

Superconducting Cable Protection System by Hybrid Superconducting Scheme

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The superconducting fault current limiters(SFCLs) are very attractive device for the electric network. But SFCLs have some problems in commercial product. Due to large size, very high cost and long recovery time, etc. So, we turn over to the hybrid concept which is combined with superconductor and mechanical fast switching device. And, we can reduce amount of superconductor dramatically. And also, our hybrid type superconducting fault current limiter has many advantages. For examples, very low cost relatively, reducing the size and coordination with other protection devices in electrical network.

In this paper, we suggest protection system for superconducting cable in a fault state by hybrid fault current limiting scheme. When fault current flows to the superconducting cable, it could become quench. In that case, it will be stressed thermally dependent on fault duration and cryogenic cooling system endures this situation. This application is one of the non-half current limiting on concept of the hybrid fault current limiter. In the results, we could find that model superconducting cable is protected well from the large fault energy in the fault state. And also, model superconducting cable didn't experience quench on flowing large fault current.

Keywords : fault Current Limiter, superconducting cable, quench.