特高压直流输电设备设计综述

（西门子公司，爱尔兰根，德国）

摘要： 高压直流输电已发展成为成熟的技术，典型的电压等级为±500 kV。在中国正在运行的几个直流系统中，单条直流系统完整双极的输送容量已达3 GW。同时，还有几个电压等级为800 kV的UHVDC系统正在建设中，并计划从2009年中期开始陆续投入商业营运。在±800 kV直流运行电压基础上，随着通电流能力的不断增加，直流系统的输电能力将会达到双极7.2 GW的输送容量。电力技术的长足进步，有赖于强有力的HVDC换流站设备设计的研发工作和长期以来积累的设备制造经验。文章总结了设备设计技术攻关方面的难点，并介绍了UHVDC换流站设备技术的现实情况。

关键词： 特高压直流；换流站设备；设计经验；制造经验

Review on UHVDC Equipment Design Aspects

(Siemens AG, Erlangen, Germany)

Abstract: HVDC (high voltage direct current) transmission has developed to a mature technique with high power ratings, and typical voltage ratings up to now are up to ±500 kV. As an example, in China several systems have been in operation transmitting up to 3 GW each with only one bipolar DC transmission system. Meanwhile, several UHVDC (ultra high voltage DC) projects with DC voltages of 800 kV are in the construction stage and are scheduled to go into commercial operation one by one from mid of year 2009 onwards. In combination with increased current capability this will boost the transmission capacity for DC systems significantly up to 7.2 GW per bipolar system. This huge step in electrical power engineering was enabled by intensive R&D works over HVDC converter equipment design and long-term manufacturing experience. This article summarizes design aspects to solve technical challenges and presents a status of the actual UHVDC converter equipment technology.

Key words: UHVDC; converter equipment; design experience; manufacturing experience

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