

## The Development of Second Generation HTS Wire at American Superconductor

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**Abstract**—Second Generation (2G) YBCO High Temperature Superconductor wire, based on the RABiTSTM/MOD process, is now being produced in continuous lengths at American Superconductor (AMSC) using a full-scale, reel-to-reel manufacturing line. AMSC's approach for manufacturing 2G wire is designed around a low-cost, wide-strip technology, in which a 4-cm wide strip is slit into multiple narrower wires, then laminated to metallic stabilizers producing a 3-ply wire called 344 superconductors. A major advantage of this approach is the ability to tailor the electrical, mechanical and thermal properties and dimensions of the final wire for specific applications and operating conditions. This allows the final wire properties to be tuned for targeted applications, including cables and fault current limiters, by tailoring the resistivity and thickness of the stabilizer layers. The superconducting properties of the MOD-based YBCO are also being improved by the introduction of thicker YBCO layers and improved flux pinning centers. This paper describes the present status of 2G wire manufacturing at AMSC, reviews present and projected performance of the 344 superconductors, and summarizes initial application demonstrations utilizing 344 superconductors.

**Index Terms**—2G wire, coated conductors, YBCO, RABiTS, HTS

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