

Title (en)  
REFRIGERATION SYSTEM

Title (de)  
KÜHLSYSTEM

Title (fr)  
SYSTEME REFRIGERANT

Publication  
**EP 1739369 A1 20070103 (EN)**

Application  
**EP 05720357 A 20050309**

Priority  
• JP 2005004085 W 20050309  
• JP 2004077904 A 20040318

Abstract (en)  
The low-side pressure of a refrigeration cycle and the refrigerant temperature at the exit of a gas cooler under reference operating conditions are employed as a reference low pressure and a reference refrigerant temperature, respectively, and the high-side pressure of the refrigeration cycle at which the COP of the refrigeration cycle reaches a maximum value under the reference operating conditions is employed as a reference high pressure. In this case, the volume  $v_2$  of a first fluid chamber (72) in the expander (60) just after the closing off of fluid communication from its inlet channel and the volume  $v_3$  of a second fluid chamber (82) in the expander (60) just before the provision of fluid communication with its outlet channel are set to  $v_2 = \frac{\dot{V}_1}{\dot{V}_2}$  and  $v_3 = \frac{\dot{V}_2}{\dot{V}_3}$ , respectively, where  $\dot{V}_1$  is the density of saturated gas refrigerant at the reference low pressure,  $\dot{V}_2$  is the density of refrigerant at the reference high pressure and the reference refrigerant temperature,  $\dot{V}_3$  is the density of refrigerant adiabatically expanded from a condition of the reference high pressure and the reference refrigerant temperature into a condition of the reference low pressure,  $v_1$  is the volume of the fluid chamber in the compressor just after the closing off of fluid communication from its suction channel, and  $r$  is the rotational speed ratio of the compressor to the expander.

IPC 8 full level  
**F01C 1/356** (2006.01); **F25B 11/02** (2006.01); **F01C 1/44** (2006.01); **F01C 1/46** (2006.01); **F01C 11/00** (2006.01); **F04C 23/00** (2006.01); **F04C 23/02** (2006.01); **F25B 1/00** (2006.01); **F25B 9/00** (2006.01); **F25B 9/06** (2006.01); **F25B 43/00** (2006.01); **F25B 1/04** (2006.01)

CPC (source: EP KR US)  
**F01C 1/00** (2013.01 - KR); **F01C 1/356** (2013.01 - KR); **F01C 1/46** (2013.01 - EP US); **F01C 11/004** (2013.01 - EP US); **F04C 23/00** (2013.01 - KR); **F25B 9/008** (2013.01 - EP US); **F25B 9/06** (2013.01 - EP US); **F25B 11/02** (2013.01 - KR); **F25B 1/04** (2013.01 - EP US); **F25B 2309/061** (2013.01 - EP US)

Citation (search report)  
See references of WO 2005090875A1

Cited by  
US8056361B2

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 MC NL PL PT RO SE SI SK TR

DOCDB simple family (publication)  
**EP 1739369 A1 20070103**; AU 2005224499 A1 20050929; CN 1934397 A 20070321; JP 2005265278 A 20050929; KR 20060131996 A 20061220; US 2009007590 A1 20090108; WO 2005090875 A1 20050929

DOCDB simple family (application)  
**EP 05720357 A 20050309**; AU 2005224499 A 20050309; CN 200580008658 A 20050309; JP 2004077904 A 20040318; JP 2005004085 W 20050309; KR 20067021492 A 20061017; US 59303805 A 20050309