

PRYSMIAN GROUP FOR PROMOTioN

New cable concept



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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.



1. Prysmian group

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↗ Energy business

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↗ Submarine business

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2. Prysmian group contribution

↗ WP2

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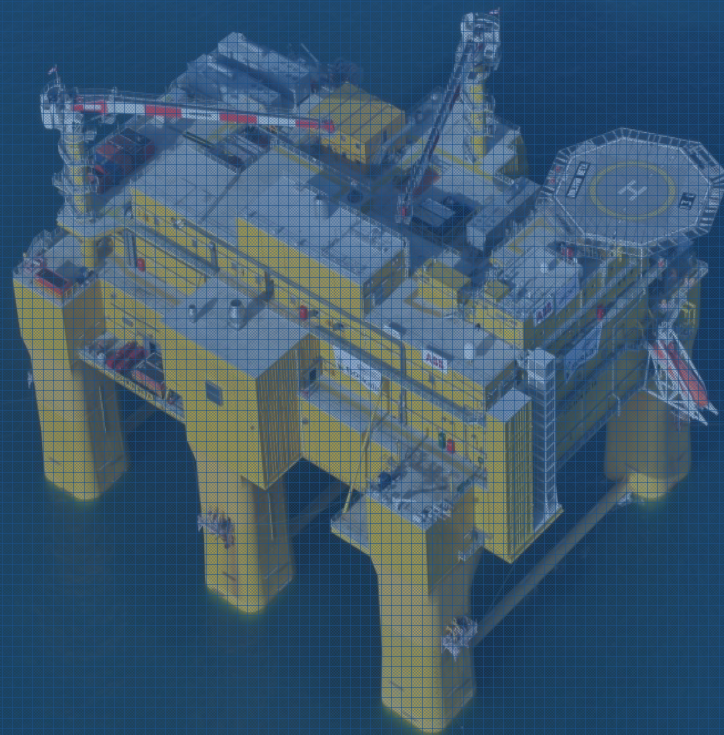


