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**Technical Issues and Components of a High-Current Test Facility for Semiconductor Switching**

## Abstracts

DC Circuit Breakers (CB) are a key enabler for HVDC Multi-Terminal-Systems (MTS). Accurate and reliable protection is necessary to guarantee stable and secure operation of the underlying AC grid. Due to environmental specifications HVDC CBs obviously have to face fast rising short circuit currents accompanied with overvoltages during switching. However, semiconductors are hereby stressed in a rather untypical way. Especially for hybrid solutions with separate load and breaking paths, they have to withstand a conducting period of several milliseconds before the current breaking process can be initiated, whereas the current itself possibly increases to values greater than 10kA. This is contrary to its purpose in common converters with pulse width modulated operation. Therefore the examination of semiconductor switching processes in a characteristic environment is reasonable and calls for design of an individual test facility. In this publication an overall design proposal is made characterizing requirements and technical realisation of the test rig as well as included components. It is particularly adapted to a new DC circuit breaking principle based on current injection. Consisting of a passive diode rectifier supplied by a tapped, high-current transformer and an ohmic inductive load added in series to the breaker widely differing stress situations shall be reproduced. Hereby a maximum current of 20 kA is targeted.

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More Informations :

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