

26th National Symposium on Cryogenics and Superconductivity

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Invited Talk IT: "DEVELOPMENT OF SUPERCONDUCTING MAGNET FOR 1.5T MRI SCANNER: A MAKE IN INDIA INITIATIVE"

Friday 24 Feb 2017 at 15:00 (00h30')

Content :

Magnetic Resonance Imaging (MRI) is one of the crucial techniques used for an accurate clinical diagnostic of neurological diseases and numerous medical ailments. A multi-institutional project has been initiated by SAMEER- Mumbai under Meity, Govt of India to develop India's first indigenous superconducting (SC) MRI scanner. IUAC-New Delhi, one of the partner institutes, is primarily responsible to develop the 1.5 T SC MRI magnet and its associated cryogenic system. The MRI scanner needs a central field homogeneity better than ± 5 ppm in 45 cm diametrical spherical volume (DSV). The 1.5 T MRI magnet will have multi-coil solenoidal structure made up of wire-in-channel NbTi conductor. The working bore of the scanner will be more than 65 cm and it will be operated in persistent mode to achieve higher temporal stability of about 0.1 ppm/hr. The stringent requirement of field homogeneity in a large DSV, temporal stability, safety field, higher stored energy make it complex to design a SC MRI magnet system. This paper briefly describes the design concepts, design parameters, complexity in designing India's first MRI magnet system.

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