

HVDC & SVC Light - Reference list

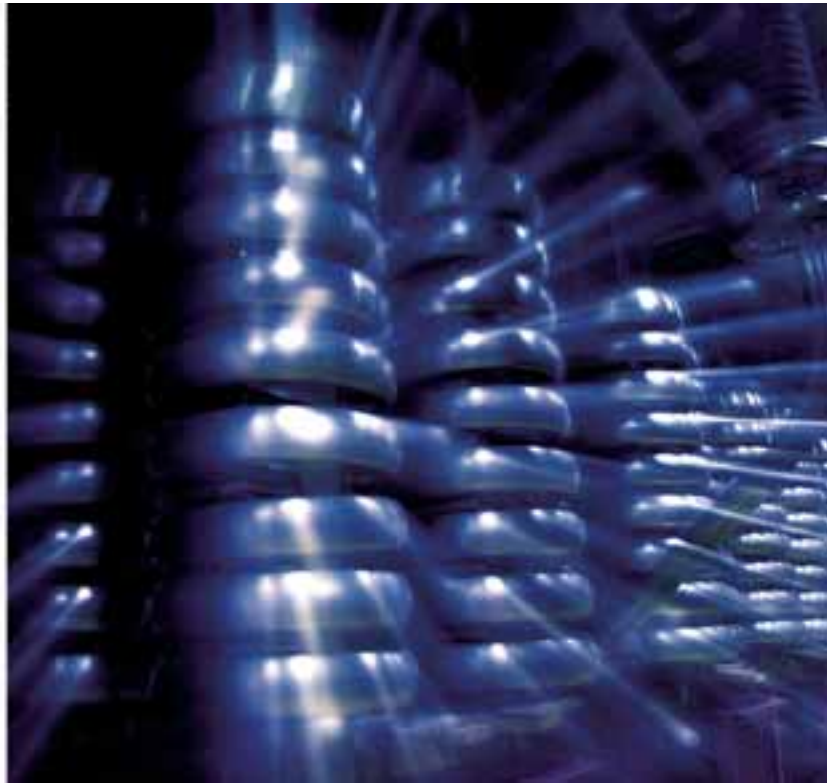
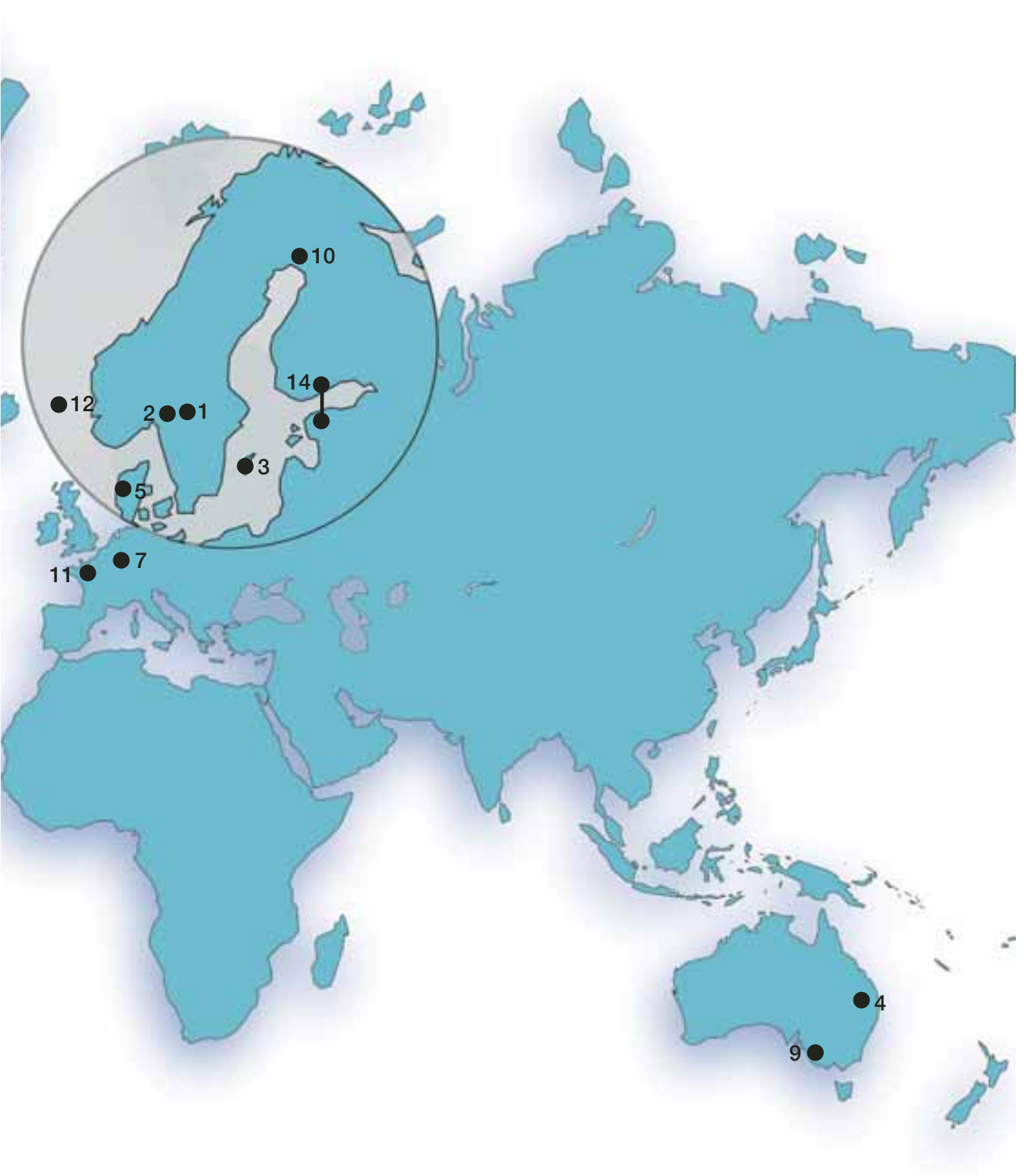


