

PATENT COOPERATION TREATY

24 OCT. 2016



From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

PCT

To:

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NOTIFICATION OF TRANSMITTAL OF
THE INTERNATIONAL PRELIMINARY
REPORT ON PATENTABILITY

(PCT Rule 71.1)

Date of mailing
(day/month/year)

18.10.2016

Applicant's or agent's file reference
135564

IMPORTANT NOTIFICATION

International application No.
PCT/DK2014/050212

International filing date (day/month/year)
08.07.2014

Priority date (day/month/year)

Applicant
GEA Process Engineering A/S

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary report on patentability and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.
4. **REMINDER**

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary report on patentability. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

The applicant's attention is drawn to Article 33(5), which provides that the criteria of novelty, inventive step and industrial applicability described in Article 33(2) to (4) merely serve the purposes of international preliminary examination and that "any Contracting State may apply additional or different criteria for the purposes of deciding whether, in that State, the claimed inventions is patentable or not" (see also Article 27(5)). Such additional criteria may relate, for example, to exemptions from patentability, requirements for enabling disclosure, clarity and support for the claims.

Name and mailing address of the international
preliminary examining authority:



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PATENT COOPERATION TREATY



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JN135564

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 135564	FOR FURTHER ACTION		See Form PCT/PEA/416
International application No. PCT/DK2014/050212	International filing date (day/month/year) 08.07.2014	Priority date (day/month/year)	
International Patent Classification (IPC) or national classification and IPC INV. A23F5/24			
Applicant GEA Process Engineering AS			
1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36. 2. This REPORT consists of a total of <u>6</u> sheets, including this cover sheet. 3. This report is also accompanied by ANNEXES, comprising: a. ☐ (sent to the applicant and to the International Bureau) a total of <u> </u> sheets, as follows: ☐ sheets of the description, claims and/or drawings which have been amended and/or sheets containing rectifications authorized by this Authority, unless those sheets were superseded or cancelled, and any accompanying letters (see Rules 46.5, 66.8, 70.16, 91.2, and Section 607 of the Administrative Instructions). ☐ sheets containing rectifications, where the decision was made by this Authority not to take them into account because they were not authorized by or notified to this Authority at the time when this Authority began to draw up this report, and any accompanying letters (Rules 66.4bis, 70.2(e), 70.16 and 91.2). ☐ superseded sheets and any accompanying letters, where this Authority either considers that the superseding sheets contain an amendment that goes beyond the disclosure in the international application as filed, or the superseding sheets were not accompanied by a letter indicating the basis for the amendments in the application as filed, as indicated in item 4 of Box No. I and the Supplemental Box (see Rule 70.16(b)). b. ☐ (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) <u> </u>, containing a sequence listing, in the form of an Annex C/ST.25 text file, as indicated in the Supplemental Box Relating to Sequence Listing (see paragraph 3ter of Annex C of the Administrative Instructions).			
4. This report contains indications relating to the following items: ☒ Box No. I Basis of the report ☐ 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 Article 35(2) 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			
Date of submission of the demand 01.04.2016		Date of completion of this report 18.10.2016	
Name and mailing address of the international preliminary examining authority:  European Patent Office P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Fax: +31 70 340 - 3016		Authorized officer van Klompenburg, Wim Telephone No. +31 70 340-2243	



**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
PCT/DK2014/050212

Box No. I Basis of the report

1. With regard to the **language**, this report is based on
- ☒ 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 (under Rules 12.3(a) and 23.1(b))
 - ☐ publication of the international application (under Rule 12.4(a))
 - ☐ international preliminary examination (under Rules 55.2(a) and/or 55.3(a) and (b))
2. With regard to the **elements*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report):*

Description, Pages

1-20 as originally filed

Claims, Numbers

1-26 as originally filed

- ☐ a sequence listing - see Supplemental Box Relating to Sequence Listing.
3. ☐ The amendments have resulted in the cancellation of:
- ☐ the description, pages
 - ☐ the claims, Nos.
 - ☐ the drawings, sheets/figs
 - ☐ the sequence listing (*specify*):
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since either they are considered to go beyond the disclosure as filed, or they were not accompanied by a letter indicating the basis for the amendments in the application as filed, as indicated in the Supplemental Box (Rules 70.2(c) and (c-bis)):
- ☐ the description, pages
 - ☐ the claims, Nos.
 - ☐ the drawings, sheets/figs
 - ☐ the sequence listing (*specify*):
5. ☐ This report has been established:
- ☐ taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rules 66.1(d-bis) and 70.2(e)).
 - ☐ without taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91(Rules 66.4bis and 70.2(e)).

**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
PCT/DK2014/050212

6. ☒ With regard to top-up searches (Rules 66.1*ter* and 70.2(f)):
- ☒ A top-up search was carried out by this Authority on 12.10.2016 (all discovered documents are listed in the Supplemental Box Relating to Top-up Search).
 - ☐ Additional relevant documents have been discovered during the top-up search.
 - ☐ No top-up search was carried out by this Authority because it would serve no useful purpose.
7. ☐ Supplementary international search report(s) from Authority(ies) has/have been received and taken into account in establishing this report (Rule 45bis.8(b) and (c)).

