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Recent Progress of Application-Oriented DI-BSCCO Wires

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Sumitomo Electric has been developing silver-sheathed Bi2223 multi-filamentary wires, DI-BSCCO (Dynamically-Innovative BSCCO). The wires have been improved various properties in response to growing demands from application products and projects.
For high magnetic field applications targeting to more than several tesla, DI-BSCCO wires need to endure the intense hoop stress and maintain high engineering critical current (Je). Lamination with Ni-Cr alloy tapes has proved to be a more feasible way to solve these challenges compared to stainless steel lamination. Combination of the thin (0.030 mm-thick) Ni-Cr alloy tapes and the previously reported lamination technique "pre-tension"has significantly enhanced the mechanical properties of the DI-BSCCO wires. For example, critical double bending diameter at room temperature ˜ 35 mm, critical tensile stress at 77 K ˜ 440 MPa, and critical tensile strain at 77 K ˜ 0.5 %. The DI-BSCCO wires laminated with the Ni-Cr alloy tapes were formerly called Type HT-XX (˜2014) and have been officially named Type HT-NX (2015˜). In terms of more practical use, the applicative DI-BSCCO wires have been generating new needs for a variety of evaluations and technical challenges to be addressed. In this talk, the detailed performances of the currently available wires and the updated R&D activities will be shown.

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