

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

PCT

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY
(PCT Rule 43bis.1)**

To:

see form PCT/ISA/220

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/EP2016/065310

International filing date (day/month/year)
30.06.2016

Priority date (day/month/year)
30.06.2015

International Patent Classification (IPC) or both national classification and IPC
INV. F03G7/06

Applicant
EXERGYN LIMITED

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 usually 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:



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Date of completion of this opinion

see form PCT/ISA/210

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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 43bis.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:
 - a. forming part of the international application as filed:
 - in the form of an Annex C/ST.25 text file.
 - on paper or in the form of an image file.
 - b. furnished together with the international application under PCT Rule 13ter.1(a) for the purposes of international search only in the form of an Annex C/ST.25 text file.
 - c. furnished subsequent to the international filing date for the purposes of international search only:
 - in the form of an Annex C/ST.25 text file (Rule 13ter.1(a)).
 - on paper or in the form of an image file (Rule 13ter.1(b) and Administrative Instructions, Section 713).
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 forming part of the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
5. Additional comments:

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

1. Statement

Novelty (N)	Yes: Claims	<u>3, 4</u>
	No: Claims	<u>1, 2, 5-7</u>
Inventive step (IS)	Yes: Claims	
	No: Claims	<u>1-7</u>
Industrial applicability (IA)	Yes: Claims	<u>1-7</u>
	No: Claims	

2. Citations and explanations

see separate sheet

Point V

Reference is made to the following documents:

- D1 DE 10 2012 202396 A1 (DYNALLOY INC [US]; GM GLOBAL TECH OPERATIONS INC [US]) 30 August 2012 (2012-08-30)
- D2 EP 1 130 257 A2 (UNITED TECHNOLOGIES CORP [US]) 5 September 2001 (2001-09-05)
- D3 US 4 306 415 A (HOCHSTEIN PETER A ET AL) 22 December 1981 (1981-12-22)

- 1 The document D1 is regarded as being the closest prior art to the subject-matter of claim 1, and discloses an energy recovery device (see paragraphs 5, 31, 42 in combination with fig. 1, 5 and 6) comprising a plurality of Shape-Memory Alloy elements 122, 162 (see paragraph 108) arranged as a plurality of wires positioned substantially parallel with each other to define a core wherein the wires are selected to have different dimensions (see paragraph 108) and the plurality of wires are activated at substantially the same time in response to a temperature change (see paragraph 103).

Claim 1 therefore does not meet the novelty requirements of Art. 33(2) PCT.

- 1.1 Applicant's attention is raised to the fact that claim 1 is also not novel (Art. 33(2) PCT) in the light of any of the following documents taken separately:

D2, see fig. 1-5 in combination with paragraph 27

D3, see the SMA bundle 12 in fig. 4

- 2 The additional features of claims 2 and 5 are also disclosed in D1, see in particular

Said claims therefore do not meet the novelty requirements of Art. 33(2) PCT.

- 3 Dependent claims 3 and 4 do not appear to contain any additional feature which, in combination with the features of any claim to which they refer, meet the requirements of Art. 33(3) PCT with respect to inventive step for the reason that the subject-matter of said claims is either in principle derivable from the disclosure of documents D1-D3, or represents simple design details which are generally known to the art.
- 4 Further independent claim 6 does not meet the conciseness requirements of Art. 6 PCT but that notwithstanding they are briefly examined:
- Taking into consideration item 1, claim 6 does not meet the requirements of Art. 33(2) PCT.
- 5 As method claim 7 specifies, in substance, in method terms the same technical features of apparatus claim 1, the reasoning of item 1 applies also to said claim, which therefore does not meet the requirements of Art. 33(2) PCT.
- 6 The following objections are also raised:
- 6.1 To satisfy the conciseness requirement of Art. 6 PCT the set of claims should include only the minimum necessary number of independent claims in any one category, with dependent claims as appropriate, Rule 6.4 (a), (b), (c). Said requirement is not satisfied by claims 1 and 6, as in the present case it is considered appropriate to use only one independent claim in any category.
- 6.2 To meet the requirements of Rule 6.3(b) PCT the independent claim should be properly cast in the two part form, with those features which in combination are part of the prior art (D1) being placed in the preamble.
- 6.3 Reference signs in parentheses should be inserted in the claims to increase their intelligibility, Rule 6.2(b) PCT. This applies to both the preamble and characterising portion.
- 6.4 To meet the requirements of Rule 5.1(a)(ii) PCT, D1-D3 should be identified in the description and the relevant background art disclosed therein should be briefly discussed.