

**PATENT COOPERATION TREATY**

**PCT**

**INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY**

(Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44bis)

Applicant's or agent's file reference W3762PCT	<b>FOR FURTHER ACTION</b>		See item 4 below
International application No. PCT/JP2010/006886	International filing date ( <i>day/month/year</i> ) 25 November 2010 (25.11.2010)	Priority date ( <i>day/month/year</i> ) 04 December 2009 (04.12.2009)	
International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237			
Applicant DAIKIN INDUSTRIES, LTD.			

<p>1. This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 bis.1(a).</p> <p>2. This REPORT consists of a total of 6 sheets, including this cover sheet.</p> <p>In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.</p>																								
<p>3. This report contains indications relating to the following items:</p> <table> <tr> <td><input checked="" type="checkbox"/></td> <td>Box No. I</td> <td>Basis of the report</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. II</td> <td>Priority</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. III</td> <td>Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. IV</td> <td>Lack of unity of invention</td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td>Box No. V</td> <td>Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. VI</td> <td>Certain documents cited</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. VII</td> <td>Certain defects in the international application</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. VIII</td> <td>Certain observations on the international application</td> </tr> </table> <p>4. The International Bureau will communicate this report to designated Offices in accordance with Rules 44bis.3(c) and 93bis.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44bis .2).</p>	<input checked="" type="checkbox"/>	Box No. I	Basis of the report	<input type="checkbox"/>	Box No. II	Priority	<input type="checkbox"/>	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability	<input type="checkbox"/>	Box No. IV	Lack of unity of invention	<input checked="" type="checkbox"/>	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement	<input type="checkbox"/>	Box No. VI	Certain documents cited	<input type="checkbox"/>	Box No. VII	Certain defects in the international application	<input type="checkbox"/>	Box No. VIII	Certain observations on the international application
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	Date of issuance of this report 10 July 2012 (10.07.2012)
The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Authorized officer  Masashi Honda
Facsimile No. +41 22 338 82 70	e-mail: pt08.pct@wipo.int

PATENT COOPERATION TREATY

**TRANSLATION**

From the  
INTERNATIONAL SEARCHING AUTHORITY

**PCT**

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

To:

Date of mailing (day/month/year) **28.12.2010**

Applicant's or agent's file reference  
**W3762PCT**

**FOR FURTHER ACTION**  
See paragraph 2 below

International application No. <b>PCT/JP2010/006886</b>	International filing date (day/month/year) <b>25.11.2010</b>	Priority date (day/month/year) <b>04.12.2009</b>
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International Patent Classification (IPC) or both national classification and IPC  
**F24F1/00, F25B1/00, H05K7/20**

Applicant  
**DAIKIN INDUSTRIES, LTD.**

1. This opinion contains indications relating to the following items:

- Box No. I Basis of the opinion
- Box No. II Priority
- Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- Box No. IV Lack of unity of invention
- Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- Box No. VI Certain documents cited
- Box No. VII Certain defects in the international application
- Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/JP	Date of completion of this opinion	Authorized officer
Facsimile No.		Telephone No.

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/JP2010/006886

Box No. I	Basis of this opinion
1.	<p>With regard to the <b>language</b>, this opinion has been established on the basis of:</p> <p><input checked="" type="checkbox"/> the international application in the language in which it was filed</p> <p><input type="checkbox"/> a translation of the international application into _____, which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).</p>
2.	<p><input type="checkbox"/> This opinion has been established taking into account the <b>rectification of an obvious mistake</b> authorized by or notified to this Authority under Rule 91 (Rule 43bis.1(a))</p>
3.	<p>With regard to any <b>nucleotide and/or amino acid sequence</b> disclosed in the international application, this opinion has been established on the basis of a sequence listing filed or furnished:</p> <p>a. (means)</p> <p><input type="checkbox"/> on paper</p> <p><input type="checkbox"/> in electronic form</p> <p>b. (time)</p> <p><input type="checkbox"/> in the international application as filed</p> <p><input type="checkbox"/> together with the international application in electronic form</p> <p><input type="checkbox"/> subsequently to this Authority for the purposes of search</p>
4.	<p><input type="checkbox"/> In addition, in the case that more than one version or copy of a sequence listing has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.</p>
5.	Additional comments:

