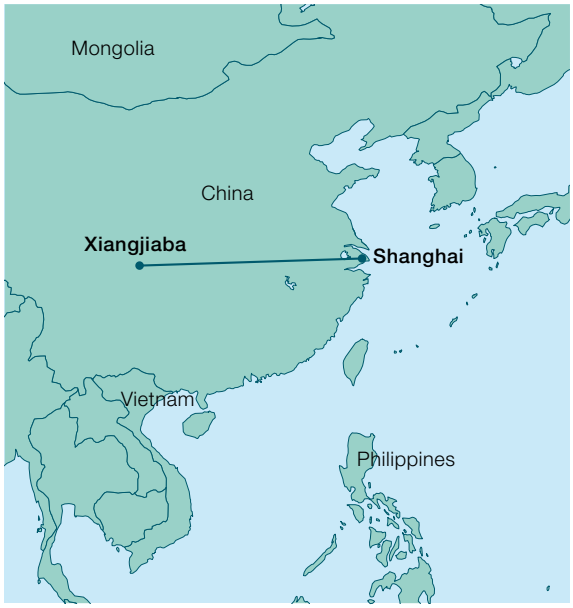
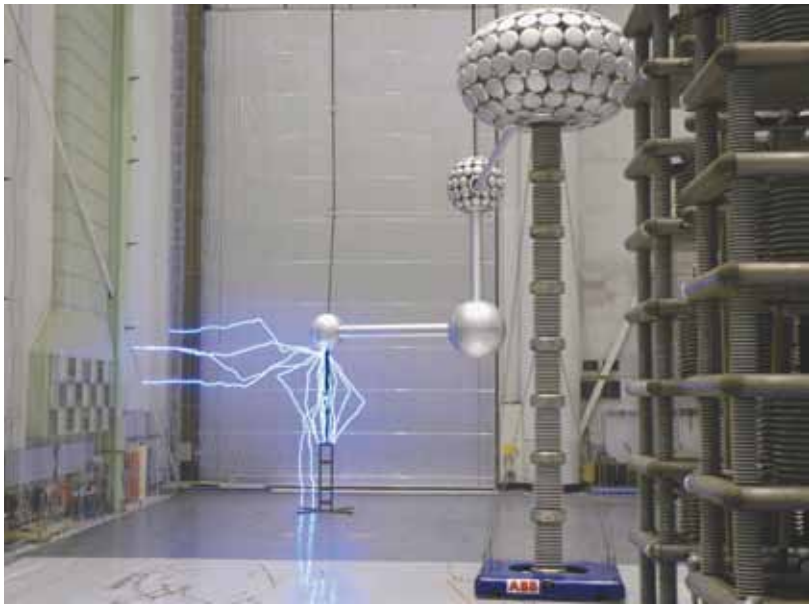
Xiangjiaba - Shanghai ±800 kV UHVDC transmission project
The world's longest transmission link with breakthrough technology



The Xiangjiaba – Shanghai route



Insulation gap tests for the 800 kV development

The State Grid Corporation of China, will transmit 6,400 MW power from the Xiangjiaba hydro power plant, located in the southwest of China, to Shanghai, China's leading industrial and commercial center, located 2,071 km (1,286 miles) away. This will be the largest transmission project ever built when the first pole goes into operation in 2010.

Largest transmission project to be built

The Xiangjiaba - Shanghai transmission link represents a major breakthrough in the technology of electric power transmission in many aspects:

- The new system voltage ±800 kV is 33% higher than the voltage used for the Itaipu ±600 kV transmission in Brazil, until now the world's highest HVDC transmission voltage rating.
- The power rating, 6,400 MW, is more than double the power rating of the most powerful transmission in operation today.
- The overhead line length, 2,071 km, will be the longest overhead transmission in the world, compared with 1,700 km for the Inga-Shaba HVDC transmission in Kongo-Kinshasa, until now the world's longest transmission line.
- The losses for this long line will be reduced to 7% compared with 10% if the line had been built with conventional 500 kV DC transmissions.
- The 800 kV voltage is formed by two 400 kV series connected 12-pulse converters.

Thorough development and preparations

ABB has invested in equipment development, manufacturing and testing facilities to enable this new technology to be used in commercial operation. The developed equipment has been under successful test operation at 850 kV DC since November 2006. The test set-up has been organized at the STRI laboratory in Ludvika, Sweden.
New thyristors with 6 inch diameters are developed to operate at a direct current of 4000 A.

ABB an extensive supplier to the project

To the Xiangjiaba - Shanghai link, ABB will supply system engineering including design, supply and installation of the two converter stations including 800 kV HVDC power transformers and switchgear, air insulated and water cooled thyristor valves provided with newly developed 6 inch thyristors rated 8,5 kV and advanced control equipment.

The system is scheduled to go in operation in 2010.

Data
Connection point Xiangjiaba: FuLong substation
Connection point Shanghai: FengXian substation
Ownership: State Grid Corporation of China
Start of project: December 2007
Commissioning year: Pole 1 and bipole: 2010
Transmission technology: UHVDC, Ultra High Voltage Direct Current
Transmission capacity: 6 400 MW
No. of poles: 2
DC voltage: ±800 kV
Length of overhead DC line: 2 071 km
AC voltage: 525 kV (both ends)
Main reason for choosing HVDC: Long distance and low losses
HVDC converter stations: Convert alternate current (AC) to direct current (DC) and on the other side DC to AC

For more information, please visit:
www.abb.com/hvdc

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