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PRYSMIAN GROUP

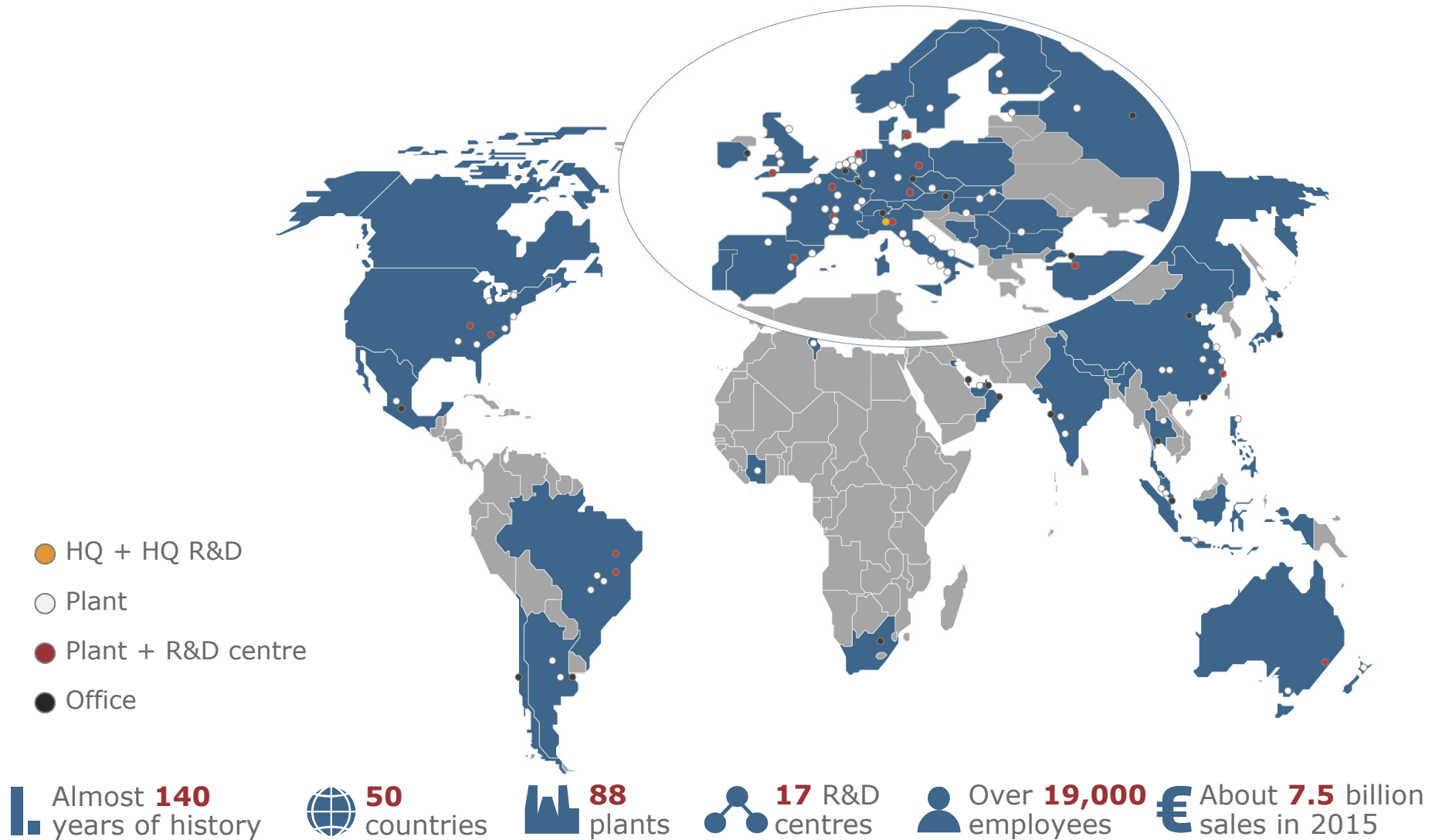


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1 – PRYSMIAN GROUP - OVERVIEW

A TRULY GLOBAL GROUP

Prysmian
Group



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1 – PRYSMIAN GROUP – ENERGY BUSINESS

ENERGY BUSINESS



ENERGY PROJECTS

The Energy Projects Operating Segment covers high-tech and high value-added businesses whose focus is on projects and their execution, as well as on product customisation.

- **High and Extra High Voltage cables for underground and submarine power transmission** directly from power stations to the primary distribution networks. Advanced services for the construction of submarine power lines for offshore wind farms, ranging from project management to cable installation.
- The Group also offers a full range of **SURF** (Subsea Umbilical, Riser and Flowline) products and services for offshore exploration activities by the oil industry.



ENERGY PRODUCTS

The Energy Products Operating Segment covers the businesses offering a complete and innovative product portfolio designed to meet the various and many demands of the market:

Energy & Infrastructure, (including Power Distribution and Trade & Installers) and **Industrial & network Components** (comprising Specialties & OEM, Oil & Gas, Elevators, Automotive and Network Components).

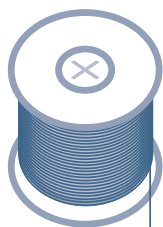
- Medium Voltage cables and systems to connect industrial and residential buildings to primary distribution grids; and low voltage ones for power distribution and the wiring of buildings.
- Integrated cabling solutions for the Industrial market (trains, aircraft, ships, port systems, cranes, mines, nuclear, defence, electro-medical, and renewables, petrochemicals, elevators, automotive).



1 – PRYSMIAN GROUP – TELECOM BUSINESS

TELECOM BUSINESS

FIBRE



A wide range of **optical fibres** designed and made to cater to the broadest possible spectrum of customer applications, including single-mode, multimode and specialty fibres.

The Group also has at its disposal every currently available **technology** for the manufacture of optical fibre, allowing it to achieve optimal solutions for different applications.

TELECOM SOLUTIONS



Solutions and connectivity products used for telecommunication networks.

Wide range of STANDARD **optical cables (from 1 to 1,700 fibres)** or designed for challenging environments. Passive **connectivity** solutions to ensure efficient management of optical fibre within networks. **Copper cables** for underground and overhead cabling solutions.

