

KEY PRODUCTS



HVDC Flexible Converter Valve

- Up to 1000MW/±320kV
- Uses 3300V/1500A IGBT
- Valve tower self-supported by 12 insulators
- Parallel cooling design
- 3-level shielding design: sub-module, module and valve tower



Control and Protection System

- Hierarchical control and segmented protection
- Dual redundant system
- Distributed hardware and software structure
- High availability and reliability
- Easy maintenance



Valve Base Controller

- Standard 19-inch racks with electromagnetic shielding design
- Distributed sub-rack and redundant power supply
- Excellent performance with respect to computing ability and logic functions
- μ s-level control with advanced algorithms to maintain the current and voltage balances
- Modular software and hardware platform

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南瑞集团中电普瑞电力工程有限公司
C-EPRI ELECTRIC POWER ENGINEERING CO.,LTD.
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Deliver Green Power Shape Future Grid

HVDC Flexible



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STATE-OF-THE-ART HVDC SOLUTIONS . . . CREATING NEW POSSIBILITIES AND MEETING YOUR FUTURE CHALLENGES.

HVDC Flexible is a new HVDC transmission technology, based on a voltage source converter (VSC). It makes use of insulated gate bipolar transistors (IGBTs) instead of thyristors for power conversion between AC and DC.

By switching the IGBTs of the voltage source converter in a defined manner, HVDC Flexible generates a controlled output voltage, the magnitude and phase angle of which can be changed rapidly and flexibly. As a result, HVDC Flexible allows for independent and fast control of active and reactive power.

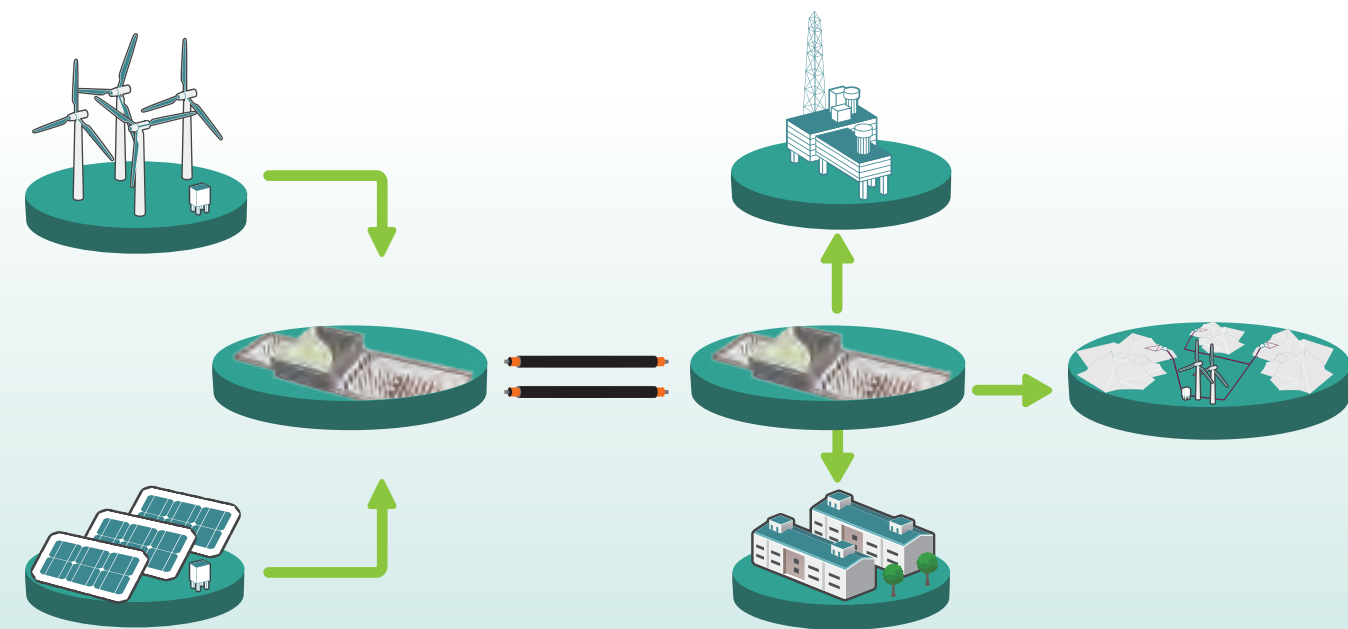
In comparison to classic HVDC, the most outstanding features of HVDC Flexible are high controllability and flexibility, which lead to a number of potential advantages and applications. HVDC Flexible provides an effective solution for wind farm integration, in particular for offshore wind farms with a transmission distance over 50-100km where an AC cable technology is not feasible.

The reactive power controllability of HVDC Flexible can also be used to adjust the AC network voltage and therefore contribute to improved power quality.

Other benefits associated with HVDC Flexible include black start capability, firewall against disturbance, inherent STATCOM functionality, low environmental impact, etc.

Due to its superior technical features, HVDC Flexible has a wide range of applications:

- Renewable energy integration
- Supply of offshore loads
- In-feeds to city centres
- Multi-terminal systems
- Feeding into passive networks
- Grid interconnection and power trading



PROJECT REFERENCE

Our turnkey solutions for HVDC systems support you throughout the whole project management process — through network analysis, engineering design, product supply, installation and commissioning.

