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Thu-Af-Or21-07: Development of a 220 kV/ 1.5kA Resistive Type Superconducting Fault Current Limiter

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Within a collaboration of Jiangsu Zhongtian and Beijing Jiaotong University, one phase of resistive type superconducting fault current limiter (SFCL) for the 220kV transmission voltage level has been designed and manufactured. The active part of the SFCL consists of 128 bifilar coils made of 12mm wide steel-stabilized YBCO conductor supplied by Shanghai Superconductor, and is housed in a cryostat operated at normal state liquid nitrogen. The device was completely assembled and successfully subjected to steady-state tests, fault current limiting tests and high voltage tests, and the basic design of the system and the test results are reported. In total the SFCL passed 22 power switching tests at voltages between 10 and 20 kVrms , at various prospective fault currents between 10 and 63 kArms for a fault duration of 100 ms. The power frequency test at 360 kVrms for 1 min and lightning impulse test at 850 kV(1.2 μs/50 μs) were carried out according to the Chinese national standard GB 1094.3.

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