

Abstract Submitted
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Critical current density and ferromagnetic loss in Ni-W substrates based coated conductors¹ S.B. HARRIS, A.O. IJADUOLA, University of North Georgia, Dahlonega GA 30597, C.L.H. THIEME, M.W. RUPICH, American Superconductor Corp., Westborough MA 01581, A. GOYAL, Oak Ridge National Laboratory, Oak Ridge TN 37831 — One of the main challenges in the use of high temperature superconducting wires, the $\text{YBa}_2\text{Cu}_3\text{O}_{7-\delta}$ (YBCO) coated conductors (CC) in electric power applications is the amount of dissipation or loss. Ni-W alloys are used as substrates for rolling assisted biaxially textured substrate (RABiTS) tapes because of their comparably low loss and ease of manufacturing. In this work, we have determined the amount of ferromagnetic loss in a series of biaxially textured $\text{Ni}_{1-x}\text{W}_x$ materials with compositions $x = 5$ and 9 at.% W. We also measured the critical current density J_c in two different samples of coated conductor; one fabricated with the Ni-5at.%W substrate and the other with the Ni-9at.%W substrate. The aim is to determine if the type of substrate used will influence the amount and the property of J_c measured. While the Ni-5at.%W shows a higher ferromagnetism (and loss), the J_c measured in both CC is fairly similar. The field and temperature dependence of the J_c in the two samples is also analyzed.

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