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No. PCT/JP2010/006886
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<b>Box No. V</b>	<b>Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</b>																		
1. Statement																			
<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20%; padding: 2px;">Novelty (N)</td> <td style="padding: 2px;">Claims <u>1-5</u></td> <td style="width: 10%; text-align: right; padding: 2px;">YES</td> </tr> <tr> <td></td> <td style="padding: 2px;">Claims _____</td> <td style="width: 10%; text-align: right; padding: 2px;">NO</td> </tr> <tr> <td style="padding: 2px;">Inventive step (IS)</td> <td style="padding: 2px;">Claims _____</td> <td style="width: 10%; text-align: right; padding: 2px;">YES</td> </tr> <tr> <td></td> <td style="padding: 2px;">Claims <u>1-5</u></td> <td style="width: 10%; text-align: right; padding: 2px;">NO</td> </tr> <tr> <td style="padding: 2px;">Industrial applicability (IA)</td> <td style="padding: 2px;">Claims <u>1-5</u></td> <td style="width: 10%; text-align: right; padding: 2px;">YES</td> </tr> <tr> <td></td> <td style="padding: 2px;">Claims _____</td> <td style="width: 10%; text-align: right; padding: 2px;">NO</td> </tr> </table>	Novelty (N)	Claims <u>1-5</u>	YES		Claims _____	NO	Inventive step (IS)	Claims _____	YES		Claims <u>1-5</u>	NO	Industrial applicability (IA)	Claims <u>1-5</u>	YES		Claims _____	NO	
Novelty (N)	Claims <u>1-5</u>	YES																	
	Claims _____	NO																	
Inventive step (IS)	Claims _____	YES																	
	Claims <u>1-5</u>	NO																	
Industrial applicability (IA)	Claims <u>1-5</u>	YES																	
	Claims _____	NO																	
2. Citations and explanations:																			
<p>Document 1: JP 2006-170469 A (Daikin Industries, Ltd.), 29 June 2006, paragraphs [0038], [0043], and [0044]; fig. 1 (Family: none)</p> <p>Document 2: JP 2005-083692 A (Matsushita Electric Industrial Co., Ltd.), 31 March 2005, paragraphs [0066] and [0067]; fig. 6 (Family: none)</p> <p>Document 3: JP 2002-257450 A (Sanyo Electric Co., Ltd.), 11 September 2002, paragraph [0038]; fig. 5 (Family: none)</p> <p>Document 4: JP 2005-117819 A (Toshiba Corp.), 28 April 2005, claim 6 (Family: none)</p> <ul style="list-style-type: none"> <li>• Claims 1-3 and 5</li> <li>• Documents 1-3</li> </ul> <p>The invention as in claims 1-3 and 5 does not involve an inventive step in the light of documents 1-3 cited in the ISR.</p> <p>Document 1 (see paragraphs [0038], [0043], and [0044], fig. 1, etc.) discloses a cooling structure of an</p>																			

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/JP2010/006886

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

electronic component unit of an outdoor unit, wherein a temperature sensor (71) measures the temperature within an electronic component unit (5) configured with a heat-generating part such as an inverter (5a), and electrically-driven expansion valves (34, 61, 62) control the flow rate of a coolant that flows through a cooling unit (53) so that the temperature of the temperature sensor (71) is a desired temperature.

Document 2 (see paragraphs [0066] and [0067], fig. 6, etc.) discloses a cooling device that controls blower devices (5, 5A) for heat sinks for cooling inverters (8, 8A) that drive a plurality of compressors (1, 1A) and correspond respectively to said compressors, said blower devices (5, 5A) being controlled according to the operating states of the respective compressors.

Document 3 (see paragraph [0038], fig. 5, etc.) discloses a cooling device for semiconductor elements, wherein the temperatures of the respective cooling units (16) that cool a plurality of semiconductor elements (6) are measured by temperature sensors (32-34), electromagnetic valves (20-22) are controlled according to the respective temperatures, and a brine flow rate is adjusted.

Applying the coolant duct comprising a plurality of compressors disclosed in document 2 to the outdoor unit disclosed in document 1 so as to arrange the electronic component units (5) in parallel relative to the coolant duct, and, in doing so, apply the coolant flow rate control of electromagnetic valves according to the temperatures of respective cooling members disclosed in document 3 would be easy for a person skilled in the art.

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/JP2010/006886

**Box No. V** Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability;  
citations and explanations supporting such statement

- Claim 4

- Documents 1-4

The invention as in claim 4 does not involve an inventive step in the light of documents 1-4 cited in the ISR.

Document 4 (see claim 6, etc.) discloses power conversion equipment that detects the current of a motor driven by an inverter and controls the flow rate of a coolant used for cooling which is supplied to the inverter device.