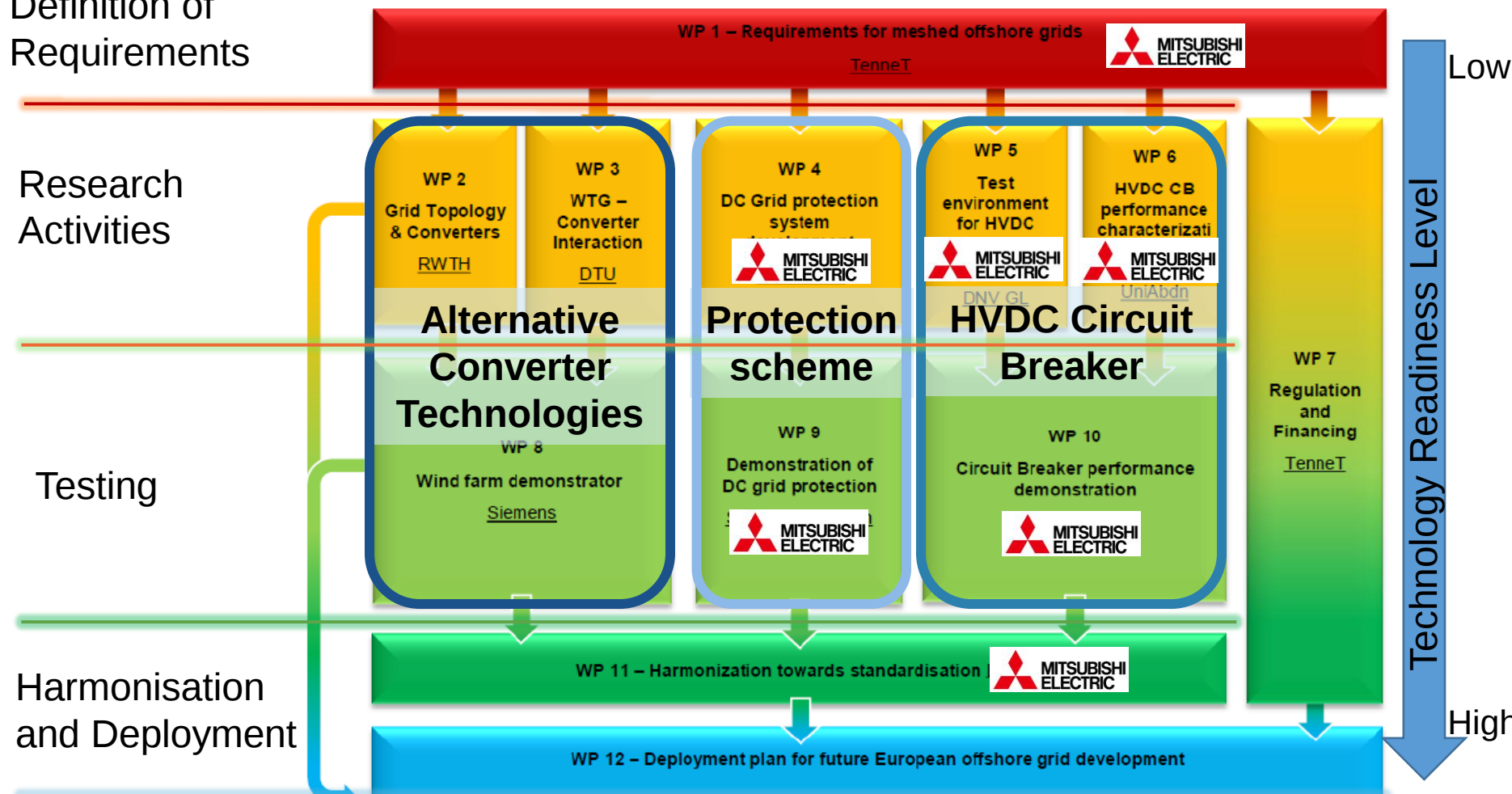
Mitsubishi Electric Europe in PROMOTiON

Definition of
Requirements

Research
Activities

Testing

Harmonisation
and Deployment



Mitsubishi Electric Europe Motivation

↗ Technical contribution to European community which is aiming to shape the challenging future of a greener energy economy.



Figures are courtesy of European Commission.



