April 1970

Brief 70-10070

AEC-NASA TECH BRIEF

Stranded Superconducting Cable of Improved Design

A lightweight, stable, high-current superconducting cable has been developed and tested in a superconducting (liquid helium cooled) magnet made with the cable. The design features the use of a substantial amount of aluminum wire interspersed with the superconductor strands. The advantages of aluminum are its low magnetoresistance coefficient, and, consequently, its higher electrical conductivity than copper at 4.2°K over a wide range of magnetic fields; its ability in the highly pure state to self-anneal at room temperature, so that reductions in electrical conductivity due to the winding stresses are avoided; its light weight; and its low thermal capacity. The latter results in reduced cooldown costs.

Notes:

1. The principles applied to this cable and magnet design are applicable to a wide range of superconducting cables and magnets.
2. Inquiries concerning this innovation may be directed to:

   Office of Industrial Cooperation
   Argonne National Laboratory
   9700 South Cass Avenue
   Argonne, Illinois 60439
   Reference: B70-10070

   Source: J. Brooks and C. Laverick of Particle Accelerator Division, G. Lobell of Central Shops, and J. Purcell of High Energy Physics Division (ARG-90108)

Patent status:

Inquiries concerning rights for commercial use of this innovation may be made to:

Mr. George H. Lee, Chief
Chicago Patent Group
U.S. Atomic Energy Commission
Chicago Operations Office
9800 South Cass Avenue
Argonne, Illinois 60439

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