



High Voltage cable systems

Maxime Toulotte



Worldwide leading expert in cable systems

Headquarters in Paris

- Industrial presence **in 40 countries** and commercial activities **worldwide**
- **26,000** local experts
- Listed on the NYSE Euronext Paris



€5.8 billion Sales* in 2016

* Sales at actual metal price

Integrated Solutions for Marine Energy

Full range of services

- Export cables
- Inter-array cables
- Cable Power accessories
- Turbine cables (WINDLINK)
- Submarine cable Laying & Protection
- Termination & Testing



High Voltage Cables

Specialized factories and know-how

- Typical OWF export cables:
 - 245 kV, up to $3 \times 1800\text{mm}^2$
 - Up to $\text{Ø} = 260 \text{ mm}$, 140 kg/m
- Factories in Norway, Germany, Belgium, France
 - Engineering
 - Specific equipments, large machines
 - R&D, Testing



Local content: key for success

Numerous local activities

- Cable manufacturing
- Project Management
- Engineering
- Mechanical accessories
- Civil Work
- Jointing
- Termination & Testing



Experience from all the oceans

Diversified complex projects

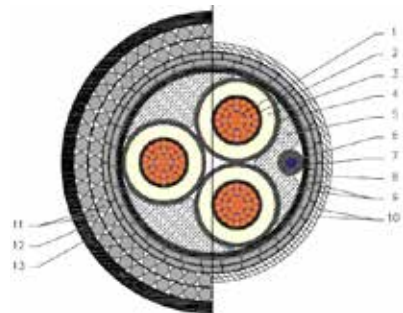
- Interconnectors
 - NordLink, NSL, ...
- Offshore Wind
 - Beatrice OWF, East Anglia One OWF, ...
- Electrification of Oil & Gas platforms
- Island connexions



Pioneering in Floating Wind

Hywind Demo (Norway), 2009

- World's first **floating wind turbine**
 - 14 km offshore
 - 220 m water depth
- Dynamic cable system in **turnkey**
 - Cable supply ($\varnothing = 125$ mm, 44 kg/m)
 - Accessories
 - Laying & Protection, Termination & Testing



Large Offshore Wind farm connections

East Anglia One OWF (UK)

- 102 Wind Turbines
- 714 MW
- 2017 - 2020

- Turnkey contractor
 - 2 x 85 km, 245 kV
 - Installation: Deepocean





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Thank you for your attention

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