

## Investigation of the Temperature Variation in Bi-2223 Tapes under Fault Current for Protection of HTS Power Machines

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Bi-2223 tapes need to be safe, even the case of over critical current for the application to superconducting power machine. The abrupt increase of temperature due to over-current can make the whole machine be defected seriously.

In this paper, temperature variation of Bi-2223 tapes, which is applied over-current, was examined and analyzed. For the experiments, Bi-2223 tape of which critical current was 115 A was prepared, and the temperature increase by applying over-current was investigated. For the exact detection of the temperature, thermocouples and RTDs were used to measure under liquid nitrogen environment. In addition, the effect of electrical insulation on temperature increase was investigated. HTS tapes insulated by Kapton film were examined by the same method, and the results were compared with the case of non-insulated one.

As a result, the amount of temperature increase with the magnitude of the applied current will be measured, and discuss the protecting method against fault current through them.