* If item 4 applies, some or all of those sheets may be marked "superseded".

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	<u>1-26</u>
	No: Claims	
Inventive step (IS)	Yes: Claims	
	No: Claims	<u>1-26</u>
Industrial applicability (IA)	Yes: Claims	<u>1-26</u>
	No: Claims	

2. Citations and explanations (Rule 70.7):

see separate sheet

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

Reference is made to the following documents:

- D1 US 4 983 408 A (COLTON RALPH L [US]) 8 January 1991 (1991-01-08)
- D2 SU 1 597 151 A1 (MO T I PISHCHEVOJ PROMY [SU]) 7 October 1990 (1990-10-07)
- D3 US 2013/177672 A1 (ROBINSON URANO A [US] ET AL) 11 July 2013 (2013-07-11)
- D4 WO 2013/019676 A2 (BEAN LOGIK LLC [US]; NEACE ROBERT JR [US]) 7 February 2013 (2013-02-07)

1 Inventive Step (Art. 33(3) PCT)

- 1.1 The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claims 1-26 does not involve an inventive step in the sense of Article 33(3) PCT.
- 1.2 D1 (or also D2) is regarded as being the prior art closest to the subject-matter of claim 1, and discloses a process for production of an instant coffee product in a high yield (col.1, l.4-10), comprising the steps of extracting roast and ground coffee beans with water to produce a first extract and spent coffee grounds (col.3 l.57-61), adding water to the spent coffee grounds to produce an aqueous suspension and hydrolysing the aqueous suspension using a hydrolysing enzyme to produce a second extract and spent remains (col.4, l.1-4), adding the first extract to the second extract (col.4, l.5-10), optionally after concentration and/or drying of the second extract, to obtain a combined extract, and drying the combined extract to obtain an instant coffee product (col.4, l.23-26).
- 1.3 The subject-matter of claim 1 therefore differs from this known method in that the first extraction is performed with water having a temperature of 80 °C or less and is therefore new.
- 1.4 It has to be noted however that whereas the differences in temperature applied in the methods according to D1 and those of present claim 1 are considerable (200 °C versus below 80 °C), the temperature applied in the first

extraction in example 1 and claim 1 of D2 is 90 °C and therefore close to the claimed range of present claim 1 (below 80 °C). It can be excluded that significant amounts of certain enzyme inhibiting compounds like HMF are present at 90 °C and absent at 80 °C.

- 1.5 The technical effect of the difference is therefore the production of an instant coffee product with reduced amounts of off-flavours, toxic substances and without impaired taste which is the result of the damage of aroma compounds at a high temperature (p.1, l.21-26; p.4, l.8-9; 12-13). The problem to be solved by the present invention may therefore be regarded as how to achieve extraction of the roast and ground coffee which demonstrates reduced production of decomposition products and limited damage of the aroma compounds.

The solution proposed in claim 1 of the present application cannot be considered to involve an inventive step (Article 33(3) PCT). The use of low extraction temperatures, described in documents D3 and D4 (see references) is already known as providing the same advantages as in the present application, namely limiting the production of undesired decomposition products and preserving the desired sensitive compounds of coffee. The skilled person when confronted with this known problem would be motivated to combine D1 (or D2) with D3 (or D4) as he would regard it as a normal design option to perform the first extraction step in lower temperatures, in the method described in D1 (or D2) in order to solve the problem posed.

- 1.6 Thus, in view of the above remarks, the solution proposed in claim 1 of the present application cannot be considered to involve an inventive step (Article 33(3) PCT). The use of low extraction temperatures, described in documents D3 and D4 (see references) is already known as providing the same advantages as in the present application, namely limiting the production of undesired decomposition products and preserving the desired sensitive compounds of coffee. The skilled person when confronted with this known problem would be motivated to combine D1 (or D2) with D3 (or D4) as he would regard it as a normal design option to perform the first extraction step in lower temperatures, in the method described in D1 (or D2) in order to solve the problem posed.

- 1.7 Dependent claims 2-26 do not appear to contain any additional features which, in combination with the features of claim 1, meet the requirements of the PCT in respect of inventive step, since the technical features of said claims can be obtained by a skilled person in a simple routine work, without any inventive input, depending on the properties of the product he wishes to have, with the simple knowledge of the field.

Re Item VIII

Certain observations on the international application

- 2 The application does not meet the requirements of Article 6 PCT, because claims 21-23 are not clear.
- 2.1 Claims 21-23 do not meet the requirements of Article 6 PCT because the matter for which protection is sought is not clearly defined. Said claims attempt to define the subject-matter in terms of the result to be achieved (the yield of the solids in the extract), which merely amounts to a statement of the underlying problem, without providing the technical features necessary for achieving this result.