

# The Analysis of Current Limiting Performance in a High- $T_c$ Superconducting Rod using Flux-Lock Concepts

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In this paper, we analyzed the fault current performance of high- $T_c$  superconducting rod which was installed on flux-lock reactor with an external magnetic field coil covering the HTS rod. In this HTS fault current limiter using flux-lock concepts, the initial limiting current level can be controlled by adjusting the inductance of the coils. Furthermore, the current limiting characteristic of high- $T_c$  superconducting FCL can be improved by applying the external magnetic field to the high- $T_c$  superconducting rod. This paper discusses current limiting performance according to the inductance of the coil 1 in the both cases with and without ac magnetic field coil and suggests the methods to improve the current limiting factor  $P_{\text{limit}}$ , which is defined as the ratio of the limited current  $I_{\text{FCL}}$  at the current limiting phase to the prospective short-circuit current  $I_{\text{PSC}}$ .

keywords : flux-lock, external magnetic field, current limiting factor, prospective short-circuit current, HTS