GE
Grid Solutions

The SouthWest Link

Transmitting Power and Controlling Voltage with HVDC in Sweden

GE's HVDC voltage source converter solution was selected for the construction of converter stations at Hurva and Barkeryd

Imagination at work

250 km long DC connection, combining overhead lines and underground cable, between Barkeryd and Hurva

Customer Challenges

The Need for Balancing the Price of Electricity

The network managers at Svenska kraftnät, the state-owned public utility that transmits electricity from major power plants to regional electrical grids via the national grid, looked at innovative solutions to solve a long-term energy issue in the country - how to balance the price of electricity between the northern and southern sectors. It needed to transmit more power more efficiently to the south where electricity is sometimes more expensive.

The Solution

The SouthWest Link power line project is the single most important investment in Sweden's electricity infrastructure. The overall project has a budget of SEK 7.3 billion and is unique in terms of both scope and technical implementation. The SouthWest Link project also marks an important technological milestone, with the introduction of High Voltage Direct Current (HVDC) Voltage Source Converter (VSC) technology within the national grid.

The SouthWest Link comprises of a 176 km long AC overhead line between Hallsberg and Barkeryd in central Sweden and two stations capable of 720 MW ±300 kV HVDC. The interconnection is between Barkeryd in Central Sweden and Hurva in the south. The HVDC inter-connector is a combination of DC cable and DC overhead lines of approximate 250 km in length. The total transmission capacity of the connection available to the market is 2 x 600 MW although the capacity of the converter stations can reach 2 x 720 MW.

This project will bolster reliability and improve power transmission capacity. The SouthWest Link will reduce the risk of price differences between southern Sweden and the rest of the country, which is particularly important following the introduction of bidding areas in Sweden. The SouthWest Link has been designed and built with the flexibility of multi terminality.

Project Overview

Country:	Sweden
Project:	SouthWest Link
Customer:	Svenska kraftnät
Technology:	High Voltage Direct Current (HVDC), Voltage Source Converter (VSC)
Scope:	2 x 720 MW HVDC interconnection between central and southern Sweden using voltage source converters underground DC cable and overhead line interconnection
Ratings:	±300 kV, 1440 MW

VSC Valves inside the Barkeryd Converter Station Valve Hall

The Hurva station in southern Sweden will have a unique architectural design established in conjunction with local residents to allow the station to blend in with the rural surroundings.

GE's Solution

GE has been providing High Voltage Direct Current (HVDC) solutions for over 50 years and remains one of the pioneers in HVDC technology. GE's high voltage valve and control technology has been used for HVDC transmission schemes worldwide.

GE will provide a full turnkey project including civil works and delivery, the projct scope includes:

- Four converters, two at Barkeryd and two at Hurva
- HVDC VSC valve modules
- Control systems
- 13 transformers
- Wall bushings
- Instrument transformers

The Nordic Supergrid

When utilities start meshing alternating and direct current in one network, this meshed system is known as a Supergrid. This particular project has several important attributes.

- HVDC brings exceptional stability to AC systems when they are interconnected.
- DC, unlike AC, is completely controllable.
- The DC link can be a help to stabilise the grid under fault conditions.

In addition, because this project will be utilising VSC technology, it simplifies the extension of additional future links to other regions, thus forming an open access DC grid.

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