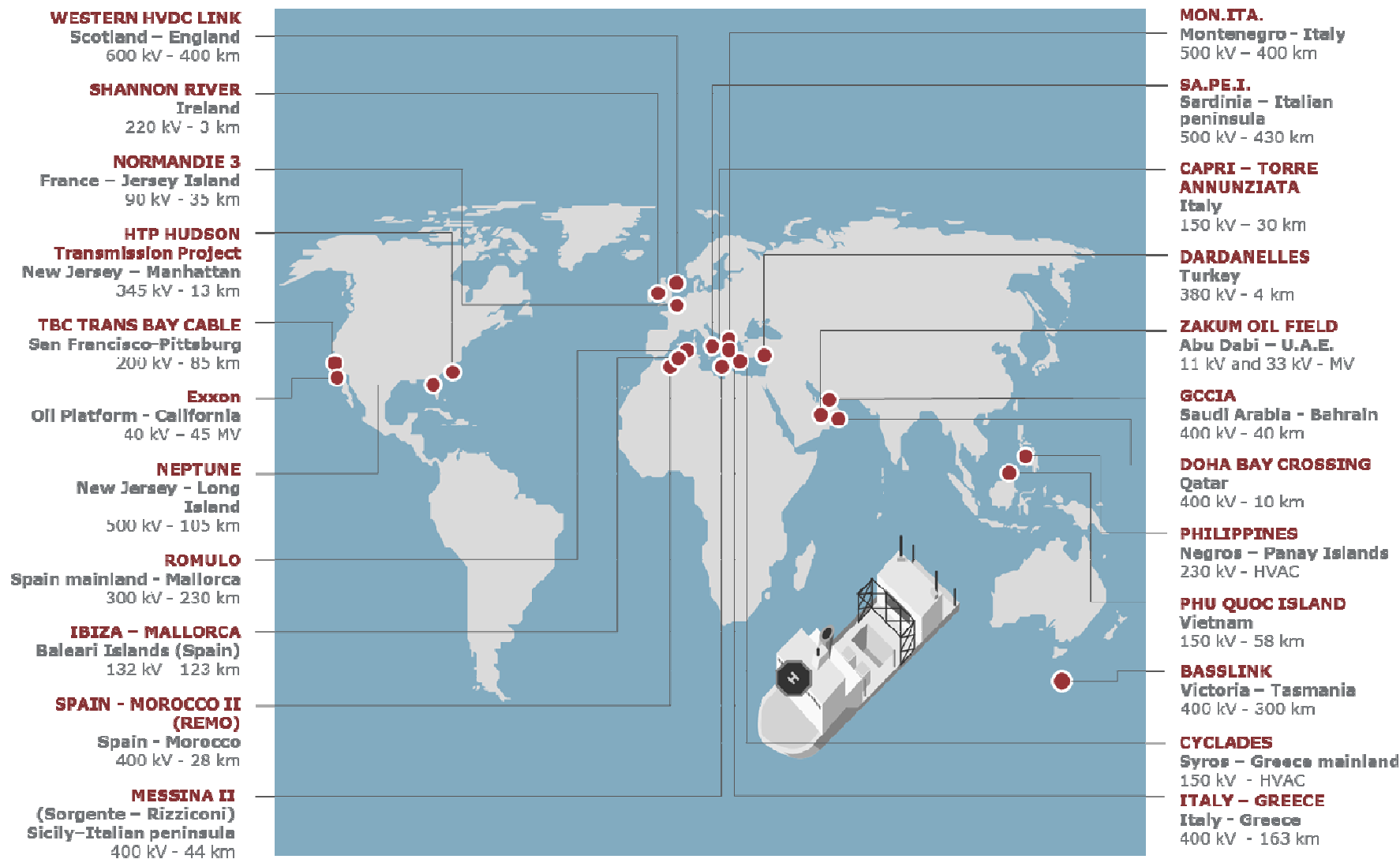
MULTIMEDIA SOLUTIONS



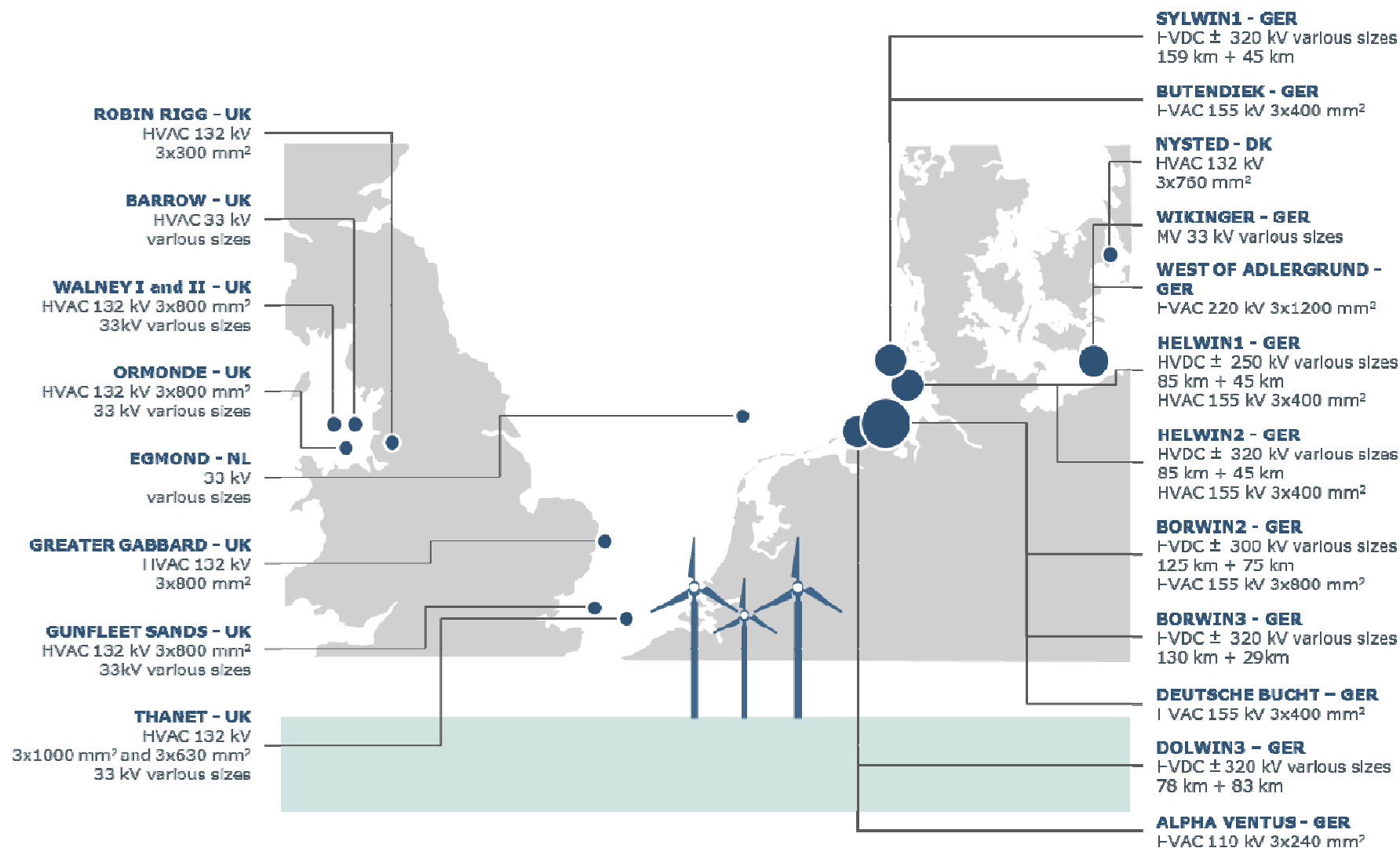
Cable solutions serving communication needs in **infrastructure, industry and transport**, for a diverse range of applications: cables for television and film studios, cables for rail networks, light-signalling cables and cables for track switching devices, as well as cables for mobile telecommunications antennae and for communication networks.



