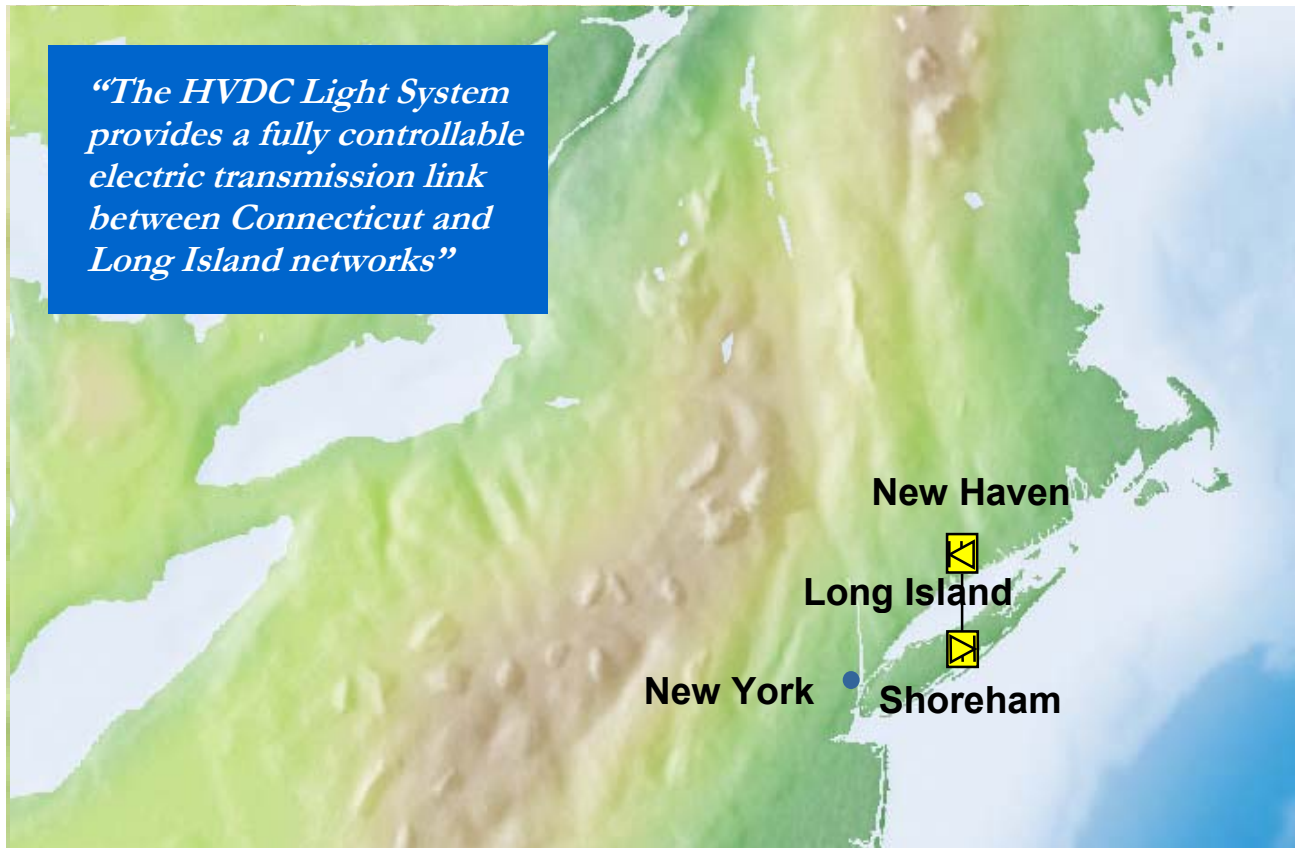


HVDC Light Submarine Cable Link

Cross Sound Cable Project, Connecticut – Long Island



Cable data

Voltage	+/- 150 kV DC
Power	330 MW
Length	2 x 42 = 84 km
Conductor	1300 mm ² Cu
Insulation	Polymeric
Weight	30 kg/m
Customer	TransEnergieUS
Year	2002

Project content

The HVDC Light System:
Project Management
Cable System
Converters
Installation
Trial Operation

The Cross Sound Cable Project is a high voltage, direct current "HVDC" buried submarine cable system that connects the electric transmission grids of New England and Long Island, New York. The Cross Sound cables will provide additional power transfer capability between New Haven, Connecticut and Shoreham, Long Island in either direction.

By virtue of the HVDC Light technology, the Cross Sound Cable Project provides a fully controllable electric transmission between Connecticut and Long Island. The HVDC Light technology allows power flows over the facilities to be directly controlled in a manner not possible over a conventional, free flowing alternating current "AC" transmission line. This ability to directly control the physical flow of energy between two control areas in New England will create tradeable transmission rights, available for sale.

This is an ITP (Independent Transmission Project) developed by TransEnergieUS (a subsidiary of Hydro-Quebec, Canada).

The cable installation in Long Island Sound

The two HVDC Light power cables and the fiber optic cable were laid bundled together to minimise the impact on the sea bottom and to protect oysters, scallops and other living species.

The cables were buried six feet into the sea floor to give protection against fishing gear and ships anchors.

HVDC Light technology

HVDC Light is the modern technology based on bipolar converters and extruded DC Cables.

HVDC Light converters give very high-speed control of both active and reactive power in both networks.

HVDC Light cable is a cable with insulation of extruded polymer and specifically adapted for direct current. The strength and flexibility make the HVDC Light cables well suited for severe installation conditions both underground as a land cable and as a submarine cable at sea. HVDC Light provides an excellent combination for transmitting power over any distances with underground or submarine routes. HVDC Light Aerial Cables can be used where necessary.

HVDC Light Cable Experience

The HVDC Light polymeric cable system is now qualified up to 150 kV ($U_m=165$ kV). The qualification tests have comprised Long Term Tests at higher stresses and Type Tests successfully performed.

1000 km of HVDC Light Cables 2002

The amount of commercially delivered HVDC Light cables is now (May 2001) 538 km for the three projects Gotland in Sweden, Tjaereborg in Denmark, and Directlink in Australia. This project adds 84 km and the Murraylink project connecting South Australia and Victoria adds 360 km, thus totalling almost 1000 km.

New applications with polymeric HVDC Light Cables

Compared with traditional paper insulated cables, the polymeric cable has an advantage because of its excellent mechanical flexibility and strength, leading to new applications:

- Land cables also in steep areas.
- Submarine cables for extreme depth.
- Aerial cables where land cable cannot be used.

- Storms, falling trees, snow and ice loads do not harm underground cables.
- Cables do not harm the impact of beautiful areas.
- The land can be used for other purposes.
- Overhead transmission lines require maintenance such as clearing of power lanes from growing trees, thermographic checks of conductor jointing sleeves and checks of insulators.

Accessories for the Cables

HVDC Light cable joints and cable terminations have been developed for all applications. For this project the following were utilized:

- Cable terminations matching the HVDC Light Converters.
- Flexible joints with properties like the cable itself.

192 fiber Optic Cable

The submarine Fiber Optic cable is furnished with 192 fibers assembled in 4 ribbons and housed in a slotted core. The water barrier consists of a longitudinal welded copper sheath. The armour is double and rated for a pulling force of 100 kN.

BU Cables

ABB Power Technologies AB

SEHVC M-044E

Telephone
+46 455 556 00

Telefax
+46 455 556 55

E-mail
sehvc@se.abb.com