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**Datasheet for the decision  
of 24 March 2015**

**Case Number:** T 0553/13 - 3.3.06

**Application Number:** 03782039.6

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**IPC:** C10G45/00, C10G47/00,  
C10G49/00, C10G49/10, B01J3/04,  
B01J19/24

**Language of the proceedings:** EN

**Title of invention:**  
Method of hydrogenation of heavy oil

**Applicant:**  
Forco Technologies

**Headword:**  
Heavy oil hydrogenation / FORCO

**Relevant legal provisions:**  
EPC Art. 123(2)

**Keyword:**  
Added subject-matter (yes)

**Decisions cited:**

**Catchword:**



**Beschwerdekammern  
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Case Number: T 0553/13 - 3.3.06

**D E C I S I O N**  
**of Technical Board of Appeal 3.3.06**  
**of 24 March 2015**

**Appellant:** Forco Technologies  
(Applicant) 16 Nehro Street  
Heliopolis  
Cairo (EG)

**Representative:** Appleyard Lees  
15 Clare Road  
Halifax HX1 2HY (GB)

**Decision under appeal:** **Decision of the Examining Division of the European Patent Office posted on 6 September 2012 refusing European patent application No. 03782039.6 pursuant to Article 97(2) EPC.**

**Composition of the Board:**

**Chairman** G. Santavicca  
**Members:** L. Li Voti  
S. Fernández de Córdoba

## Summary of Facts and Submissions

- I. This appeal lies from the decision of the Examining Division to refuse European patent application no. 03 782 039.6.
- II. In the decision under appeal, the Examining Division decided that the subject-matter of claims 1 and 4 received on 23 January 2012, the then only pending Applicant's claim request, did not to comply with the requirements of Article 123(2) EPC.
- III. With its statement setting out the grounds of appeal (dated 14 January 2013), the Appellant filed an amended set of claims and submitted that the claimed subject-matter complied with the requirements of Article 123(2) EPC, was novel and involved an inventive over the cited prior art.

The Appellant requested that the decision under appeal be set aside and that a patent be granted on the basis of claims 1 to 4 filed with letter of 14 January 2013, (as well as pages 1 to 4 of the description as originally filed, page 5 of the description filed with letter of 16 January 2012 and drawings sheet 1/1 as originally filed). It also requested, as a precaution, that oral proceedings be held before any refusal of the application.

- IV. Claims 1 to 4 according to the Appellant's only claim request read as follows:

*"1. A method of hydrogenation of heavy oil, comprising the sequential steps of:*

*introducing a catalyst to untreated heavy oil by means of an eductor (14) and pump (26); then*

*heating the untreated heavy oil prior to adding hydrogen gas by passing the untreated heavy oil through a heat exchanger (24) through which passes treated heavy oil; then*

*injecting hydrogen gas into the preheated untreated heavy oil at a location downstream of heat exchanger (24) and upstream of a heater (12); then*

*heating the untreated heavy oil containing hydrogen in the heater (12) to lower the viscosity of the untreated heavy oil; then*

*pumping the untreated heavy oil containing hydrogen and dispersed catalyst through a continuous pipe reactor (10) defining a serpentine flow path to create a turbulent flow of untreated heavy oil containing to promote addition of hydrogen into the untreated heavy oil, the continuous pipe reactor (10) being separate and distinct from both the heat exchanger (24) and the heater (12); and*

*promoting optimal reaction kinetics by injecting make up hydrogen at space injection points along the continuous pipe reactor (10)."*

*"2. The method as defined in Claim 1, including a further step of positioning a catalyst recovery separator (18) downstream of the continuous pipe reactor (10) for the purpose of recovering and recycling catalyst."*

*"3. The method as defined in Claim 1, including a further step of positioning a hydrogen recovery separator (20) downstream of the continuous pipe reactor (10) for the purpose of recovering and recycling hydrogen."*

*"4. The method as defined in Claim 1, wherein continuous removal and separation of the dispersed catalyst permit the user to control catalyst poisoning and ensure milder operating conditions."*

