

Title (en)
Cooling apparatus

Title (de)
Kühlvorrichtung

Title (fr)
Dispositif de refroidissement

Publication
EP 1586833 A3 20061011 (EN)

Application
EP 05251855 A 20050324

Priority
GB 0408312 A 20040414

Abstract (en)
[origin: EP1586833A2] Cooling apparatus comprises a cooling system defining a closed path around which a coolant flows. The system includes a pump (13) for causing coolant flow, a supply line (26) extending from the pump to a cold location, positioned in a cryostat, in order to cool that location, and a return line extending (28) from the cold location to the pump. The pump is located externally of the cryostat. A first heat exchanger (17) is positioned within the cryostat and links the supply and return lines to allow heat exchange therebetween such that coolant flowing in the supply line is cooled by coolant flowing in the return line. A refrigerator is provided having a cooling stage within the cryostat and coupled to the supply line downstream of the first heat exchanger such that coolant reaching the first cooling stage has been pre-cooled by the first heat exchanger.

IPC 8 full level
F25B 9/14 (2006.01); **F25B 25/00** (2006.01); **G01R 33/3815** (2006.01); **H01F 6/04** (2006.01)

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F25B 9/02 (2013.01 - EP US); **F25B 9/10** (2013.01 - EP US); **F25B 9/14** (2013.01 - EP US); **F25B 2400/17** (2013.01 - EP US); **F25D 19/006** (2013.01 - EP US)

Citation (search report)

- [A] WO 03081145 A1 20031002 - SUMITOMO HEAVY INDUSTRIES [JP], et al
- [A] US 5889456 A 19990330 - TRIEBE RENE [CH], et al
- [A] US 4432216 A 19840221 - MATSUDA TOSHIHARU [JP], et al
- [A] US 5575155 A 19961119 - MITA HIDEO [JP], et al
- [A] WO 03023433 A1 20030320 - OXFORD INSTR SUPERCONDUCTIVITY [GB], et al
- [A] US 6679066 B1 20040120 - FUNAYAMA SHIN [JP], et al
- [A] US 5347819 A 19940920 - SAJI NOBUYOSHI [JP], et al
- [A] US 6107905 A 20000822 - ITOH KOJI [JP], et al
- [A] US 6640552 B1 20031104 - RAMPERSAD BRYCE MARK [US], et al
- [XA] PATENT ABSTRACTS OF JAPAN vol. 2003, no. 11 5 November 2003 (2003-11-05)
- [A] YOSHIKI H ET AL: "THREE METRE LONG HORIZONTAL CRYOSTAT PRODUCING ULTRACOLD NEUTRONS USING SUPERFLUID LIQUID HELIUM AT 0.5 K (MARK 3000)", CRYOGENICS, IPC SCIENCE AND TECHNOLOGY PRESS LTD. GUILDFORD, GB, vol. 34, no. 4, 1 April 1994 (1994-04-01), pages 277 - 286, XP000439358, ISSN: 0011-2275
- [A] PATENT ABSTRACTS OF JAPAN vol. 1999, no. 13 30 November 1999 (1999-11-30)
- [A] PATENT ABSTRACTS OF JAPAN vol. 1998, no. 11 30 September 1998 (1998-09-30)
- [A] PATENT ABSTRACTS OF JAPAN vol. 012, no. 158 (E - 608) 13 May 1988 (1988-05-13)

Cited by
JP2007205709A; EP4033176A4; GB2490836A; CN102971594A; GB2502628A; US2013160975A1; US9958519B2; GB2433581A; GB2433581B; CN102290187A; US11828513B2; WO2011112987A3

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