Status and application perspectives of superconducting fault current limiters in Korea

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Development and grid-operation of superconducting fault current limiters (SFCLs) have been carried out in Korea, as an alternative to deal with the increasing fault current. A 22.9 kV / 630 A SFCL has been designed, fabricated, installed, and successfully operated on a distribution line of Icheon Substation. Superconducting elements of the SFCL were made of coated conductors with stainless steel lamination for larger resistance development during faults. Performance of the elements have been stable throughout the operation of more than 1.5 year, and maintained the initial level, requiring no maintenance. In parallel, a 154 kV SFCL has been under development. Superconducting elements, a cooling system, and other components of the SFCL were designed, fabricated, and integrated into an SFCL system. The superconducting elements were also made of coated conductors with stainless steel lamination. In this presentation, development and grid-operation of SFCLs in Korea will be reviewed, and grid application perspectives of the SFCLs will be discussed. Emphasis will be placed on the role of coated conductors in commercialization of SFCLs.

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