SUBMARINE CABLES BUSINESS



TRACK RECORD IN OFFSHORE WIND FARMS



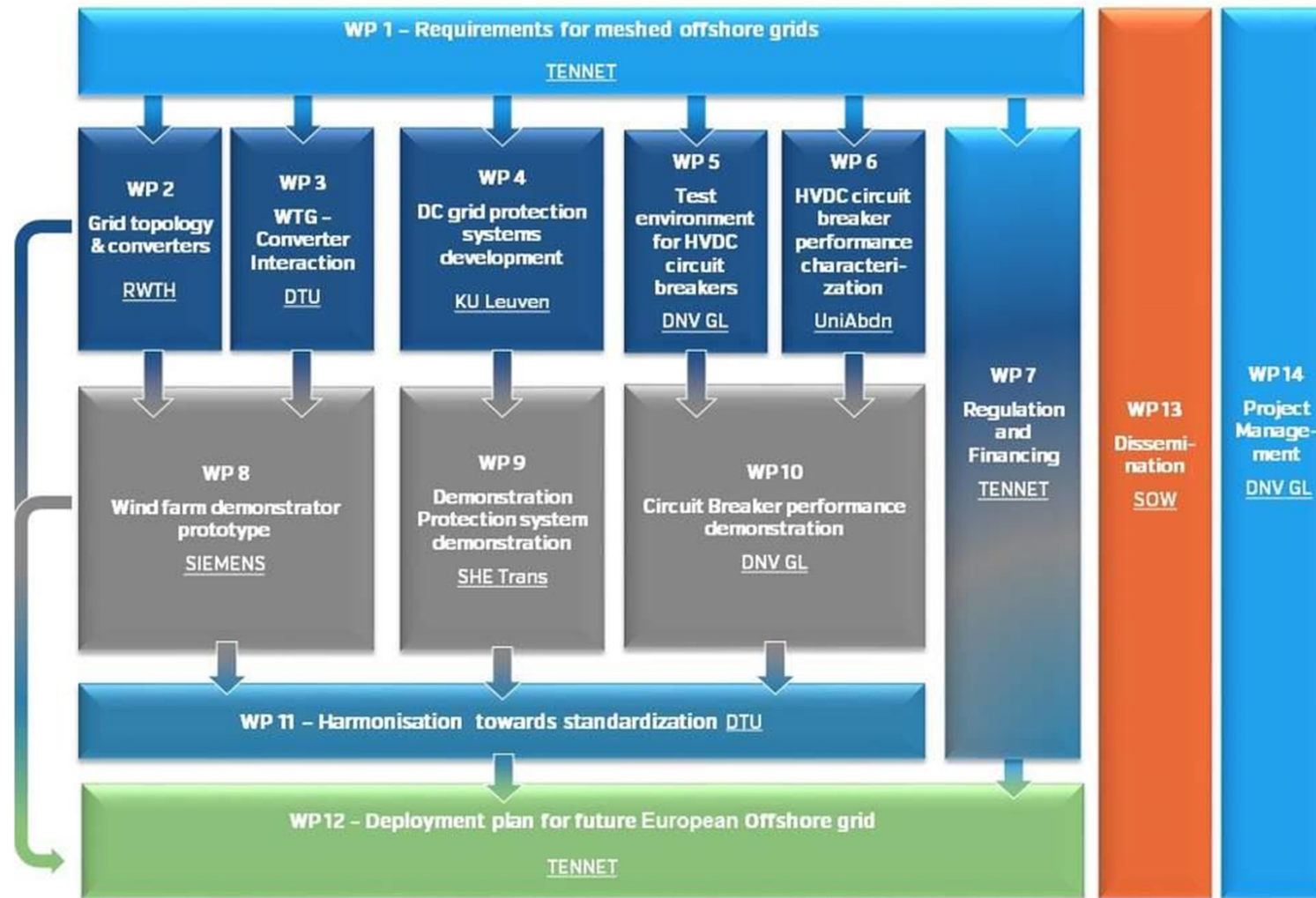
PRYSMIAN GROUP CONTRIBUTION



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2 – PRYSMIAN GROUP CONTRIBUTION

