



Existing HVDC links in Italy

TERNA's experience on HVDC systems

1967

Biterminal connection SA.CO.I 200 MW, 200 kV between Codrongianos (Sardinia) and San Dalmazio (Tuscany), converter bridges equipped with mercury arc valves.

1987

A third terminal, 50 MW, in Corsica was connected to the link, so SACOI became a multiterminal HVDC connection (first in the world).

1992

Commissioning of new connection 200 kVdc - 300 MW called SACOI 2 obtained through the renovation of the two principal converter stations adopting the new technology of thyristor

2001

Commissioning of 400 kVdc-500 MW Italy-Greece connection between South Italy and Greece (world record for depth of power cable 1000 m)

2009 2010

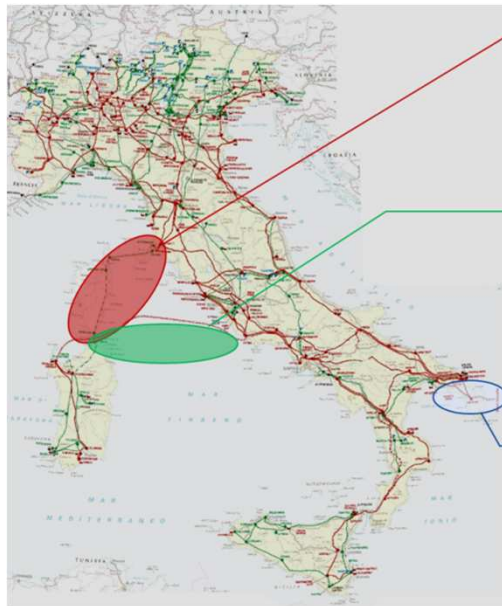
Commissioning of the first pole of 500 kVdc-1000 MW bipolar connection between Sardinia and Italian peninsula (SAPEI) (world record for depth of power cable 1620 m), the first pole is in operation from november 2009

Commissioning of the second pole of bipolar connection SAPEI, second pole is in operation from november 2010

SACOI

GRITA

SAPEI



SA.CO.I.
Unipolar HVDC link (tri-terminal)
200 kV – 300 MW
(Sardinia-Corse-Mainland)

SA.PE.I.
Bipolar HVDC link
500 kV – 1000 MW
(Sardinia – Mainland)

ITALY- GREECE
Monopolar HVDC link
400 kV – 500 MW
(Puglia - Epiro)



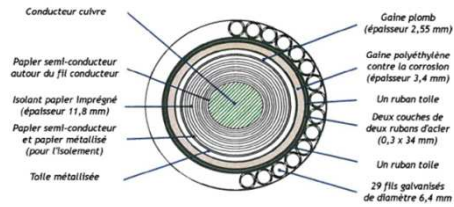
Future HVDC links in Italy

Incoming HVDC projects (planned, under feasibility, permitting phase, authorized)

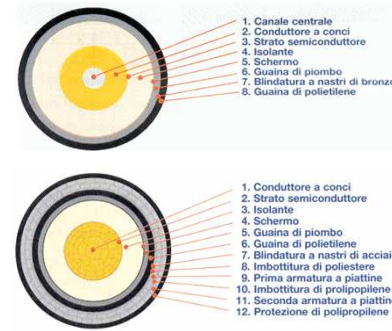


Cables types of the Italian HVDC links

Used models of cables



SA.CO.I.		
	MARINE	TERR.
Nominal Voltage [kV]	200	200
Nominal Current [A]	750	750
Maximum depth [m]	450	
Insulation Type	MIND	MIND
Cable Section [mm ²]	Cu 420	Cu 1080



GR.ITA		
	MARINE	TERR.
Nominal Voltage [kV]	400	400
Nominal Current [A]	1250	1250
Maximum depth [m]	1000	
Insulation Type	MIND	SCFF
Cable Section [mm ²]	Cu 1250	Cu 1200

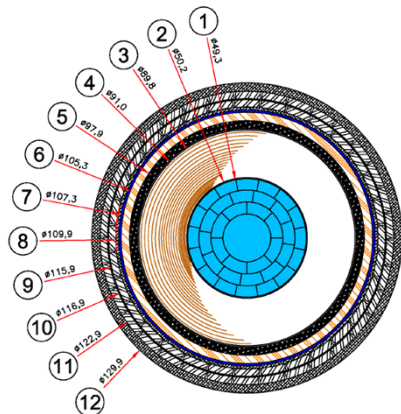


High Depth

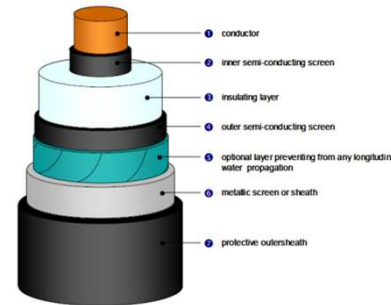


Low Depth

SA.PE.I.			
	LOW DEPTH	HIGH DEPTH	TERRESTRIAL
Nominal Voltage [kV]	500	500	500
Nominal Current [A]	1000	1000	1000
Maximum depth [m]	400	1640	
Insulation Type	MIND	MIND	MIND
Cable Section [mm ²]	Cu 1000	Al 1150	Cu 1400



MON.ITA		
	MARINE	TERR.
Nominal Voltage [kV]	500	500
Nominal Current [A]	1200	1200
Maximum depth [m]	1200	
Insulation Type	MIND	MIND
Cable Section [mm ²]	Al 1900	Cu 1900



Piemonte - Savoie	
Nominal Voltage [kV]	320
Nominal Current [A]	950
Length [km]	200
Insulation Type	XLPE
Cable Section [mm ²]	Al 2500