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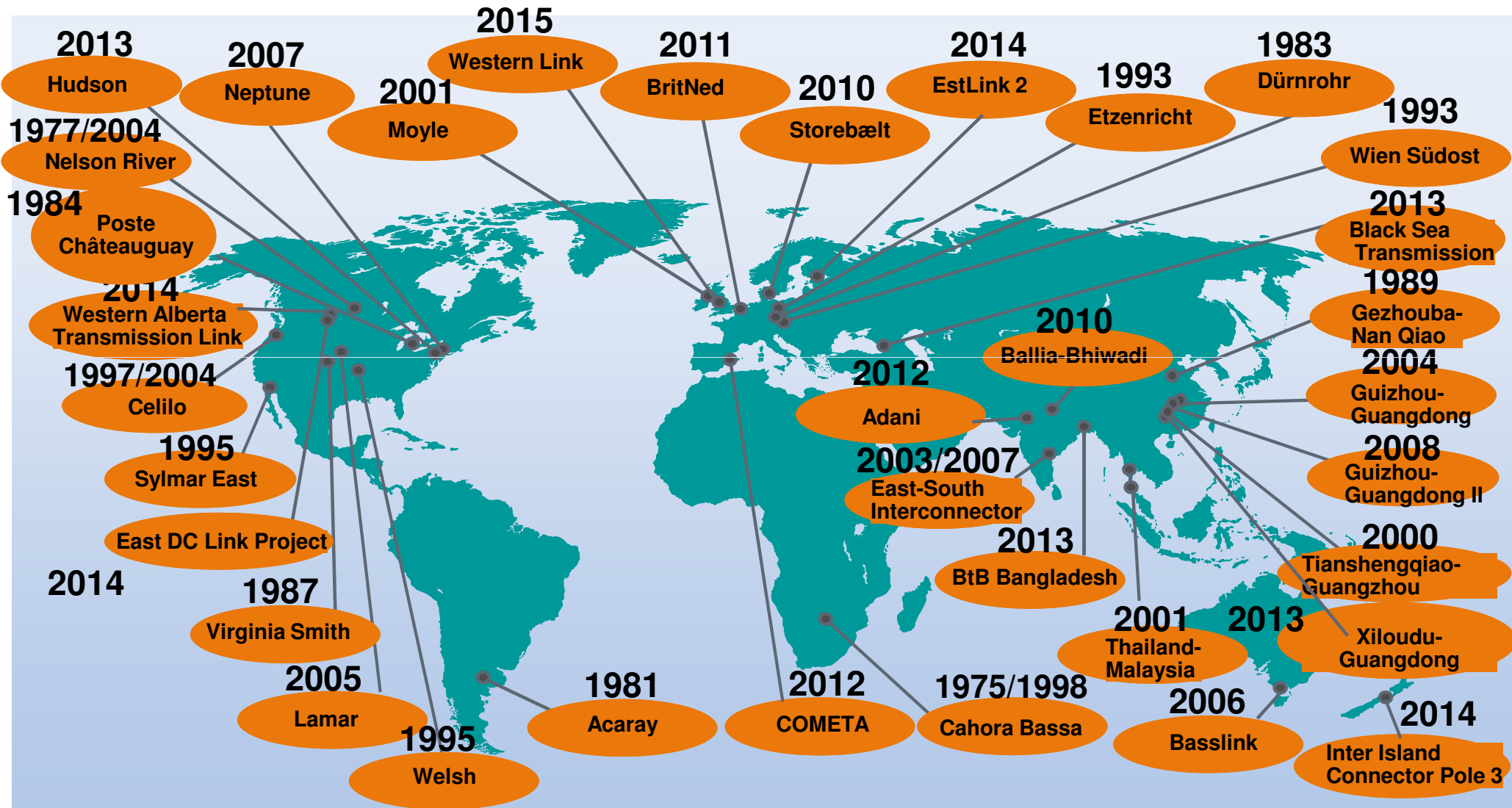


Peter Kohnstam, 22 April 2013, United States Department of Energy

High Voltage Direct Current Transmission

HVDC Classic – LCC Technology

HVDC Classic- Siemens Experience



Hudson Transmission Project Ridgefield (New Jersey), USA, 2013



Customer	Hudson Transmission Partners LLC.
Project Name	Hudson Transmission Project
Location	Ridgefield, NJ
Power Rating	600 MW
Type of Plant	HVDC Classic B2B, monopolar
Voltage Levels	170 kV DC 345/230 kV AC, 60/60 Hz
Semiconductors	LTT

