

HVDC Light

Murraylink connecting Victoria and South Australia



Cable data

Voltage	+/- 150 kV DC
Power	200 MW
Length	2 x 180 km = 360 km
Conductor	1200 and 1400 mm ² Al
Insulation	Polymeric
Weight	7.5 kg/m
Customer	TransÉnergie
Year	2002

Project content

HVDC Light Cable and Accessories
Cable System design
Project Management
Installation, 180 km

2nd order for HVDC Light technology in deregulating Australian market

ABB will design and build a 180-kilometre underground high-voltage power link in Australia. Using ABB's HVDC (high-voltage direct current) Light technology, the link between Victoria and South Australia will enable electricity trading in Australia's deregulating power market.

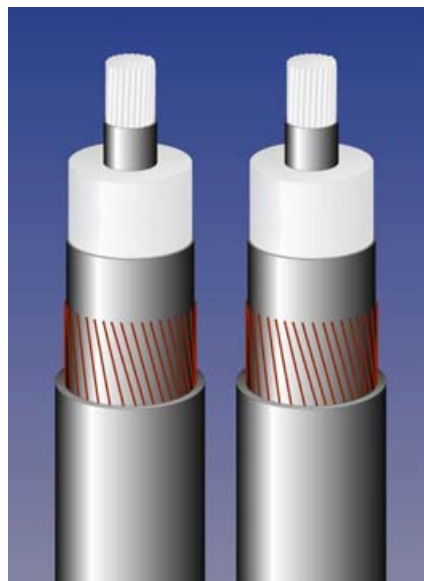
The order was placed by Murraylink Transmission Company Pty, a subsidiary of TransÉnergie, the transmission division of Hydro-Québec, Canada.

ABB will provide a complete HVDC Light transmission system, made up of high-tech extruded cables buried in the ground, with a converter station at each end of the link. The stations convert electricity from alternating current used in the local power grids to direct current for efficient power transmission over longer distances.

The order is the second underground HVDC Light order in Australia. The first was a 65-kilometre link between Queensland and New South Wales. The technology uses high-power semiconductors and advanced cables to reduce the size of the converter stations, cut power losses during transmission, and to permit precise measurement and control of power flows. As a result, it is especially well suited for energy trading applications and to reduce impact on the landscape.

HVDC Light technology

HVDC Light is a concept of modern technology based on bi-polar converters and extruded DC cables with power units up to 300 MW. HVDC Light converters give very high speed control of active and reactive power in both the AC and DC networks. HVDC Light Cable is a cable with extruded polymer insulation and specifically adapted for direct voltage. The strength and flexibility of HVDC Light Cables makes them well suited for severe installation conditions both as an underground land



cable and as a submarine cable. HVDC Light therefore provides the ideal medium for transmitting power over any distance underground or under the sea. HVDC Light Aerial Cables can be used where necessary.

HVDC Light Cable qualification

The HVDC Light polymeric cable system is now qualified up to 150 kV (Um=165 kV). The qualification tests comprised Long Term testing and Type tests, all of which were successful. As of May 2000 538 km of HVDC Light Cable had been commercially delivered for the three projects at Gotland in Sweden, Tjaereborg in Denmark and Directlink in Australia.

New applications with polymeric HVDC Light Cables

Compared with traditional paper insulated cable, polymeric cable has a number of advantages due to its excellent mechanical strength and flexibility. These allow the use of;

- Land cables in steep areas
- Submarine cables in extreme depths of water
- Aerial cables where it is not possible to use land cables.

Cables instead of overhead lines

The increasing demand to use underground cables in place overhead lines has many reasons. These reasons include;

- Storms, falling trees, snow or ice loads do not cause damage to underground cables.
- Underground cables have no impact on areas of natural beauty.
- The land can be used for other purposes.
- No maintenance is required whereas overhead transmission lines require thermographic checks of conductor joints, insulator checks and the constant clearing of growing trees from the power lanes.

Low magnetic fields from HVDC Light Cables

The HVDC Light Cable System has the advantage, due to its bi-polar construction, of virtually eliminating magnetic radiation associated with other systems.

Cable accessories

HVDC Light Cable accessories have been developed for all applications including;

- Cable terminations inside the HVDC Light Converters.
- Prefabricated stiff joints normally used on land cables
- Site moulded flexible joints, normally used on submarine cables.



Prepared for Fiber Optic Cable

Plastic tubes are installed in the 180 km cable trench. This gives an opportunity to pull in a fiber optic, should this be desired in the future.

World's longest land cable transmission

This is an example new possibilities created by the HVDC Light System.

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