

Development of Superconducting Coils Using MgB₂ Wires

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To realize carbon neutrality, we are developing energy storage technology. In the railway field, superconducting magnetic energy storage (SMES) has an advantage assuming a unique power load that frequently changes by train powering and braking. So, we have been developing superconducting coils for SMES using MgB₂ superconducting wire which has low cooling cost and manufacturing cost. It has been reported that MgB₂ superconducting wire is sensitive to bending strain and MgB₂ wire deteriorates under certain bending strain. Therefore, we evaluated superconducting characteristics of superconducting stranded conductors. Also, the deterioration due to the dent was investigated. As a result, it was clarified that not only bending strain but also dents due to compression lead to deterioration of superconducting characteristics.