

From the INTERNATIONAL SEARCHING AUTHORITY

To:

PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

Date of mailing (day/month/year) 22 March 2017	
Applicant's or agent's file reference PCT/JX160187	FOR FURTHER ACTION See paragraph 2 below
International application No. PCT/CN2016/099539	International filing date (day/month/year) 21 September 2016
Priority date (day/month/year) 17 June 2016	
International Patent Classification (IPC) or both national classification and IPC F24F 1/24(2011.01)i; F28D 15/02(2006.01)i	
Applicant KARHE TECHNOLOGY CO., 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 and 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.

Name and mailing address of the ISA/	Date of completion of this opinion	Authorized officer

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International application No.

PCT/CN2016/099539

Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of:
 - the international application in the language in which it was filed.
 - 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)).
2. This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43*bis*.1(a)).
3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, this opinion has been established on the basis of a sequence listing filed or furnished:
 - a. (means)
 - on paper
 - in electronic form
 - b. (time)
 - in the international application as filed
 - together with the international application in electronic form
 - subsequently to this Authority for the purposes of search
4. 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.
5. Additional comments:

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PCT/CN2016/099539

Box No. V	Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step and industrial applicability; citations and explanations supporting such statement		
1. Statement	Novelty (N)	Claims	1-15 _____ YES None _____ NO
	Inventive step (IS)	Claims	None _____ YES 1-15 _____ NO
	Industrial applicability (IA)	Claims	1-15 _____ YES None _____ NO
2. Citations and explanations :			
[1] 1. The present written opinion is formed with reference to the following documents:			
[2] D1: CN 104930603 A (23 September 2015)			
[3] D2: CN 105101751 A (25 November 2015)			
[4] 2. Novelty			
[5] D1 is considered to be the prior art document closest to the subject matter of claims 1 and 12, and relates to an outdoor unit of an air conditioner (see description, paragraphs [0057]-[0074], and fig. 1-8): the outdoor unit of the air conditioner comprises a controller C (i.e., an electric controller). The controller C further comprises a Printed Circuit Board (PCB) 30 and an electrical component. At least one heating component 28 in the electrical component is installed on the PCB 30. A heat dissipating module 50 is affixed to the surface of the heating component 28 generating lots of heat.			
[6] Hence, claims 1 and 12 differ from D1 in that a thermally superconductive heat dissipating plate is affixed to the surface of a power device with large calorific capacity; a thermally superconductive closed pipeline of a specific shape is formed in the thermally superconductive heat dissipating plate; and the pipeline is filled with a heat transfer working substance. Therefore, the subject matter of claims 1 and 12 are novel in the sense of PCT Article 33(2).			
[7] Claims 2-11 are directly or indirectly dependent on independent claim 1. Claims 13-15 are directly or indirectly dependent on independent claim 12. Therefore, claims 2-11 and 13-15 are also novel in the sense of PCT Article 33(2).			
[8] 3. Inventive step			
[9] D2 discloses that the thermally superconductive heat dissipating plate 2 is affixed to the surface of the power device 3 generating heat; the thermally superconductive closed pipeline 12 of a specific shape is formed in thermally superconductive heat dissipating plate 2; and the pipeline is filled with the heat transfer working substance 14 (see D2, description, paragraphs [0061]-[0102], and fig. 1-8). Hence, D2 discloses the distinguishing technical features between claims 1 and 12 and D1. It would be obvious to arrive at the subject matter of claims 1 and 12 by combining D1 and D2. Claims 1 and 12 lack an inventive step in the sense of PCT Article 33(3).			
[10] The thermally superconductive heat dissipating plate being formed into a curved sheet shape comprising an erect portion, a curved portion, and a transverse portion; and the thermally superconductive heat dissipating plate being parallel to the surface of the PCB and extending away from the power device are common technical means, and can be conceived of by a person skilled in the art without involving an inventive effort. Therefore, claims 2-5 lack an inventive step in the sense of PCT Article 33(3).			
[11] The additional technical features of the characterizing portion of claims 6-11 are disclosed by D2. Therefore, claims 6-11 lack an inventive step in the sense of PCT Article 33(3).			
[12] The additional technical features of the characterizing portion of claims 13 and 14 are matters of routine design of the components in the outer unit of the air conditioner. Therefore, claims 13 and 14 lack an inventive step in the sense of PCT Article 33(3).			

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PCT/CN2016/099539

Box No. V

**Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step and industrial applicability;
citations and explanations supporting such statement**

- [13] One end of the thermally superconductive heat dissipating plate away from the power device extending to an air conditioner fan and above the support thereof, which is a matter of routine design according to the arrangement of the interior space of the outdoor unit of the air conditioner and would be conceived of by a person skilled in the art without an inventive effort. Therefore, claim 15 lacks an inventive step in the sense of PCT Article 33(3).
- [14] 4. Industrial applicability
- [15] The subject matter set forth in claims 1-15 can be made or used in industry, and therefore, claims 1-15 are industrially applicable in the sense of PCT Article 33(4).