ABB HVDC & SVC Light Projects Worldwide

- 1 Hällsjön
- 2 Hagfors
- 3 Gotland
- 4 Directlink
- 5 Tjæreborg
- 6 Eagle Pass
- 7 Moselstahlwerke
- 8 Cross Sound Cable
- 9 Murraylink
- 10 Polarit
- 11 Evron
- 12 Troll A
- 13 Holly
- 14 Estlink





SCHEME	1. HÄLLSJÖN	2. HAGFORS	3. GOTLAND
Commissioning year	1997	1999	1999
Power Transmitted, MW	3	NA	50
Direct voltage, kV	±10	–	±80
Converters per station	1	1	1
Direct voltage per converter, kV	±10	–	±80
Direct current, A	150	–	360
Reactive power range, MVar	±3	0 - 44	+50 / -55
Converter station location and AC grid	Hällsjön, 10 kV, 50 Hz Grängesberg, 10 kV, 50 Hz	Hagfors, 36 kV, 50 Hz	Näs, 77 kV, 50 Hz Bäcks, 77 kV, 50 Hz
Length of overhead DC line, km	10	NA	–
Cable arrangement	–	NA	Bipolar
Length of cable, km	0,2	NA	70
Grounding of the DC circuit	NA	NA	NA
AC grids at both ends	Synchronous	NA	Synchronous
Control	Active and reactive power	Steel: Reactive power, Flicker mitigation	Active and reactive power AC voltage
Emergency change of power flow	–	NA	–
Main reason for choosing VSC system	Pilot system	Flicker mitigation	Environmental, controllability
Owner	VB Elnät, SWEDEN	Uddeholm, SWEDEN	GEAB, SWEDEN
Main supplier of converter equipment	ABB	ABB	ABB

