

Title (en)
REFRIGERATION DEVICE

Title (de)
KÜHLVORRICHTUNG

Title (fr)
DISPOSITIF DE REFRIGERATION

Publication
EP 1990587 A4 20141119 (EN)

Application
EP 07714753 A 20070222

Priority
• JP 2007053255 W 20070222
• JP 2006053431 A 20060228

Abstract (en)
[origin: EP1990587A1] A refrigerant circuit (10) includes a gas-liquid separator (15) and a compressor (30) including a low pressure side compression mechanism (34) and a high pressure side compression mechanism (35) connected to each other by means of a drive shaft (33). In the refrigerant circuit (10), a two-stage compression/two-stage expansion refrigeration cycle is performed with CO₂ refrigerant utilized as that at its critical pressure. In the compressor (30), a volume ratio V₂/V₁ of the displacement volume V₂ of the second compression mechanism (35) to that V₁ of the first compression mechanism is set within a range between 0.8 and 1.3, both exclusive.

IPC 8 full level
F25B 1/10 (2006.01); **F25B 1/00** (2006.01); **F25B 1/04** (2006.01)

CPC (source: EP KR US)
F25B 1/00 (2013.01 - KR); **F25B 1/04** (2013.01 - KR); **F25B 1/10** (2013.01 - EP KR US); **F25B 9/008** (2013.01 - EP US); **F25B 13/00** (2013.01 - EP US); **F25B 2309/061** (2013.01 - EP US); **F25B 2313/0272** (2013.01 - EP US); **F25B 2313/02741** (2013.01 - EP US); **F25B 2400/13** (2013.01 - EP US); **F25B 2400/23** (2013.01 - EP US)

Citation (search report)
• [I] JP 2003074999 A 20030312 - DAIKIN IND LTD
• [A] JP 2003065615 A 20030305 - DAIKIN IND LTD
• [X] JAKOBSEN A: "Improving efficiency of trans-critical CO₂ refrigeration systems for reefers", IIF-IIR COMMISSION D2 D3., 1 February 1998 (1998-02-01), pages 130 - 138, XP001168660
• [X] HUFF H-J ET AL: "OPTIONS FOR A TWO-STAGE TRANSCRIPTIONAL CARBON DIOXIDE CYCLE", IIR GUSTAV LORENTZEN CONFERENCE ON NATURAL WORKING FLUIDS. JOINT CONFERENCE OF THE INTERNATIONAL INSTITUTE OF REFRIGERATION SECTION B AND E, XX, XX, 17 September 2002 (2002-09-17), pages 158 - 164, XP001176579
• [A] INOKUTY H: "NEUE KREISPROZESSE AN KALTDAMPFMASCHINEN THEORIE UND VERSUCHE", ZEITSCHRIFT FUER DIE GESAMTE KAELTE-INDUSTRIE, VDI VERLAG, BERLIN, DE, vol. 36, no. 2, 1 February 1929 (1929-02-01), pages 21 - 26, XP001169158, ISSN: 0372-879X
• See references of WO 2007105440A1

Cited by
US2011232325A1; US9068765B2; WO2011091014A3; EP2339272A1

Designated contracting state (EPC)
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LI LT LU LV MC NL PL PT RO SE SI SK TR

DOCDB simple family (publication)
EP 1990587 A1 20081112; EP 1990587 A4 20141119; EP 1990587 B1 20190417; AU 2007226005 A1 20070920; AU 2007226005 B2 20100520; CN 101384865 A 20090311; CN 101384865 B 20120418; ES 2733021 T3 20191127; JP 2007232263 A 20070913; KR 20080090528 A 20081008; TR 201909681 T4 20190722; US 2009044564 A1 20090219; WO 2007105440 A1 20070920

DOCDB simple family (application)
EP 07714753 A 20070222; AU 2007226005 A 20070222; CN 200780005850 A 20070222; ES 07714753 T 20070222; JP 2006053431 A 20060228; JP 2007053255 W 20070222; KR 20087020719 A 20080825; TR 201909681 T 20070222; US 22408607 A 20070222