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Metallurgical Optimization and Production of NbTi Superconductors



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Abstract: Presently several hundred tons of copper stabilized Niobium-Titanium superconductors are produced annually. The development of these conductors has been strongly influenced by their intended applications. Starting in the early 1960's these conductors have evolved from bare single strands to multi-filament strands and cables. In the same period critical current more than doubled. This was accomplished by a detailed understanding of the flux pinning requirements and the metallurgical engineering of the alloy substructure. Modern production techniques and quality assurance will be discussed.

Biography: Dr. Bruce Strauss, is presently the Program Manager for the United States Department of Energy's projects such as the Muon Collider, Accelerator Project for Upgrade of the LHC, ILC R&D, and Project X at Fermilab. He received his undergraduate and doctoral education at the Massachusetts Institute of Technology and a Master of Business Administration degree at the University of Chicago. He is a Registered Professional Engineer in the states of Illinois and Massachusetts. Following early experience at the Avco Everett Research Laboratory and at Argonne National Laboratory, he joined the Fermi National Accelerator Laboratory in Batavia, Illinois. At Fermilab, he rose to the rank of Assistant Director of the Tevatron Project. He was responsible for the procurement scheme for the entire superconductor inventory for that project. He left Fermilab to join the Magnetic Corporation of America where he served as production manager for superconducting wire and magnet fabrication. Subsequently, he was the principal of two management-consulting organizations. Clients included government agencies, national laboratories and industrial concerns. A significant consulting contribution was to Management and Administration Branch of the DOE for the Independent Cost Estimation process for all of the technical components, installation, and commissioning for the Superconducting Super Collider. Dr. Strauss is an incorporator of the Applied Superconductivity Conference, Inc., where he currently serves as the corporate treasurer, as well as a member of several technical committees. He is a Fellow of the IEEE and is also an officer of the IEEE Technical Council on Superconductivity. He is a member of the Russian International Academy of Electrotechnical Technology.