4. DIRECTLINK	5. TJÆREBORG	6. EAGLE PASS	7. MOSELSTAHLWERKE
2000	2000	2000	2000
3 x 60	7,2	36	NA
±80	±9	-	-
3	1	2	1
±80	±9	-	-
375	358	-	-
+90 / -165	-3 / +4	±36	0 - 38
Terranora, 110 kV, 50 Hz Mullumbimby, 132 kV, 50 Hz	Enge, 10,5 kV, 50 Hz Tjaereborg, 10,5 kV, 50 Hz	Eagle Pass, 138 kV, 60 Hz	Trier, 20 kV, 50 Hz
-	-	-	NA
Bipolar	Bipolar _	-	NA
65	4,4	0 (Back to Back)	NA
NA	NA	NA	NA
Asynchronous	Normally synchronous	Asynchronous	NA
Active and reactive power AC voltage	Active and reactive power, AC-voltage, Variable frequency control	Active and reactive power	Steel: Reactive power, Flicker mitigation
-	-	Runback implemented	NA
Energy trade, Environment, Controllability	Wind Power, Environment, Controllability	Voltage support Power exchange	Flicker mitigation
TransEnergy, USA North Power, AUSTRALIA	Eltra, DENMARK	AEP, USA	RWE Energie, GERMANY
ABB	ABB	ABB	ABB

SCHEME	8. CROSS SOUND CABLE	9. MURRAYLINK	10. POLARIT
Commissioning year	2002	2002	2002
Power Transmitted, MW	330	220	NA
Direct voltage, kV	±150	±150	–
Converters per station	1	1	1
Direct voltage per converter, kV	±150	±150	–
Direct current, A	1200	739	–
Reactive power range, MVar	±150	+140 / -150	0 - 164
Converter station location and AC grid voltage	New Haven, 345 kV, 60 Hz Shoreham, 138 kV, 60 Hz	Berri, 132 kV Red Cliffs, 220 kV	Tornio, 33 kV, 50 Hz
Length of overhead DC line, km	–	–	NA
Cable arrangement	Bipolar	Bipolar	NA
Length of cable, km	40	180	NA
Grounding of the DC circuit	NA	NA	NA
AC grids at both ends	Synchronous	Asynchronous	NA
Control	Active and reactive power, AC Voltage	Active and reactive power, AC Voltage	Steel: Reactive power, Flicker mitigation
Emergency change of power flow	Runback implemented	Runback implemented	NA
Main reason for choosing VSC system	Sea cable	Environment, controllability	Very high flicker mitigation Compactness
Owner	TransEnergie US, USA	TransEnergie US, USA	AvestaPolarit Stainless Oy, FINLAND
Main supplier of converter equipment	ABB	ABB	ABB

11. EVRON	12. TROLL A	13. HOLLY	14 ESTLINK
2003	2005	2004	2006
NA	2 x 41	NA	350
-	±60	-	±150
1	2	1	1
-	NA	-	±150
-	400	-	1230
±17	Troll A: NA Kollsnes: +24 / -20	+110 / -80	±125
Evron, 90 kV, 50 Hz	Troll A, 56 kV Kollsnes, 132 kV	Austin, 138 kV, 60 Hz	Espoo, 400 kV, 50 Hz Harku, 330 kV, 50 Hz
NA	-	NA	-
NA	Bipolar	NA	Bipolar
NA	67 km	NA	105 km
NA	NA	NA	NA
NA	NA	NA	Asynchronous
Railway: Load balancing and active filtering	Motordrive and Motorformer	Reactive power	Active and reactive power, AC voltage
NA	NA	NA	Yes
Active filtering	Platform electrification, environment, CO ₂ -tax	Voltage support Compactness	Asynchronous grids, Long land cables, Voltage control
SNCF/RTE, FRANCE	Statoil, NORWAY	Austin Energy, TEXAS	Nordic Energy Link AS, ESTONIA
ABB	ABB	ABB	ABB



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