

Johan Karlstrand, ABB AB High Voltage Cables, 2010-10-19

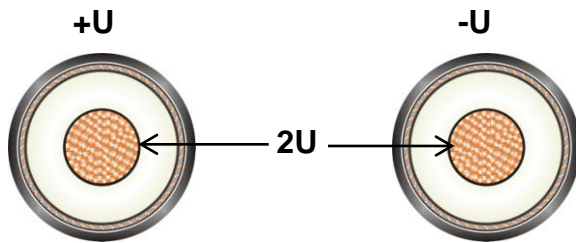
A future grid of extruded DC cables?

Contents

- Power and Voltage Range
- Applications
- Some Projects
- Future?

Power and Voltage Range

- Three standardized system voltages
 - ± 80 kV
 - ± 150 kV
 - ± 320 kV



} **Almost 1 GW per circuit**

- Power depends on
 - Voltage
 - Conductor type and cross-section area
 - Soil conditions

Applications

Oil & gas



Offshore Wind



Bulk transport



Trading

Some Projets

- **Oil & Gas - Troll A project**

- Customer – Statoil in Norway
- Power – 80 MW
- Voltage – 160 kV (± 80 kV)
- Cable length
 - 4 x 68 = 272 km
- Commissioning year 200



- **Wind - NordE.ON 1 project**

- Customer – E.ON Netz, Germany
- Power – 400 MW
- Voltage – 300 kV (± 150 kV)
- Cable length
 - subm. 2 x 120 = 240 km
 - land 2 x 75 = 150 km
- Commissioning year 2009



Some Projets

- **Bulk Transport - Estlink**

- Customer – AS Nordic Energy Link
- Power – 350 MW
- Voltage – 300 kV (± 150 kV)
- Cable length
 - subm. $2 \times 74 = 148$ km
 - land $2 \times 31 = 62$ km
- Commissioning year 2006

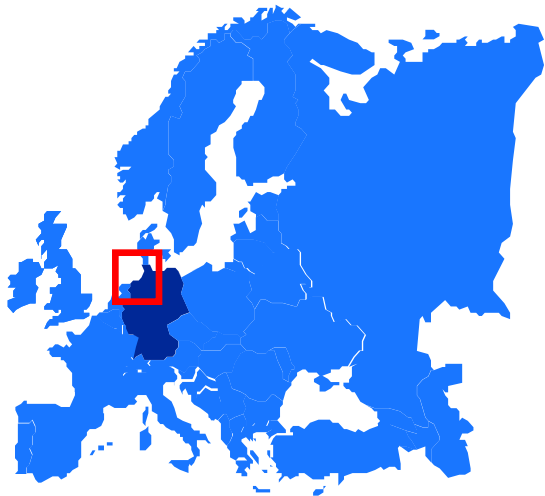


- **Trading - Murraylink**

- Customer – TransÉnergie
- Power – 200 MW
- Voltage – 300 kV (± 150 kV)
- Cable length
 - $2 \times 180 = 360$ km
- Commissioning year 2002

