

## **Coated Conductor Composite Wires: The First Decade of Achievement in the United States**

*R. A. Hawsey*, Oak Ridge National Laboratory; *D. E. Peterson*, Los Alamos National Laboratory

This paper presents an evaluation of the current state of the development of coated conductor composite wire technology in the United States and a vision for its future. The challenges that U.S. Department of Energy laboratories and their industrial and university partners face in 2004 will be presented against the backdrop of the history of achievements. Since 2001 laboratories have acquired new space, new equipment, and new personnel with the goal of working closely with U.S. companies to take technologies invented in the labs and demonstrated in continuously processed 1-m lengths and transfer these technologies to the commercial sector. At least six U.S.-based companies are investigating a like number of processes for deposition of buffer layers and/or the superconductor YBCO on metal tapes. Several of these companies had produced >10-m lengths of YBCO tape by early 2003. Co-location of industry with laboratory staff has enabled private sector use of specialized equipment at the labs. Given the investment by the government and private sectors, there is a high likelihood that 100-m lengths of >100-ampere YBCO conductor (77 K, self-field) will be available for small demonstration systems by the end of 2004. Engineering the conductor geometry for these systems is likely to become a major research thrust in 2004.

Research sponsored by the United States Department of Energy, Office of Energy Efficiency and Renewable Energy, Office of Distributed Energy and Electric Reliability-Superconductivity Program. Oak Ridge National Laboratory is managed by UT-Battelle, LLC for the U.S. Department of Energy under contract No. DE-AC05-00OR22725. Los Alamos National Laboratory is managed by the Regents of the University of California for the U.S. Department of Energy under contract W-7405-ENG-36. RABiTS is a trademark of UT-Battelle, LLC.