

Thermal Properties of REBCO HTS Magnet for Maglev

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The REBCO coated conductor, which is one of high temperature superconductors, can be used even if the operational temperature of superconducting magnets is raised. If the coated conductor is applied on Maglev, the on-board magnets are directly cooled by a cryocooler without liquid helium. The cost of liquid helium has been increasing and the future supply of helium is considered to be unstable. The absence of cryogens, such as liquid helium, means the drastic change of the thermal structure of the magnet. We produced an experimental cryostat which imitates the thermal properties of the on-board magnet made of REBCO coils. The thermal distribution of the REBCO coil and cold storage time in case of cryocooler failure were evaluated.