Nanhui wind farm integration

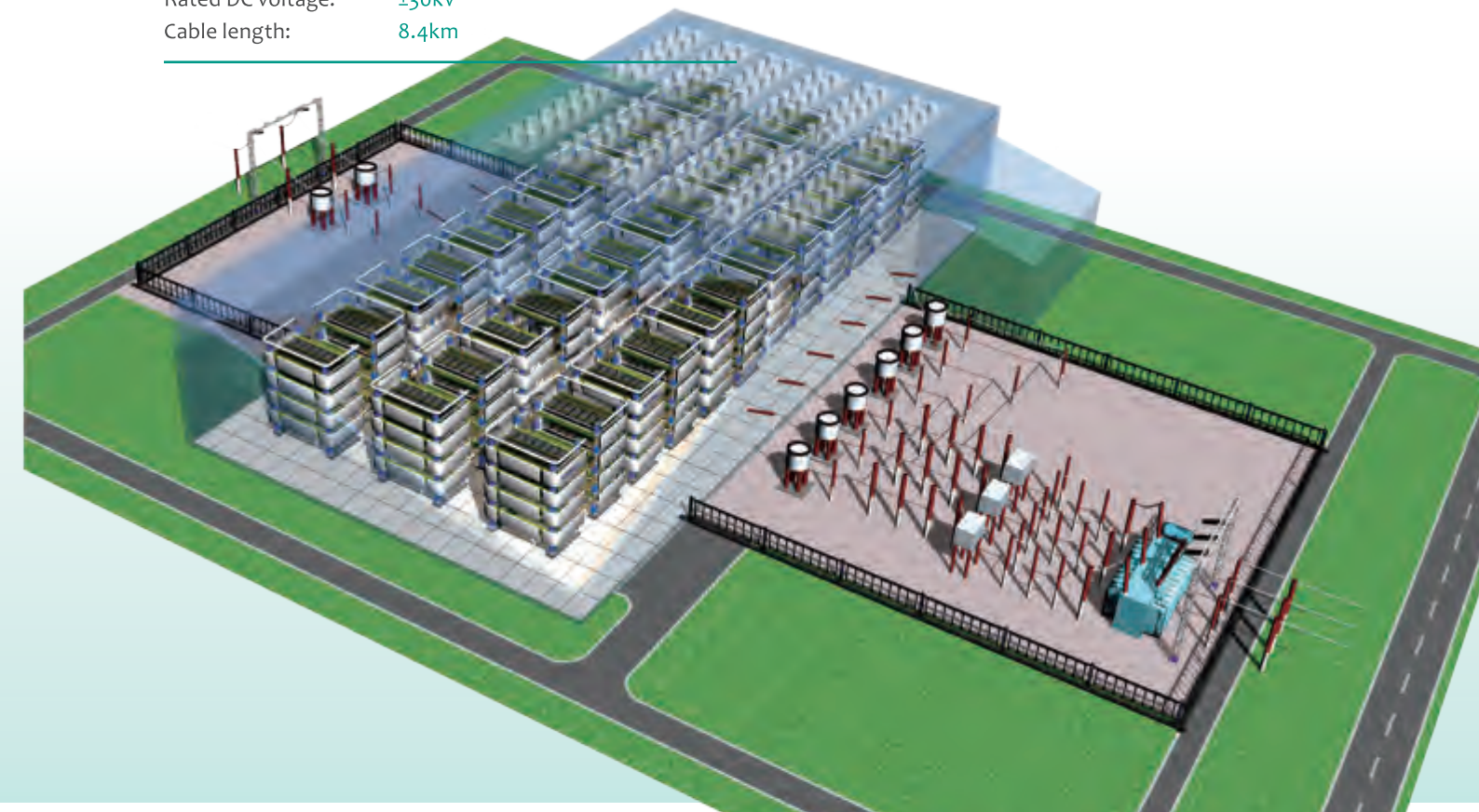
Nanhui wind farm integration project is the first VSC-HVDC project in Asia. It connects the Nanhui wind farm to the Shanghai main grid with an HVDC Flexible link. Since its commissioning in July 2011, this scheme has improved the wind farm's fault ride-through performance by more than 50%, reduced the impact of power system disturbances and enhanced the stability and reliability of the connected grid.

We are responsible for a turnkey supply of the whole scheme, including the design, engineering, manufacturing, supply, installation and commissioning of the two converter stations and DC cables.



Key facts

Commissioning time: 2011
Rated capacity: 18MW
Rated DC voltage: ±30kV
Cable length: 8.4km



Dalian city in-feed

Dalian city is divided into two major districts, the north city and the south city, with the latter being the core part. The south city accommodates many important loads with a high requirement for power quality and reliability. However, with the rapid development of the economy in this area, the existing network can no longer secure a reliable power supply. Moreover, the south city is surrounded by sea on three sides, making it impractical to expand the existing transmission corridor. Due to its superior features, our HVDC Flexible technology has been adopted by the customer for transmitting electricity from the north city to the south city.

Key facts

Commissioning time: Rescheduled
Rated capacity: 1000MW
Rated DC voltage: ±320kV
Cable length: 47.6km



Zhoushan multi-terminal interconnection

Comprising a series of small islands, Zhoushan city, Zhejiang province, has long been suffering from poor power quality due to weak grid structure, inadequate system power flow and lack of reactive power compensation. Meanwhile, some hundred megawatts of wind power are expected to be fed into Zhoushan Grid during the next five years (the 12th five-year-plan).

After evaluating possible alternative solutions, the customer decided to construct a multi-terminal interconnection using HVDC Flexible technology. It links five terminals among Zhoushan islands via DC cables and uses the ability of HVDC flexible to improve power supply quality and to support wind power development in Zhoushan Grid.

Key facts

Commissioning time: 2014
Rated capacity: 400/300/100/100/100MW
Rated DC voltage: ±200kV
Cable length (in total): 141km

