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**State-of-the-art of HVDC power transmissions and development of their application in the global power industry (review of 45th CIGRE Session reports).**

Review of presentations made by Study Committee B4 «HVDC and power electronics» during 45th CIGRE Session is given. Key topics of discussions were: modular multilevel converters, connection of off-shore intermittent power sources, DC grid economics, and control and protection issues, research work of UHVDC power transmission for transmit bulk electrical power over long distances.

*Key-words: high voltage direct current power transmission, voltage source converter, modular multilevel converter, offshore windfarm, direct current grid, ultra high voltage direct current (UHVDC) power transmission.*

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