PROMOTiON STRUCTURE



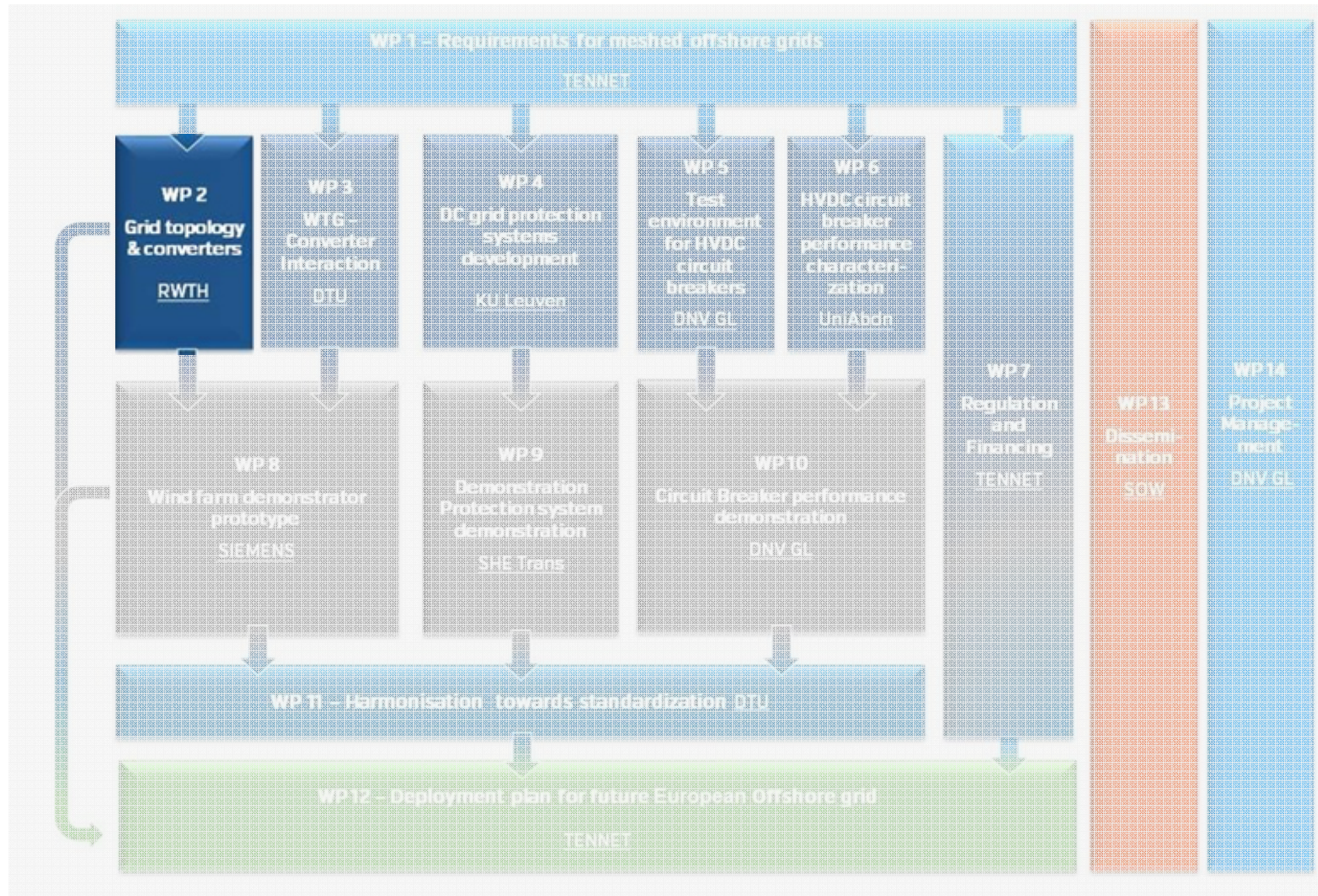
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PROMOTiON STRUCTURE – WP2



