

Title (en)
HEAT PUMP SYSTEM

Title (de)
WÄRMEPUMPE

Title (fr)
POMPE À CHALEUR

Publication
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Application
EP 20206234 A 20201106

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Abstract (en)

The present invention provides a heat pump system including: a main refrigerant circuit 10 formed from a compression mechanism 11, a usage-side heat exchanger 12, an intermediate heat exchanger 13, a first expansion device 14 and a heat source side heat exchanger 15; a bypass refrigerant circuit 20 branched off from a pipe 16 between the usage-side heat exchanger 12 and the first expansion device 14, in which branched refrigerant is decompressed by a second expansion device 21 and thereafter, heat of the refrigerant is exchanged with that of refrigerant flowing through the main refrigerant circuit 10 by the intermediate heat exchanger 13, and the refrigerant joins up refrigerant which is in the middle of a compression operation of the compressing rotation element; and a control device 60, wherein when temperature of heat medium which flows into the usage-side heat exchanger 12 rises, the control device 60 controls a valve opening of at least the second expansion device 21 to increase a ratio of an amount of refrigerant flowing through the bypass refrigerant circuit 20 to an amount of refrigerant flowing on a side of the main refrigerant circuit 10 of the intermediate heat exchanger 13, and even if temperature of the usage-side heat medium which flows into the usage-side heat exchanger 12 rises, deterioration of COP is suppressed by performing appropriate control.

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Citation (applicant)
JP 2008008499 A 20080117 - SANYO ELECTRIC CO

Citation (search report)
• [XA] DE 112016004544 T5 20180621 - DENSO CORP [JP]
• [A] US 2010115975 A1 20100513 - MITRA BISWAJIT [US], et al
• [A] WO 2009091401 A1 20090723 - CARRIER CORP [US], et al

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