

Title (en)

Refrigeration cycle and method of controlling the refrigeration composition ratio of the refrigeration cycle.

Title (de)

Kältekreislauf und Verfahren zur Steuerung der Kältemittelzusammensetzung im Kältekreislauf.

Title (fr)

Cycle frigorifique et procédé de réglage de la composition du réfrigérant dans le cycle frigorifique.

Publication

EP 0631095 A3 19950301 (EN)

Application

EP 94109583 A 19940621

Priority

JP 15324693 A 19930624

Abstract (en)

[origin: EP0631095A2] The composition of a refrigerant within the refrigeration cycle in which a non-azeotrope refrigerant is used is controlled to a predetermined composition. Further, the amount of the refrigerant is detected, and the composition and amount of the refrigerant within the refrigeration cycle are displayed, facilitating the maintenance of the refrigerant. The refrigeration cycle includes a compressor (1), a heat-source-side heat exchanger (2), use-side heat exchangers (20a,20b), and a pressure reducing apparatus (7,21a,21b), in which cycle a non-azeotrope refrigerant is used as a refrigerant. The refrigeration cycle further includes a sensor (8), disposed in a pipe portion where a liquid phase is formed, for detecting the composition of the non-azeotrope refrigerant circulating within the refrigeration cycle, and devices (5,6,10) for controlling the composition to a predetermined composition, a sensor for detecting the amount of refrigerant and a device for displaying the amount of the refrigerant. Since the composition of the refrigerant circulating within the refrigeration cycle is detected and control appropriate for the detected composition is performed, it becomes possible to perform a stable operation even when the refrigerant leaks outside and the composition of the refrigerant varies.

IPC 1-7

F25B 49/02; **F25B 1/00**

IPC 8 full level

F25B 1/00 (2006.01); **F25B 5/00** (2006.01); **F25B 9/00** (2006.01); **F25B 13/00** (2006.01)

CPC (source: EP)

F25B 9/006 (2013.01); **F25B 13/00** (2013.01); **F25B 2400/13** (2013.01); **F25B 2400/16** (2013.01)

Citation (search report)

- [XAY] US 5186012 A 19930216 - CZACHORSKI MAREK [US], et al
- [YA] US 3668882 A 19720613 - SARSTEN JAN A, et al
- [DY] JP S59129366 A 19840725 - HITACHI LTD
- [YA] DE 3406588 A1 19850829 - SIEMENS AG [DE]
- [A] US 4913714 A 19900403 - OGURA KENJI [JP], et al
- [A] US 5062275 A 19911105 - HIRATA TOSHIO [JP], et al
- [A] US 4700549 A 19871020 - BIAGINI GUIDO [US]
- [A] US 4624112 A 19861125 - PROCTOR ROBERT H [US]
- [PXA] WO 9407095 A1 19940331 - FRITZ EGGER GMBH [AT], et al
- [A] EP 0196051 A2 19861001 - MATSUSHITA ELECTRIC IND CO LTD [JP]
- [A] EP 0518394 A2 19921216 - MATSUSHITA ELECTRIC IND CO LTD [JP]
- [A] US 4961323 A 19901009 - KATSUNA KIYOHARU [JP], et al
- [A] US 5056329 A 19911015 - WILKINSON WILLIAM H [US]
- [A] US 4972676 A 19901127 - SAKAI TAKESHI [JP]
- [Y] PATENT ABSTRACTS OF JAPAN vol. 17, no. 490 (M - 1474) 6 September 1993 (1993-09-06)

Cited by

EP1293735A3; EP1553365A3; EP0854326A3; EP0750166A3; US5927087A; EP0898128A3; EP0732551A3; EP0898133A3; US5987907A; US6032473A; EP0685692A3; EP0715134A3; EP2722617A4; EP0693663A3; AU683385B2; EP0853221A3; EP0854329A3; EP0854330A3; EP0854331A3; WO2009147172A1

Designated contracting state (EPC)

DE GB

DOCDB simple family (publication)

EP 0631095 A2 19941228; **EP 0631095 A3 19950301**; **EP 0631095 B1 20000112**; DE 69422551 D1 20000217; DE 69422551 T2 20000803; DE 69432489 D1 20030515; DE 69432489 T2 20040212; EP 0838643 A2 19980429; EP 0838643 A3 20001115; EP 0838643 B1 20030409; JP H0712411 A 19950117

DOCDB simple family (application)

EP 94109583 A 19940621; DE 69422551 T 19940621; DE 69432489 T 19940621; EP 98101094 A 19940621; JP 15324693 A 19930624