

TRAITÉ DE COOPÉRATION EN MATIÈRE DE BREVETS

PCT

RAPPORT PRÉLIMINAIRE INTERNATIONAL SUR LA BREVETABILITÉ (chapitre I du Traité de coopération en matière de brevets)

(règle 44bis du PCT)

Référence du dossier du déposant ou du mandataire 11685OLC744F	POUR SUITE À DONNER	Voir le point 4 ci-dessous
Demande internationale no. PCT/FR2013/050339	Date du dépôt international (<i>jour/mois/année</i>) 19 February 2013 (19.02.2013)	Date de priorité (<i>jour/mois/année</i>) 20 February 2012 (20.02.2012)
Classification internationale des brevets (8 ^e édition, sauf indication d'une édition antérieure) Voir les informations pertinentes dans le formulaire PCT/ISA/237		
Déposant SNECMA		

<p>1. Le présent rapport préliminaire international sur la brevetabilité (chapitre I) est établi par le Bureau international au nom de l'administration chargée de la recherche internationale selon la règle 44bis.1.a).</p> <p>2. Ce RAPPORT comprend un total de 6 feuilles, y compris la présente feuille de couverture.</p> <p style="margin-left: 20px;">Dans les feuilles jointes, toute référence à l'opinion écrite de l'administration chargée de la recherche internationale doit être entendue, à la place, comme une référence au rapport préliminaire international sur la brevetabilité (chapitre I).</p>																								
<p>3. Le présent rapport contient des indications relatives aux points suivants :</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 5%; text-align: center;"><input checked="" type="checkbox"/></td> <td style="width: 30%;">Cadre n° I</td> <td>Base de l'opinion</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Cadre n° II</td> <td>Priorité</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Cadre n° III</td> <td>Absence de formulation d'opinion quant à la nouveauté, l'activité inventive et la possibilité d'application industrielle</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Cadre n° IV</td> <td>Absence d'unité de l'invention</td> </tr> <tr> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td>Cadre n° V</td> <td>Déclaration motivée selon l'article 35.2) quant à la nouveauté, l'activité inventive et la possibilité d'application industrielle; citations et explications à l'appui de cette déclaration</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Cadre n° VI</td> <td>Certains documents cités</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Cadre n° VII</td> <td>Certaines irrégularités relevées dans la demande internationale</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Cadre n° VIII</td> <td>Certaines observations relatives à la demande internationale</td> </tr> </table> <p>4. Le Bureau international communiquera le présent rapport aux offices désignés conformément aux règles 44bis.3.c) et 93bis.1 mais pas avant l'expiration du délai de 30 mois à compter de la date de priorité (règle 44bis.2), sauf si le déposant a présenté une requête expresse à cet égard en vertu de l'article 23.2).</p>	<input checked="" type="checkbox"/>	Cadre n° I	Base de l'opinion	<input type="checkbox"/>	Cadre n° II	Priorité	<input type="checkbox"/>	Cadre n° III	Absence de formulation d'opinion quant à la nouveauté, l'activité inventive et la possibilité d'application industrielle	<input type="checkbox"/>	Cadre n° IV	Absence d'unité de l'invention	<input checked="" type="checkbox"/>	Cadre n° V	Déclaration motivée selon l'article 35.2) quant à la nouveauté, l'activité inventive et la possibilité d'application industrielle; citations et explications à l'appui de cette déclaration	<input type="checkbox"/>	Cadre n° VI	Certains documents cités	<input type="checkbox"/>	Cadre n° VII	Certaines irrégularités relevées dans la demande internationale	<input type="checkbox"/>	Cadre n° VIII	Certaines observations relatives à la demande internationale
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Bureau international de l'OMPI 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Date d'établissement du présent rapport 26 August 2014 (26.08.2014)
no de télécopieur +41 22 338 82 70	Fonctionnaire autorisé Simin Baharlou e-mail: pt09.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)	See form PCT/ISA/210
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Applicant's or agent's file reference 11685OLC744F	FOR FURTHER ACTION See paragraph 2 below
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International application No. PCT/FR2013/050339	International filing date (day/month/year) 19.02.2013	Priority date (day/month/year) 20.02.2012
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International Patent Classification (IPC) or both national classification and IPC
F01D17/06 F01D17/08 F02K9/48

Applicant
SNECMA

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/EP	Date of completion of this opinion	Authorized officer
Facsimile No.		Telephone No.

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/FR2013/050339

Box No. I Basis of this 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 and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material
 - a sequence listing
 - table(s) related to the sequence listing
 - b. format of material
 - on paper
 - in electronic form
 - c. time of filing/furnishing
 - contained in the international application as filed
 - filed together with the international application in electronic form
 - furnished 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 and/or table(s) relating thereto 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:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No. PCT/FR2013/050339
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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
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1. Statement			
Novelty (N)	Claims	1-12	YES
	Claims	_____	NO
Inventive step (IS)	Claims	1-12	YES
	Claims	_____	NO
Industrial applicability (IA)	Claims	1-12	YES
	Claims	_____	NO

2. Citations and explanations:	
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Reference is made to the following document:

D1 US 6 321 525 B1 (ROGERS DAVID MARK [US]) 27
November 2001 (2001-11-27)

1 Claim 1

1.1 D1 (column 1, lines 36-39 and column 2, lines 21-30), which is considered to be the prior art closest to the subject matter of claim 1, discloses a method for ensuring the safety of operation of a rotary assembly of a turbomachine (22), which rotary assembly comprises a turbine (28) the rotation of which is brought about by the expansion of a driving fluid which is intended to flow through the turbine (28), and a rotary machine (24) which is mechanically driven in rotation by the turbine (28) so as to displace a driven fluid which is intended to flow through the

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

rotary machine (24).

Therefore the subject matter of claim 1 differs from this known method in that the crossing of a predetermined speed threshold by the rotary assembly is anticipated by repetitively carrying out a prediction cycle during which:

- the following parameters are measured in a predetermined time interval:

* an actual rotational speed of the rotary assembly at a given observation instant within said time interval;

* at least one fluid/turbine interaction parameter which is indicative of the interaction between the turbine and the driving fluid;

* at least one fluid/rotary machine interaction parameter which is indicative of the interaction between the rotary machine and the driven fluid;

- the driving torque applied by the turbine to the rotary assembly is estimated from said actual rotational speed and said at least one fluid/turbine interaction parameter;

- independently of the estimate of said driving torque, the resistant torque applied by the rotary machine to the rotary assembly is estimated, from said actual rotational speed and from said at least one fluid/rotary machine interaction parameter;

- a value indicative of the difference between said driving torque and said resistant torque is formulated;

- a predicted rotational speed of the rotary assembly at a prediction instant subsequent to

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

said observation instant is calculated from said actual rotational speed, said indicative value and the difference in time between the prediction instant and the observation instant;

- a first condition is determined to have been satisfied if said predicted rotational speed crosses the predetermined speed threshold, and in that an action is carried out on the operation of the turbomachine in order to limit the extent to which the rotary assembly thereof exceeds, in terms of speed, said threshold if, during the prediction cycle, it is determined that at least the first condition is met; therefore it is novel.

- 1.2 The problem addressed by the present invention can be considered that of providing a turbomachine with overspeed protection.

The solution to this problem, as proposed in claim 1 of the present application, is considered to involve an inventive step, for the following reasons: none of the cited documents describes, alone or in combination, all of the features of claim 1. Also, the subject matter of claim 1 is not obvious to a person skilled in the art.

- 2 Claims 2-12 are dependent on claim 1 and as such likewise meet the requirements of novelty and inventive step.