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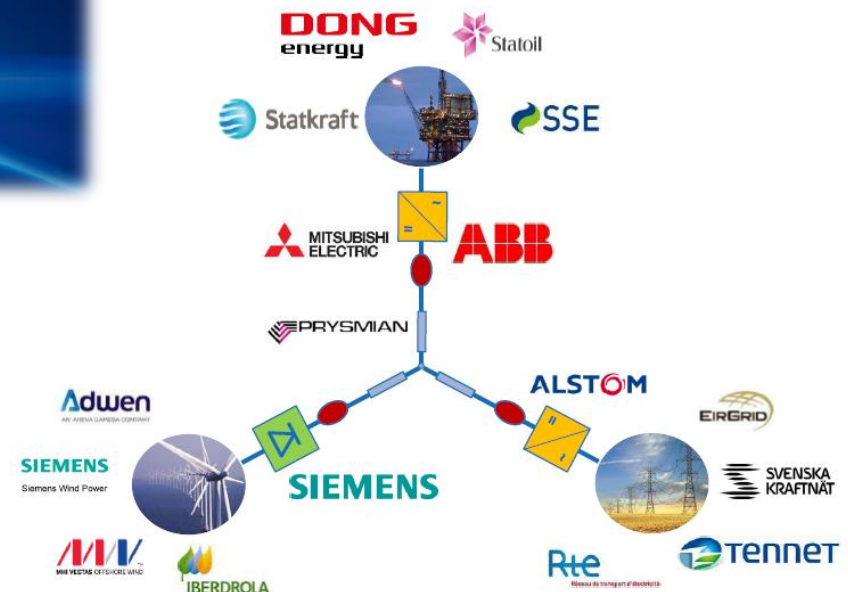
This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 691714.

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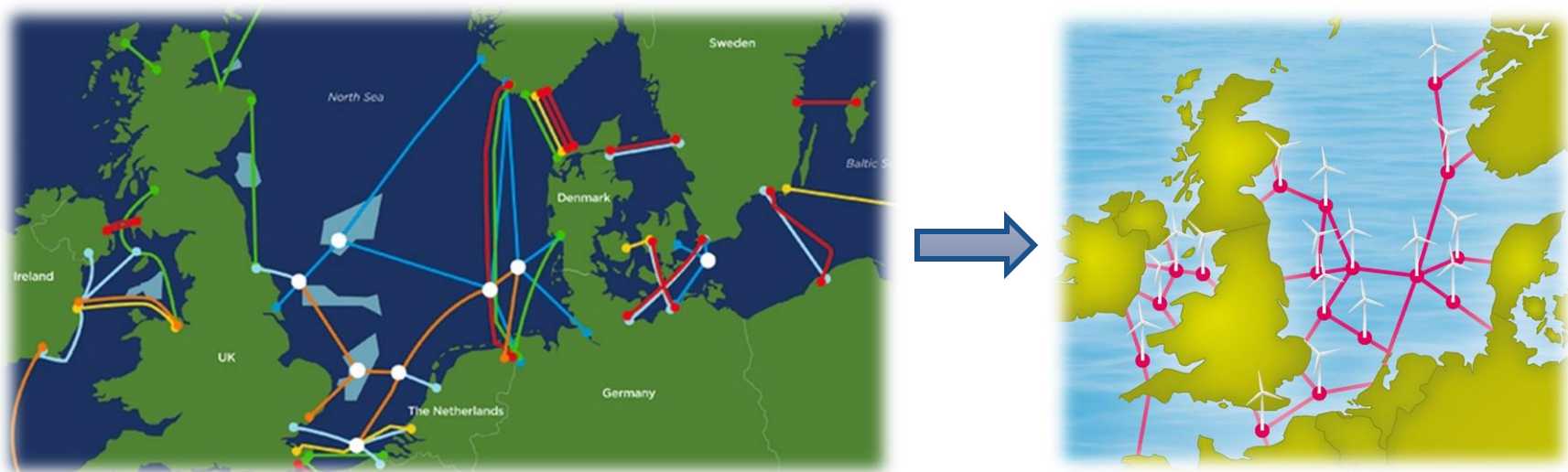
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- ↗ Help define the requirements to build a robust and reliable offshore meshed DC grid.



Figures are courtesy of WindEurope.



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- ↗ Testing our technology in an innovation environment with the aim to deploy for the future.
- ↗ Harmonizing to enable interoperability between different technologies.
- ↗ Define an optimized solution in terms of cost/benefit for meshed offshore DC grids.**

Mitsubishi Electric Europe Contribution

Objectives of PROMOTiON

- ↗ Identification of specific **technical requirements** and standardization methods for meshed HVDC network technologies towards **interoperability**
- ↗ Development of **interoperable, reliable and cost-effective technology** of protection for meshed HVDC offshore grids ready for **large scale application**
- ↗ **Demonstration** of cost-effective key technologies for meshed HVDC offshore grids and to **increase their technology readiness level (TRL)**
- ↗ **Harmonisation** of on-going activities at European and international scale by engaging with working groups and **standardization** bodies

Contributions from MEU

- ↗ Providing input to the requirements of meshed offshore grid with respect to **testing methods** and achieving **standardization by modularization**
- ↗ **Decentralized protection** philosophy for meshed DC network considering the implementation of **active resonant circuit HVDC circuit breaker** and **DC reactors**
- ↗ Rise of TRL by testing **protection philosophy** and **HVDC circuit breaker** in independent **HVDC multi terminal test environment** and **high voltage laboratory** respectively
- ↗ Supporting harmonisation of the industry by providing input to **functional specification** and **testing procedures** for HVDC systems



APPENDIX

DISCLAIMER & PARTNERS

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