

# Italian – Norwegian Energy Dialogue

Interconnecting Europe for a more efficient and sustainable use of energy resources

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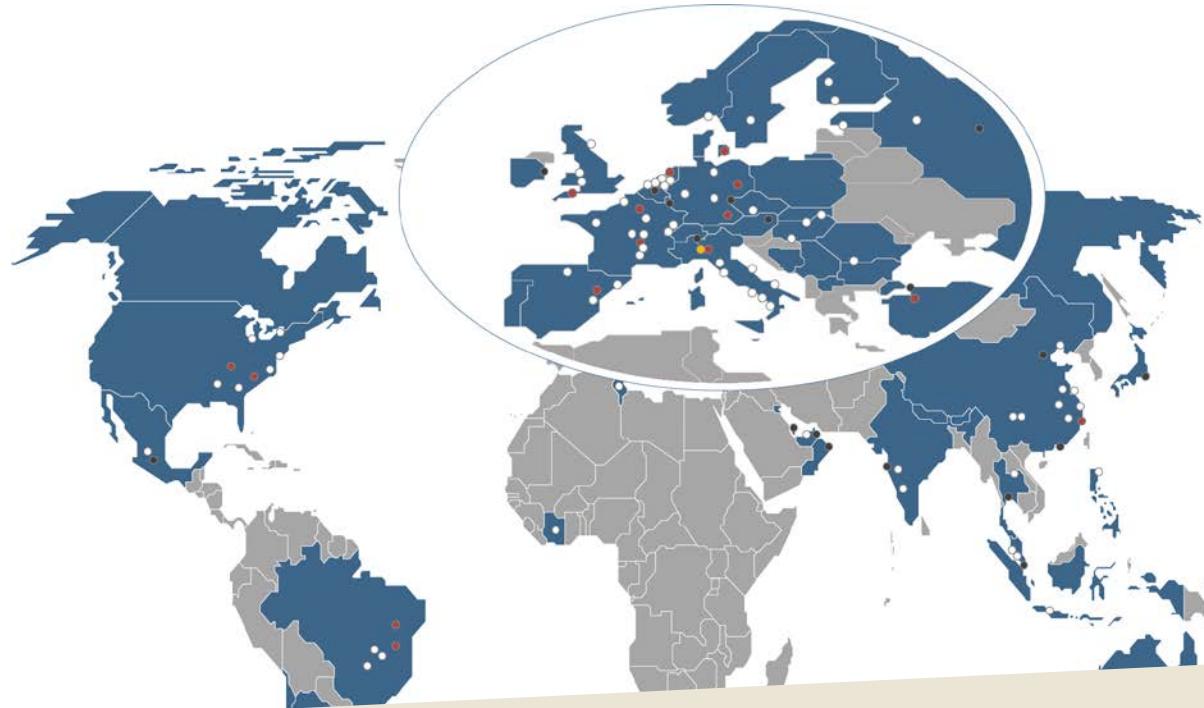
# A truly global group

