22.9 kV 초전도케이블 시스템의 Thermal Cycle Test 영향

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Influence of Thermal Cycle Test of a 22.9 kV High Temperature Superconducting Cable System

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Abstract : To verify the applicability of High Temperature Superconducting (HTS) cable system into the real grid, the HTS cable system with the specification of 22.9 kV, 1250 A, 100 m long was installed in the second quarter of 2006, and the long term field test has been in progress at the KEPCO's Gochang power testing yard.

Apart from the conventional power cable, HTS cable system requires sufficient thermo-mechanical strength to endure a large temperature difference. To date, the KEPCO HTS cable system was cooled down and warmed to the room temperature several times to investigate the influence of thermal cycles experimentally. Dielectric properties, critical current dependance and heat losses were evaluated at each step of thermal cycle. The test results showed that thermal cycle did not induce the degradation of dielectric properties, and the critical current decreased to 5 % of the initial value.