

Title (en)  
HEAT PUMP AND AIR CONDITIONER OR WATER HEATER HAVING THE SAME

Title (de)  
WÄRMEPUMPE UND KLIMAANLAGE ODER WASSERERHITZER DAMIT

Title (fr)  
POMPE À CHALEUR ET CLIMATISEUR OU CHAUFFE-EAU ÉQUIPÉS DE CELLE-CI

Publication  
**EP 2980498 A1 20160203 (EN)**

Application  
**EP 15180070 A 20080121**

Priority  

- EP 15180070 A 20080121
- EP 08703521 A 20080121
- JP 2008050671 W 20080121

Abstract (en)  
A heat pump that can accurately detect a frost formation state on an evaporator without being affected by changes in an indoor environment and changes in a compressor frequency, and an air conditioner or water heater on which the heat pump is mounted are provided. In the heat pump having a refrigerant circuit in which a compressor 3, an indoor heat exchanger 8 (condenser), an expansion valve 5, and an outdoor heat exchanger 6 (evaporator) are sequentially connected, evaporator refrigerant saturation temperature detecting means 10 for detecting an evaporation temperature  $T_e$  of the outdoor heat exchanger 6, evaporator sucked air temperature detecting means 11 for detecting an evaporator sucked air temperature  $T_a$  of the outdoor heat exchanger 6, compressor frequency detecting means 12 for detecting a compressor frequency  $f$  of the compressor 3, and frost formation state detecting means 103 for detecting a frost formation state on the outdoor heat exchanger 6 are provided, and the frost formation state detecting means 103 detects a drop in heat exchange performance caused by a frost formation on the outdoor heat exchanger 6 on the basis of a characteristic amount  $T_1$ , which is a calculation value obtained by dividing a difference between the evaporator sucked air temperature  $T_a$  and the evaporation temperature  $T_e$  by a compressor frequency  $f$ .

IPC 8 full level  
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Citation (applicant)  

- JP 2001099529 A 20010413 - HITACHI LTD
- JP S6219656 A 19870128 - TOSHIBA CORP

Citation (search report)  

- [X1] EP 1855064 A1 20071114 - DAIKIN IND LTD [JP]
- [A] WO 2004013548 A2 20040212 - WATER COMPANY [US]
- [A] US 6715304 B1 20040406 - WYCOFF LYMAN W [US]

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DOCDB simple family (publication)  
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