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STUDY ON IMPACT OF HTS WINDING CONFIGURATION ON ENERGY VALUE AND MAGNETIC FIELD DISTRIBUTION IN SMES

ABSTRACT *The article describes a physical model of Superconducting Magnetic Energy Storage System (SMES) built in the Laboratory of Superconducting Technology in the Electrotechnical Institute. The considered problem concerns the choice of the superconducting winding configuration, which can be responsible for the required energy value in a limited space of the strong magnetic field. Possible configurations of the windings were analysed with particular focus on the solenoid and the toroidal configuration. The results of the calculations of the magnetic field distribution and the energy accumulated in the coil for the considered shield configuration have been described. It was shown that for the tested SMES model with energy of 34 kJ at temperature 13 K, it is possible to use such magnetic field shielding configuration, which allows to limit the magnetic field zone with an intensity exceeding the limit values and energy increase by 14%.*

Keywords: *SMES, magnetic shielding, magnetic field distribution*

DOI: 10.5604/01.3001.0012.1258