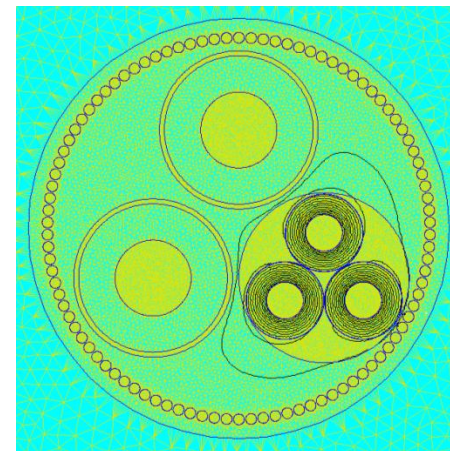
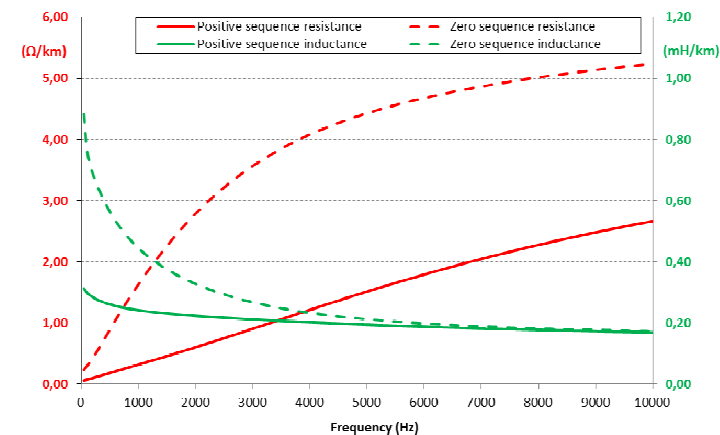
WP2 - GRID TOPOLOGY & CONVERTERS

“The purpose of this WP is to define *recommendations for minimum requirements* on onshore and meshed HVDC offshore power systems *in order to adapt and extend existing grid codes*. Thus a *simulative analysis* of 2-3 realistic offshore HVDC topologies *is performed*. The interoperability of diode rectifiers and converters is investigated.”

Task 2.1: Definition of model parameters, control objectives and operational assumptions for the meshed HVDC offshore topologies

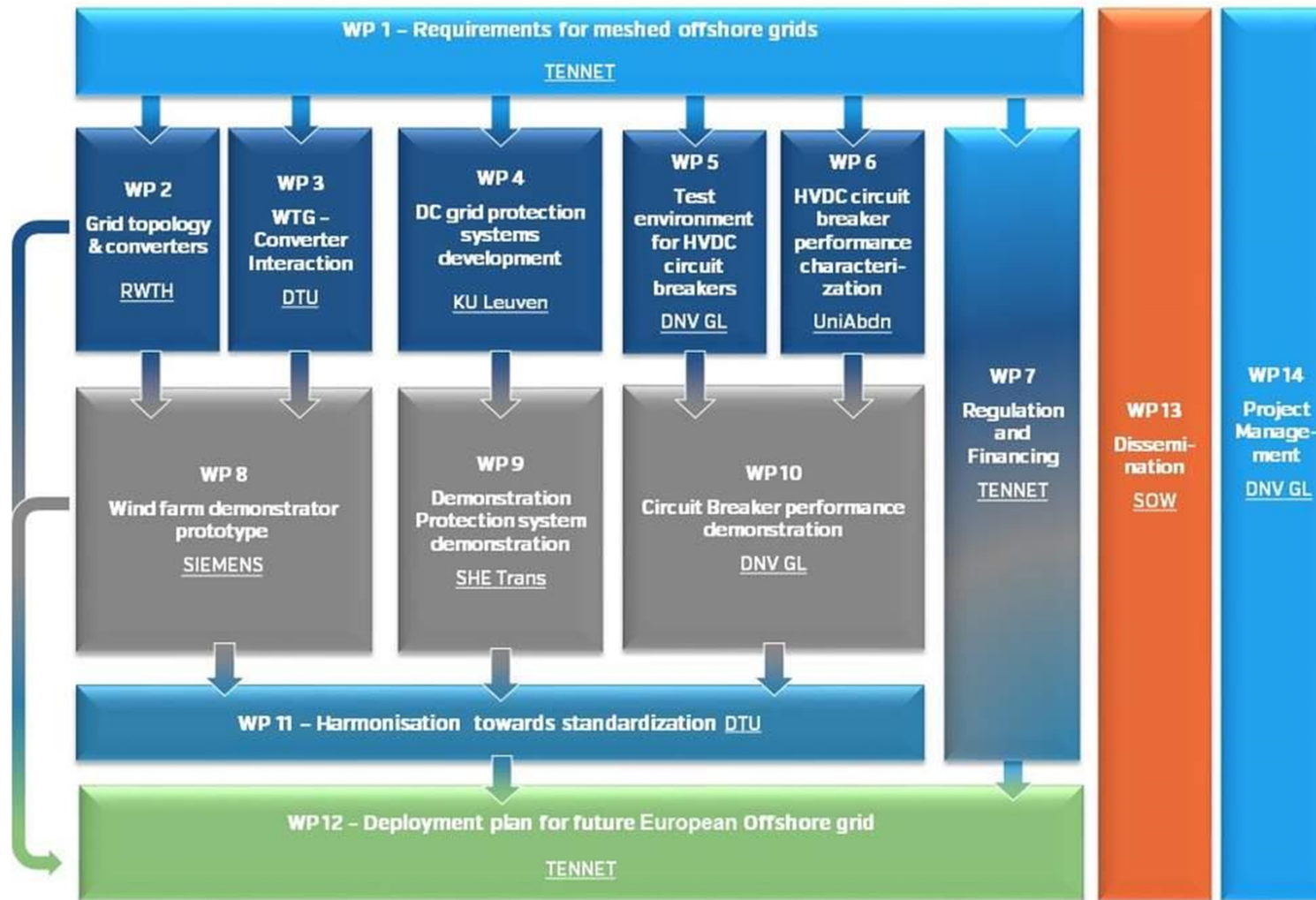
Prysmian assists with cable parameters and modeling approaches.