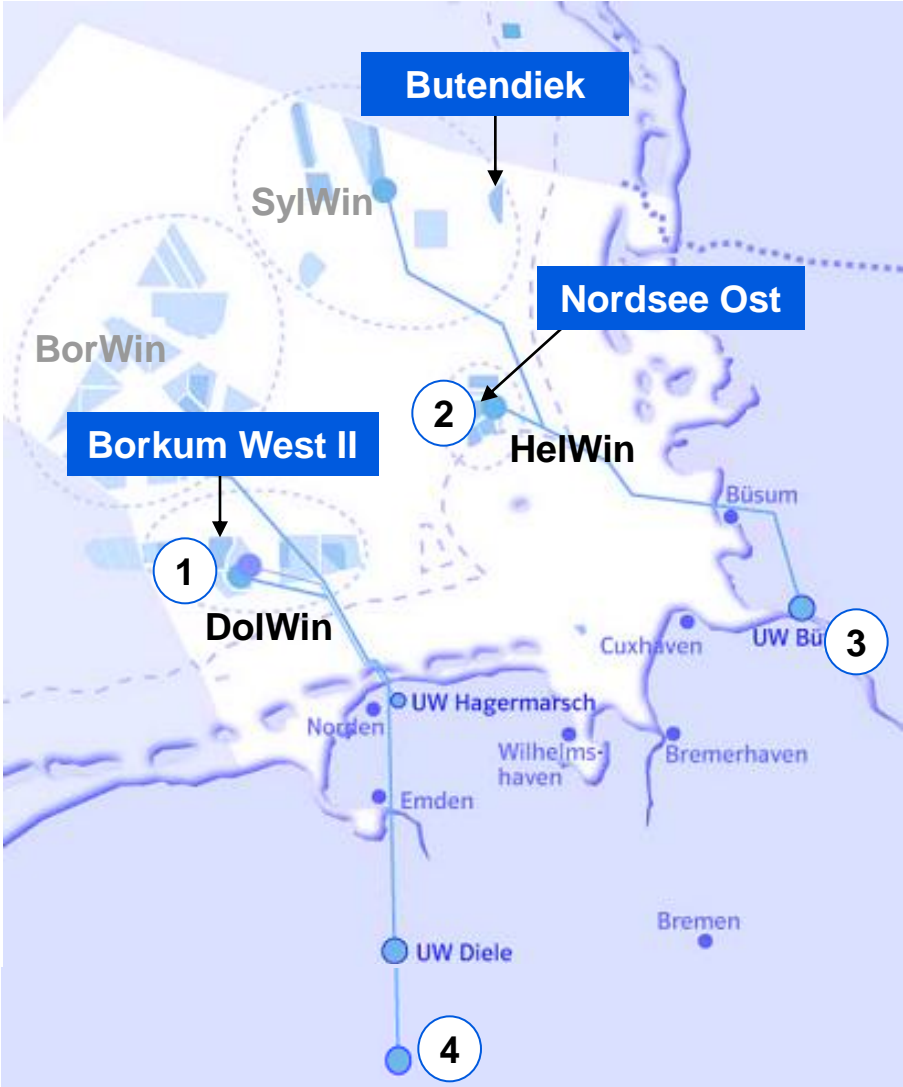


Some Projects

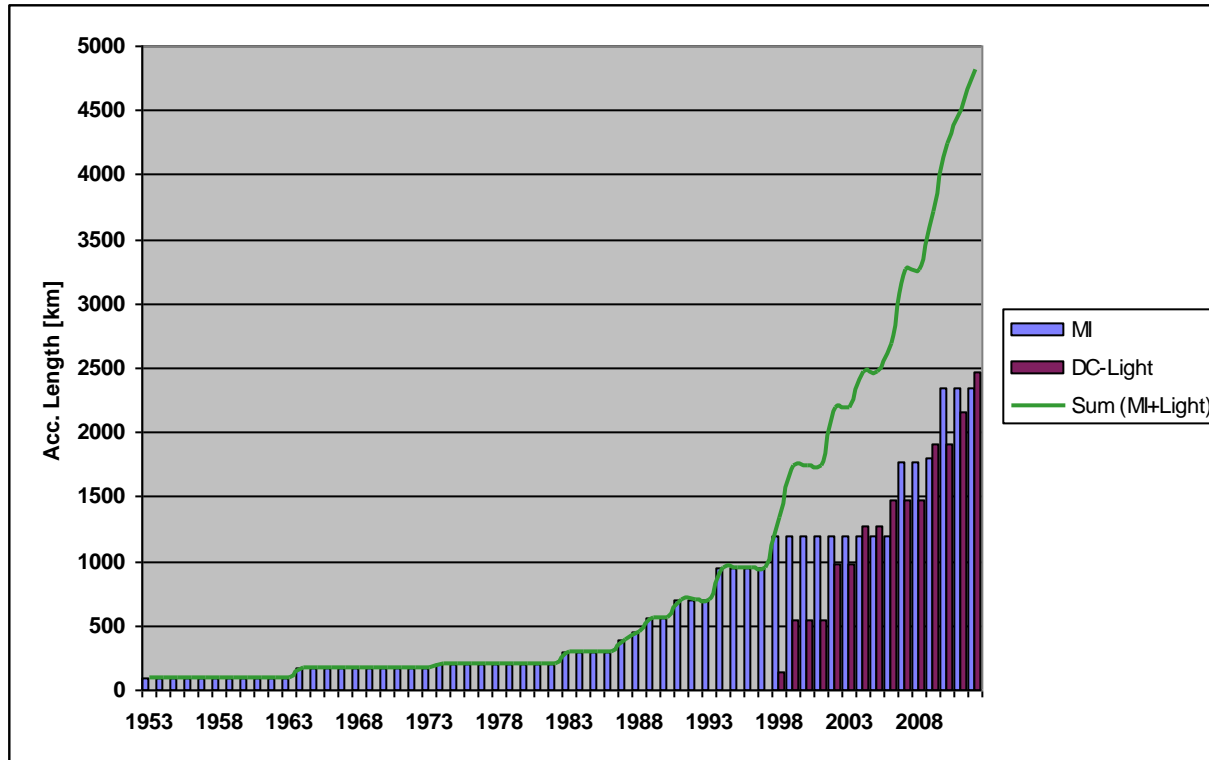


DolWin 1

- ± 320 kV HVDC Light
- 2x75 km submarine cable
- 2x90 km land cable

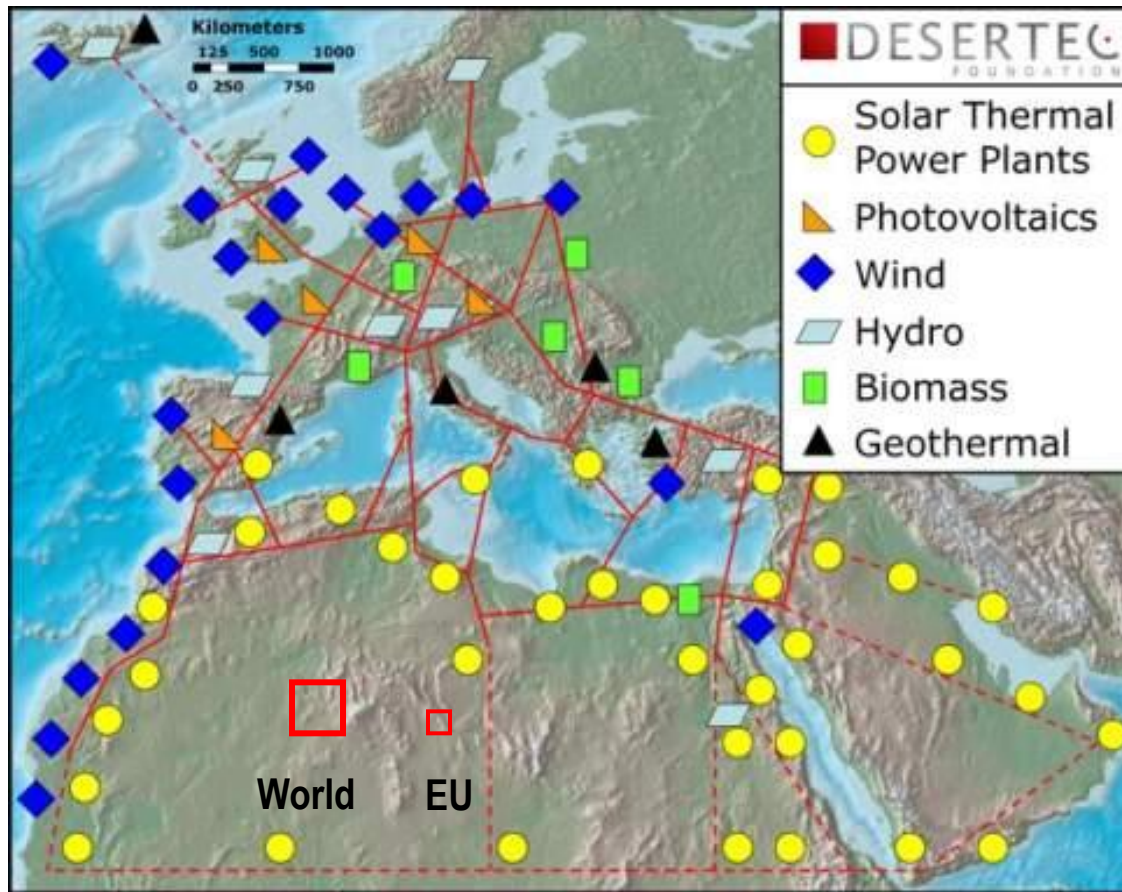


Growth of DC-cables (HVDC-Light and MI) from ABB



- **More HVDC-Light cables in 12 years than MI-Cables in 60 years**
- **The last 12 years the growth has increased 15 times!**
- **Both MI and HVDC-Light cables have a good potential**

Vision of a Supergrid



Advice from Henry Ford's lawyer, 1922:

"The horse is here to stay, but the automobile is only a novelty – a fad"