

Cryogenic Structural Steels for Superconducting Magnets and their Application*, T. KOBAYASHI, U. NISHIIKE, K. NOHARA, Kawasaki Steel Corporation - The cold mass of particle accelerator superconducting magnets are composed of beam tubes, collars and yokes as well as superconducting cables. The former three components necessitate cryogenic structural steels, both non-magnetic and ferro-magnetic. The presentation gives (1) the summary of newly developed non-magnetic high manganese steel (KHMN) and ferro-magnetic ultra-low carbon steel (EFE); and (2) their application to the tooling and performances of some accelerator superconducting magnets (SSC, LHC and RHIC). Based on the application of KHMN to some R/D and actual sized SSC magnets, there is a possibility of this steel to be used as collars and/or end-yokes of LHC magnets, where there are some problems of the relation among strength of the steel, fine-blankability, and tooling lamination/dimensional accuracy. EFE is being used for the construction of RHIC magnets, which might lead to the application to LHC magnets centre yokes.

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