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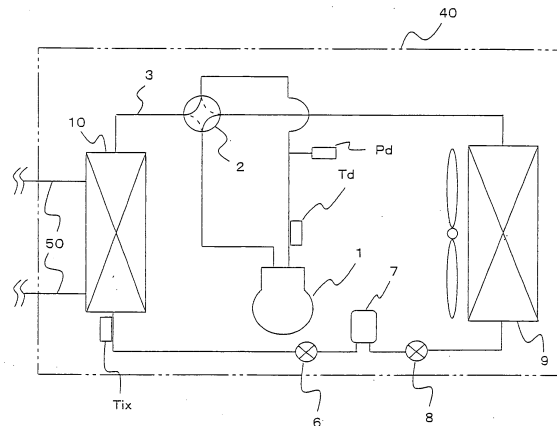
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(54) **Hot water system**

(57) A hot water system includes: a compressor (1) with variable operation capacity; a four-way valve (2) for switching the direction of the refrigerating cycle; a plate heat exchanger (10) for exchanging heat between water and a refrigerant; an electronic expansion valve (6) for controlling the flow rate of the refrigerant to reduce the pressure; and a heat exchanger (9) for exchanging heat between air and the refrigerant, which are connected in that order by a pipeline (3) to form a refrigerating cycle for circulating the refrigerant, thereby heating water. The hot water system further includes; pressure detection means (Pd) disposed between the outlet of the compressor (1) and the two-way valve (2), for detecting the pressure of the refrigerant discharged from the compressor (1), wherein the speed of operation of the compressor (1) is controlled according to the difference between the condensing temperature calculated from the pressure detected by the pressure detection means (Pd) and a target condensing temperature.

FIG. 1



- 1: COMPRESSOR
- 2: FOUR-WAY VALVE
- 3: PIPELINE
- 6: FIRST ELECTRONIC EXPANSION VALVE
- 7: RECEIVER
- 8: SECOND ELECTRONIC EXPANSION VALVE
- 9: HEAT EXCHANGER
- 10: PLATE HEAT EXCHANGER
- 40: HOT WATER SYSTEM OUTDOOR UNIT
- Td: TEMPERATURE SENSOR FOR DETECTING DISCHARGED REFRIGERANT TEMPERATURE
- Tix: TEMPERATURE SENSOR FOR DETECTING LIQUID REFRIGERANT TEMPERATURE
- Pd: PRESSURE DETECTION MEANS FOR DETECTING DISCHARGED REFRIGERANT PRESSURE

**EP 1 972 871 A3**



EUROPEAN SEARCH REPORT

Application Number  
EP 07 25 4438

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A	* figures 1-3 * * page 9, line 9 * * page 10, line 3 - line 4 * -----	4-6	ADD. F25B13/00
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A	* figures 1-29 * * column 14, line 47 - column 15, line 9 * -----	4-6	
A	US 2006/107689 A1 (NUNGESSER ROY J [US] ET AL) 25 May 2006 (2006-05-25) * figure 1 * -----	4-6	
			TECHNICAL FIELDS SEARCHED (IPC)
			F25B
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
The Hague		1 July 2015	Dezso, Gabor
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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Application Number

EP 07 25 4438

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**CLAIMS INCURRING FEES**

The present European patent application comprised at the time of filing claims for which payment was due.

Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due and for those claims for which claims fees have been paid, namely claim(s):

No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due.

**LACK OF UNITY OF INVENTION**

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.

As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.

Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:

None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:

The present supplementary European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims (Rule 164 (1) EPC).



**LACK OF UNITY OF INVENTION  
SHEET B**

Application Number  
EP 07 25 4438

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The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

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1. claims: 1-3(completely); 7(partially)

Hot water system with pressure detection means disposed between the outlet of the compressor and the four-way-valve.

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2. claims: 4-6(completely); 7(partially)

Hot water system with pressure detection means disposed between the four way valve and the plate heat exchanger.

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**ANNEX TO THE EUROPEAN SEARCH REPORT  
ON EUROPEAN PATENT APPLICATION NO.**

EP 07 25 4438

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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

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EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82