

Development of YBCO Roebel Cables for High Current Transport and Low AC Loss Applications

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Abstract - We discuss production of lengths of up to 27 m of YBCO Roebel cable. Results for 5/2 (5 strands, 2 mm width), 9/2 and 15/5 cables produced from standard 12 mm commercial YBCO wire are presented. We discuss specifications for the input wire and suggest using a statistical correlation function, using data from magnetic field scanning, that is shown to produce high performance strands. We discuss advances in manufacturing techniques including cable insulation processes. Transport and magnetic AC loss data are presented for 5/2 cable which demonstrates the effectiveness of decreased strand width and the transposition of strands. Both losses are predominantly hysteretic in nature. Finally, the cable DC transport is presented and we discuss the possibilities for high current cables in high field applications.

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