- HQ + HQ R&D

- Plant

- Plant + R&D centre

- Office



Almost **140**  
years of  
history



**50**  
countries



**88**  
plants



**17** R&D  
centres



Over  
**19,000**  
employees



€ About **7.5**  
billion  
sales in 2015

# Large pipeline of INTERCONNECTIONS projects under development

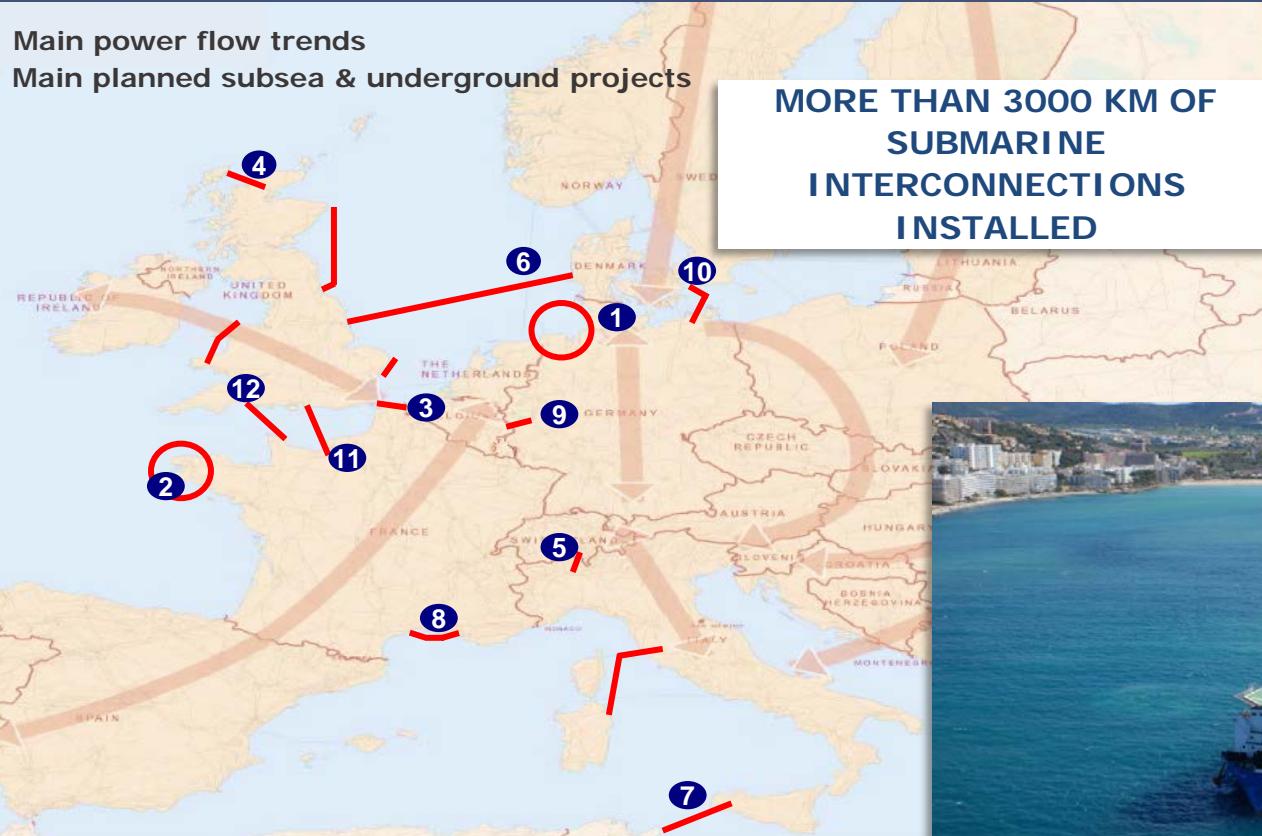
## Main subsea and underground projects of pan-European significance



Main power flow trends



Main planned subsea & underground projects



## Projects' list

1. Germany (HVDC Grid Offshore)
2. France Off-Shore
3. France – UK (Eurotunnel)
4. Western Isles Link
5. Green Connector
6. Denmark – UK (Viking Link)
7. Tunisia – Italy
8. Marseille – Languedoc
9. ALEGrO (Belgium – Germany Aachen-Liège Electric Grid Overlay)



# Large track record of OFFSHORE WIND FARM projects

- **84 OFFSHORE WIND FARMS** in 11 Eu countries
- **6 ONGOING PROJECTS** in Germany, the Netherlands and the UK
- **TOTAL CAPACITY: 11 GW** (12.9 GW with on-going projects)

**ROBIN RIGG - UK**  
HVAC 132 kV  
3x300 mm<sup>2</sup>

**BARROW - UK**  
HVAC 33 kV  
various sizes

**WALNEY I and II - UK**  
HVAC 132 kV 3x800 mm<sup>2</sup>  
33kV various sizes

**ORMONDE - UK**  
HVAC 132 kV 3x800 mm<sup>2</sup>  
33 kV various sizes

**EGMOND - NL**  
33 kV  
various sizes

**GREATER GABBARD - UK**  
HVAC 132 kV  
3x800 mm<sup>2</sup>

**GUNFLEET SANDS - UK**  
HVAC 132 kV 3x800 mm<sup>2</sup>  
33kV various sizes

**THANET - UK**  
HVAC 132 kV  
3x1000 mm<sup>2</sup> and 3x630 mm<sup>2</sup>  
33 kV various sizes

**SYLWIN1 - GER**  
HVDC ± 320 kV various sizes  
159 km + 45 km  
**BUTENDIEK - GER**  
HVAC 155 kV 3x400 mm<sup>2</sup>

