

Title (en)

METHOD OF COOLING AN OBJECT BY MEANS OF SUPERFLUID HELIUM (HE II) AND DEVICE FOR CARRYING OUT THE METHOD

Publication

EP 0212093 B1 19901128 (DE)

Application

EP 86107337 A 19860530

Priority

DE 3529391 A 19850816

Abstract (en)

[origin: US4713942A] A method for cooling an object with the aid of superfluid helium (He II) in which a fountain effect pump is used to produce a forced flow of He II and to an apparatus for implementing the method. The abnormally good thermal conductivity of He II in a temperature range between 1.7 DEG K. and 2.1 DEG K. and its superfluidity are excellent characteristics for cooling superconductive magnetic coils. In the past, such 1.8 DEG K. cooled coils could be attained only by external cooling according to the bath cooling principle. Internal cooling of the conductors with forced flow, as practiced already with He I cooling systems, could not yet be realized for operation with He II due to the lack of suitable pumping systems. In the process of the invention, the heat absorbed by the object to be cooled is utilized in an advantageous manner to generate the forced flow of Helium (He II) in its own cooling circuit, with the absorbed heat being coupled into a thermomechanical pump in such a manner that no additional driving power is required and the flow rate automatically adjusts itself to the respective load.

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