Prysmian will use its engineering knowledge to support the WP2 providing cable parameters and contributing to the cable model.



2 – PRYSMIAN GROUP CONTRIBUTION

PROMOTiON STRUCTURE



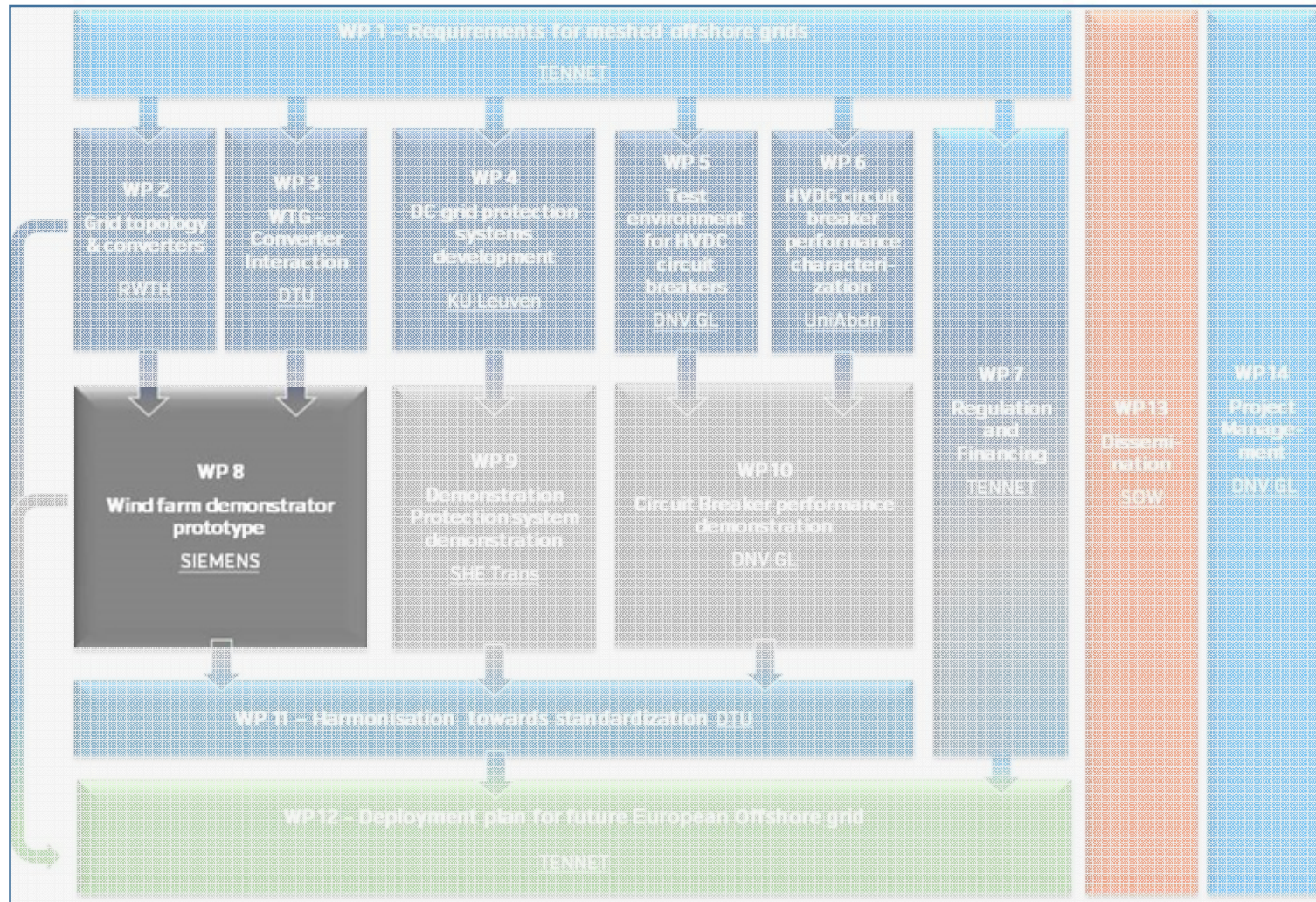
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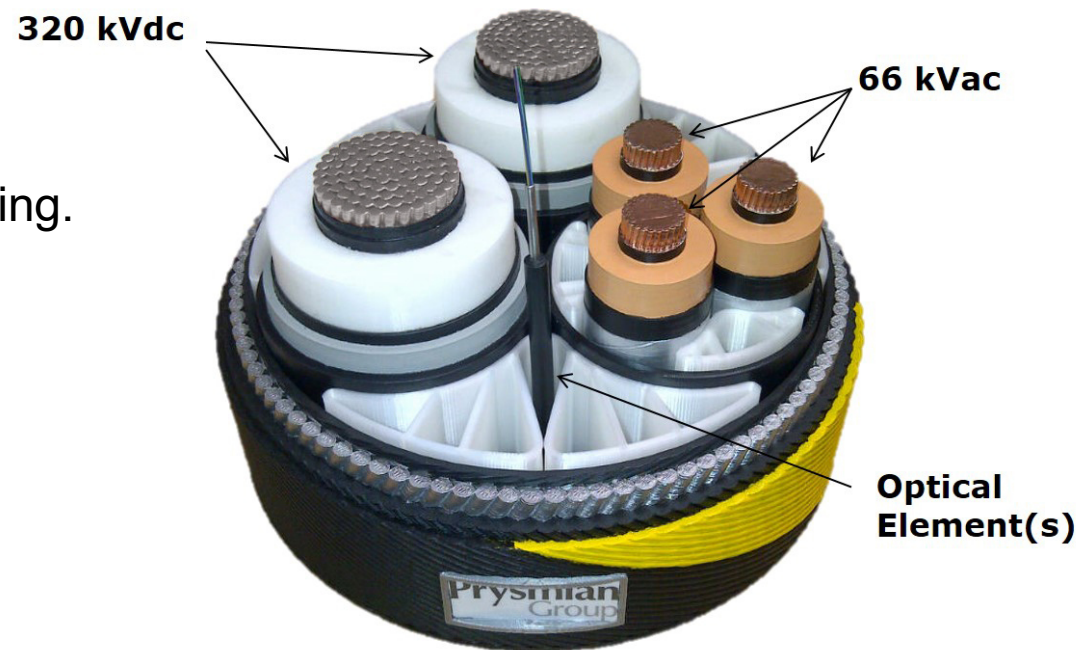