**NYSTED - DK**  
HVAC 132 kV  
3x760 mm<sup>2</sup>

**WIKINGER - GER**  
MV 33 kV various sizes

**WEST OF ADLERGRUND - GER**  
HVAC 220 kV 3x1200 mm<sup>2</sup>

**HELWIN1 - GER**  
HVDC ± 250 kV various sizes  
85 km + 45 km  
HVAC 155 kV 3x400 mm<sup>2</sup>

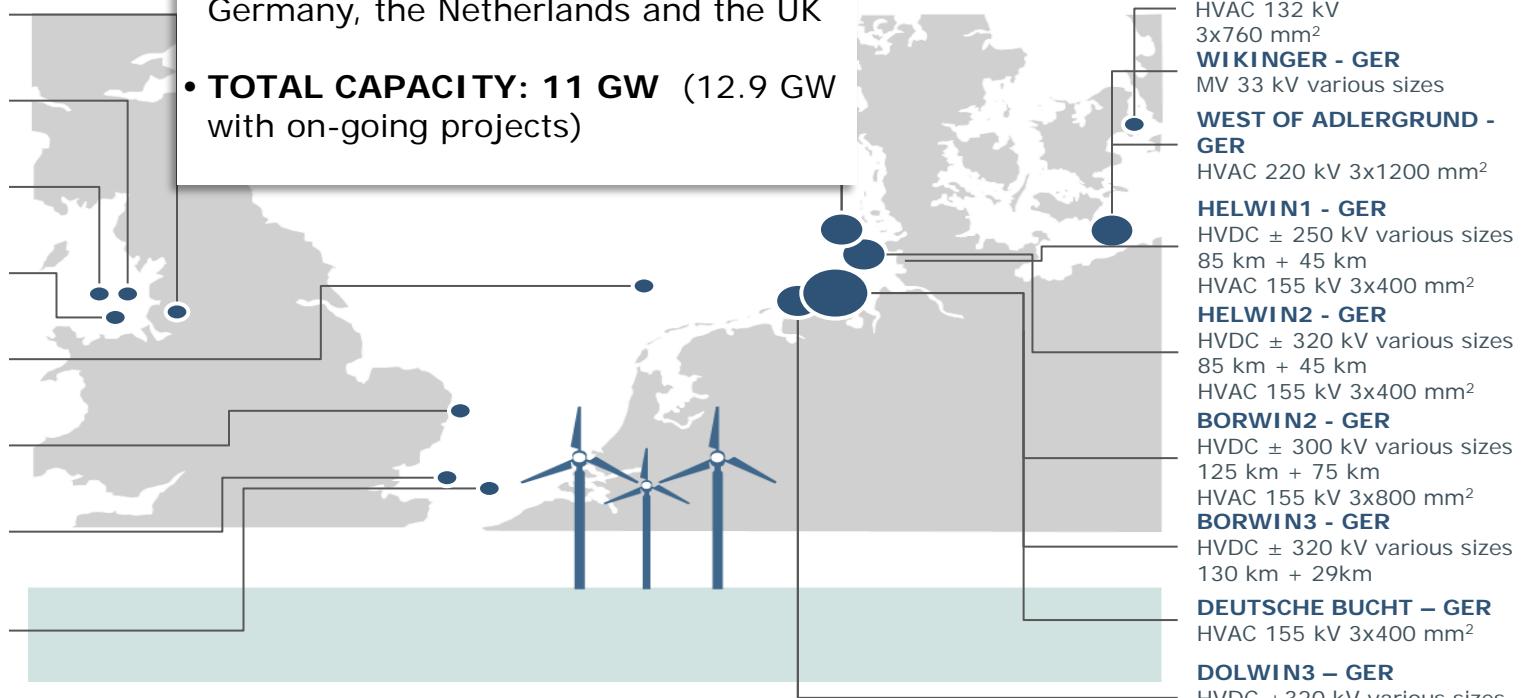
**HELWIN2 - GER**  
HVDC ± 320 kV various sizes  
85 km + 45 km  
HVAC 155 kV 3x400 mm<sup>2</sup>

**BORWIN2 - GER**  
HVDC ± 300 kV various sizes  
125 km + 75 km  
HVAC 155 kV 3x800 mm<sup>2</sup>

**BORWIN3 - GER**  
HVDC ± 320 kV various sizes  
130 km + 29km

**DEUTSCHE BUCHT – GER**  
HVAC 155 kV 3x400 mm<sup>2</sup>

**DOLWIN3 – GER**  
HVDC ±320 kV various sizes  
78 km + 83 km



# Off shore wind farm sample configuration

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# Prysmian operations in German off shore wind farms

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# NSL project - UK to Norway interconnector



Blyth 400kV  
Substation

Converter Station &  
Underground Cable

Subsea Cable

- Total route length: 740 Km
- Voltage:  $\pm 525$  kV
- Rated Power: 1400 MW
- Cable tech.: Mass Impregnated
- Owners: Statnett & National Grid NSL Limited

Converter Station &  
Underground Cable

Kvilldal 420kV  
Substation



# Thank you

