

Title (en)
Refrigeration/air conditioning system

Title (de)
Kühl- und Klimatisierungssystem

Title (fr)
Système de réfrigération et d'air conditionné

Publication
EP 1046869 A1 20001025 (EN)

Application
EP 00303315 A 20000419

Priority
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Abstract (en)
A two-phase mechanical refrigeration system, particularly suitable for operation in accordance with the carbon dioxide trans-critical cycle, utilises energy produced on expansion to pre-compress refrigerant returning to a primary compressor (21), thereby improving the overall performance and efficiency of the system and of the primary compressor (21). The system finds application in refrigeration and air conditioning systems, and in heat pumps.
Gaseous carbon dioxide is compressed in a compressor (21) to a pressure and temperature above the critical point. The high pressure gas then enters the gas cooler (22), where its temperature is reduced while maintaining its pressure constant. The gas then enters an expander (23) where the gas is expanded to a lower intermediate pressure and temperature resulting in a formation of a gas/liquid mixture. The mixture enters a combined gas separator/liquid accumulator (24) which separates the gaseous portion of the mixture for recycling prior to the primary compressor and directs the liquid portion to an evaporator (26).

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Citation (search report)
• [YA] US 2494120 A 19500110 - FERRO JR BERNARDO J
• [Y] US 4896515 A 19900130 - ENDOU HAJIME [JP]
• [A] EP 0030636 A2 19810624 - HUGHES AIRCRAFT CO [US]

Cited by
EP1359379A1; JP2013092293A; CN103512256A; JP2006242491A; EP1596140A3; CN106705470A; EP1411308A3; EP2097686A4; EP1855068A3; EP1467158A3; JP2013092292A; AU2005270472B2; EP2244040A3; EP2264385A3; US6898941B2; US8113008B2; WO2005019743A1; WO2020194945A1; WO2004055451A1; WO2006015741A1; WO03019085A1; US6945066B2; US11105539B2; US11906211B2; US6923016B2; US8844303B2; US9476614B2; US9494345B2

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