Hudson Transmission Project Ridgefield (New Jersey), USA, 2013



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Black Sea Transmission Project, Georgia, 2013



Customer	Energotrans Ltd.
Project Name	Black Sea Transmission Network
Location	Akhaltsikhe, Georgia
Power Rating	2 x 350 MW
Type of Plant	HVDC Classic
	Back-to-Back
Voltage Levels	96 kV DC
	500/400 kV AC, 50/50 Hz
Type of Thyristor	LTT 8 kV

Black Sea Transmission Project, Georgia, 2013



Yunnan-Guangdong, China, 2010



Customer	China Southern Power Grid
Project Name	Yunnan-Guangdong
Location	Chuxiong City/Yunnan Zengcheng City/Guangdong
Power Rating	5000 MW
Type of Plant	UHV DC Bipolar 1418 km long distance
Voltage Levels	± 800 kV DC 525 kV AC, 50 Hz
Type of Thyristor	LTT 8 kV

World's first UHV DC transmission project with 800 kV in commercial operation.

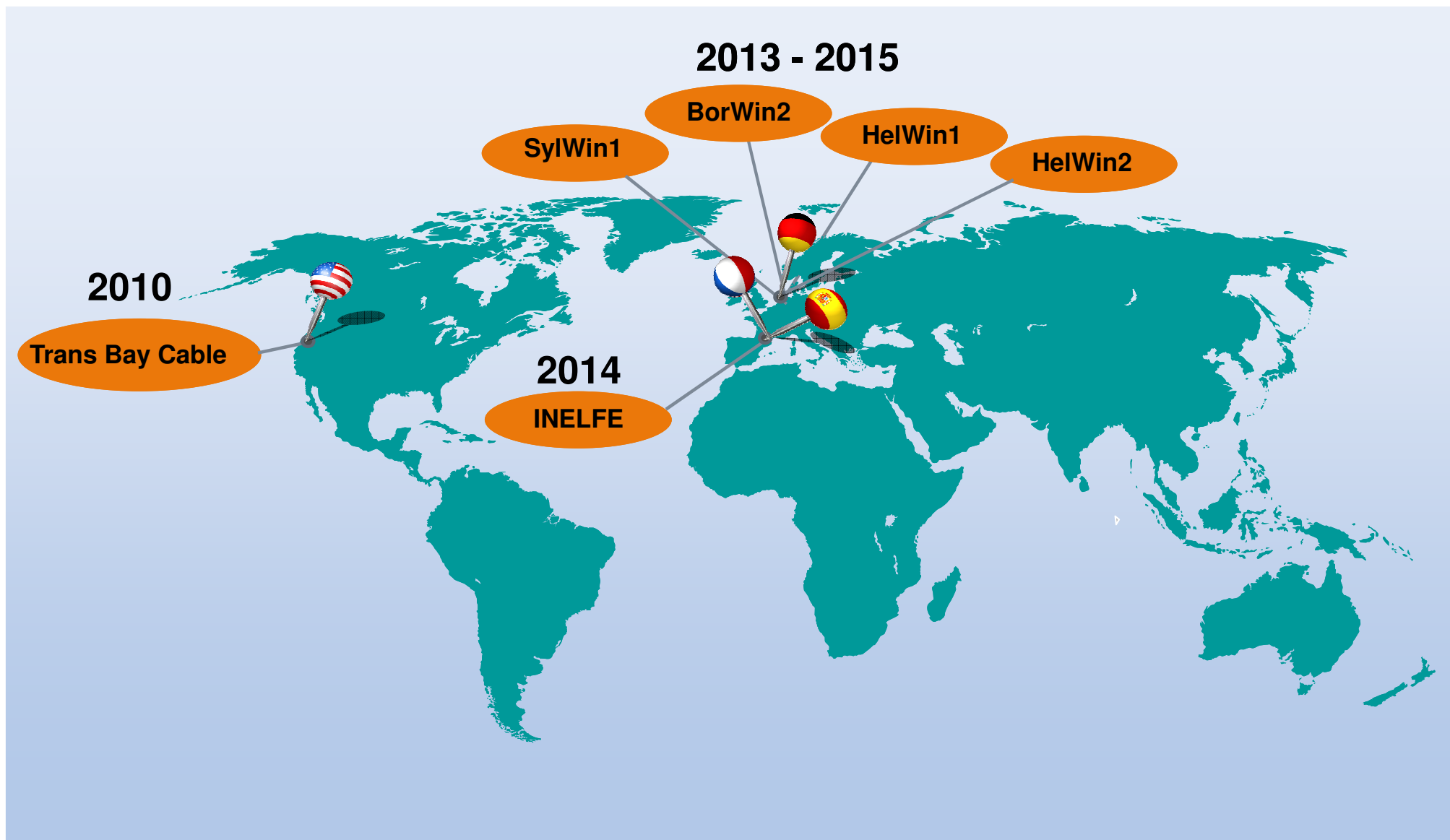


Yunnan-Guangdong, China, 2010



HVDC PLUS – VSC Technology

HVDC PLUS – Siemens Experience



INELFE, France-Spain, 2014



Customer	INELFE (Rte and REE)
Project Name	INELFE
Location	Baixas, France to Santa Llogaia, Spain
Power Rating	2 x 1000 MW
Type of Plant	60 km HVDC PLUS Underground Cable
Voltage Levels	± 320 kv DC 400 kV AC, 50 Hz
Semiconductors	IGBT

World's first HVDC Project in VSC Technology with each 1000 MW transmission capacity (HVDC PLUS).

