

**Ac Loss Reduction and Cooling Characteristic Improvement for Putting  
Superconducting Traction Transformer into Practical Use**

Hiroki KAMIJO    Hiroshi HATA    Kazuya IKEDA  
Ken NAGASHIMA    Yoshiki MIYAZAKI    Yusuke FUKUMOTO

We had designed, fabricated and tested a prototype superconducting traction transformer of a floor-mount type for Shinkansen vehicle by 2004. As a result, we could verify that the transformer satisfied the requirement almost exactly as initially planned. However there have been raised some problems to be solved to put superconducting traction transformer into practical use such that the AC loss of the superconducting tape should be reduced and the capacity of the refrigerator should be larger. In this paper, we present a newly developed narrow type Bi2223 superconducting tape which reduces AC loss to less than 1/2 of that of the transformer fabricated previously in 2004, and a cooling system with 65K, 1kW class pulse tube refrigerator.