WP8 – WIND FARM DEMONSTRATOR PROTOTYPE

*“The work package covers all **design, build and operation tasks** for demonstrating a diode rectifier converter technology, connecting an existing wind farm to the onshore grid. **It shall proof the functionality and feasibility of the new technology.**”*

Task 8.4 : Cable design and testing.
Leader: Prysmian

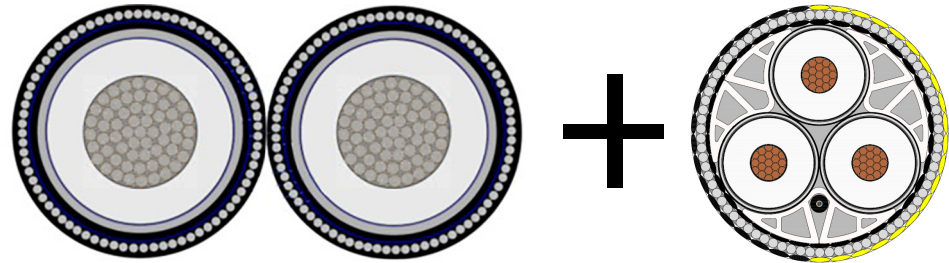
Task 8.5 : Manufacturing and installation of cable and cable accessories. Leader: Prysmian



TRADITIONAL vs. INNOVATIVE options

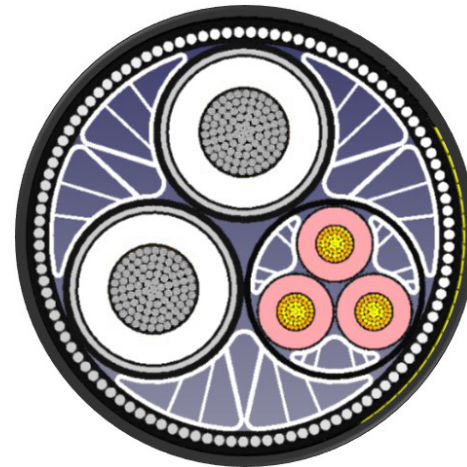
Two HVDC bundled cables + One HVAC threecore cable

- ✓ HVDC cable technology
- ✓ HVAC cable technology
- X Three cables
- X Two installation processes
- X Two routes



One Hybrid three-core cable

- ✓ One cable
- ✓ One installation process
- ✓ One route
- ✓ HVDC cores technology
- ✓ HVAC cores technology



PRODUCTION & TESTING

Phase	TRL	Definition
System test, launch and operation	9	Actual system proven in operational environment
	8	System complete and qualified
System development	7	System prototype demonstration in operational environment
Technology demonstration	6	Technology demonstrated in relevant environment
	5	Technology validated in relevant environment
Technology development	4	Technology validated in lab
Research to prove feasibility	3	Experimental proof of concept
Basic technology research	2	Technology concept formulated
	1	Basic principles observed

(European Commission definition)



Pikkala plant - Finland

Prysmian is ready to produce and test the cable in order to supply a reliable submarine system for the Promotion's demonstrator and for future applications.



APPENDIX

DISCLAIMER & PARTNERS

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The opinions in this presentation are those of the author and do not commit in any way the European Commission

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THANK YOU



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