INELFE, France-Spain, 2014



INTERCONEXIÓN HVDC PLUS, FRANCIA – ESPAÑA, SANTA LLOGAIA D'ALGUEMA, GIRONA
www.taryr.es Tel. 914400918 N° de Imagen: 075110 Fecha y Hora de Toma: 02/03/2013 - 14:35



North Sea Projects in Germany



TenneT Clusters

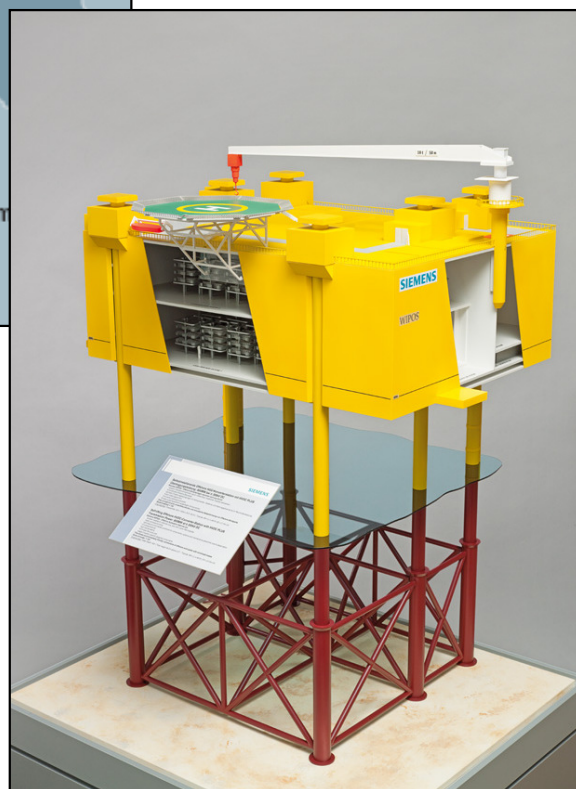
In Service
 BorWin1 400MW

In Construction
Siemens
 SylWin1 864MW
 HelWin1 576MW
 BorWin2 800MW
 HelWin2 690MW

In Construction
ABB
 DoIWin1 800MW
 DoIWin2 924MW

Proposed
 DoIWin3 900MW
 BorWin3 900MW
 BorWin4 900MW
 DoIWin4 900MW
 BorWin5 900MW
 SylWin2 900MW

BorWin2, Germany, 2013



Customer	TenneT
Project Name	BorWin2
Location	Diele, Germany
Power Rating	800 MW
Type of Plant	200 km HVDC Plus On-/Offshore Cable
Voltage Level	± 300 kV DC 400 kV/155 kV AC, 50 Hz
Semiconductors	IGBT

BorWin2 Offshore Windfarm

800 MW offshore HVDC PLUS link



Year of Award	2010
Wind Capacity	800 MW
Top Side Dimensions	App. 70 x 50 x 35 m
Weight Top Side	> 10,000 t
Voltage	±300 kV
Transmission Type	HVDC PLUS
Export Cables	2
Length of Export Cables	200 km
Service Life	30 years
Client	TenneT TSO
Platform Fabricator	Nordic Yards
Fabrication Location	Warnemunde, GER
Installation Location	North Sea, GER

More Information



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