- V. In a communication pursuant to Article 15(1) of the Rules of Procedure of the Boards of Appeal (RPBA), dated 15 October 2014, issued with the summons to oral proceedings, the Board addressed various discrepancies existing between the wording of the claimed process and the disclosure in the application as originally filed and expressed its preliminary view that the subject-matter defined in claims 1 to 4 at issue did not comply with the requirements of Article 123(2) and/or 84 EPC.
- VI. The Appellant did not reply to the objections raised in the Board's communication of 15 October 2014. By a fax dated 17 March 2015, the Appellant informed the Board that it possibly would not attend the oral proceedings scheduled for 24 March 2015. This was confirmed by the Appellant's representative in a telephone conversation held with the registrar of the Board on 23 March 2015.
- VII. Oral proceedings were held on 24 March 2015 in the absence of the duly summoned Appellant, pursuant to Rule 115(2) EPC.

## Reasons for the Decision

Allowability of the amendments (Article 123(2) EPC)

1. According to Article 123(2) EPC an European patent application may not be amended in such a way that it contains subject-matter which extends beyond the content of the application as filed.

An amendment is to be regarded as introducing subject-matter which extends beyond the content of the application as filed, and therefore unallowable, if the overall change in the content of the application (whether by way of addition, alteration or excision) results in the skilled person being presented with information which is not directly and unambiguously derivable from that previously presented by the application as filed, even when account is taken of matter which is implicit to a person skilled in the art (see Case Law of the Boards of Appeal of the EPO, 7th edition 2013, II.E.1 on page 361).

2. As regards the compliance of the subject-matters of claims 1 to 3 at issue with the requirements of Article 123(2) EPC, as already pointed out in the communication of 15 October 2014, *inter alia* (points 4.1 to 4.6, 4.10.1 and 4.10.2), the Board's objections remain as follows:

- 2.1 The method of hydrogenation of heavy oil according to claim 1 at issue comprises six sequential steps.

- 2.1.1 The amended claim is in the Appellant's view supported by claim 1 and the passages contained on page 2, lines 9 to 12 and 30 to 36 as well as page 4, lines 13 to 27

- and figure 1 of the originally filed application documents (reference being made to the published international application WO 2005/061676 A1).
- 2.1.2 The first step of claim 1 at issue requires the introduction of a catalyst into an untreated heavy oil by means of an eductor (14) and a pump (26).
- 2.1.3 As explained on page 4, lines 13 to 20 of the original application, **fresh** catalyst is added by means of pump (26) whilst only **recycled** catalyst is added to the untreated oil by means of an eductor (14). This aspect of the invention is not specifically indicated in the amended claim. Moreover, no other possibilities for adding fresh and recycled catalyst are disclosed or suggested in the original description.
- 2.1.4 Therefore, the first step of the claimed process includes embodiments which have no basis in the originally filed application.
- 2.2 The second step of claim 1 at issue requires the heating of the untreated heavy oil prior to adding hydrogen gas by passing the untreated heavy oil through a heat exchanger (24) through which passes treated heavy oil.
- 2.2.1 This step is in the Appellant's view supported by lines 20 to 22 of page 4 and figure 1 of the application as filed. However, this step does not specify that the heating should occur on the untreated heavy oil which contains added catalyst but includes a heating step on a portion of untreated heavy oil to which catalyst has not yet been added, which step is nowhere disclosed in the original description.

- 2.2.2 The second step does not specify either that the untreated oil contains dispersed catalyst, which appears to be an essential requirement of the process.
- 2.2.3 Therefore, this step too is not based on the application as originally filed.
- 2.3 The third step requires injecting hydrogen gas into the preheated untreated heavy oil at a location downstream of a heat exchanger (24) and upstream of a heater (12).
  - 2.3.1 These features of the third step seem to be supported by the passage on lines 22 to 26 of page 4 and figure 1.
  - 2.3.2 However, this step, as the previous one, does not specify that the untreated oil contains dispersed catalyst and thus it does not comply either with the requirements of Article 123(2) EPC.
- 2.4 The fourth step requires heating the untreated heavy oil containing hydrogen in the heater (12) to lower the viscosity of the untreated heavy oil.
  - 2.4.1 The heating step is supported by the passage bridging pages 3 and 4 as well as from that on page 4, lines 26 to 27 and figure 1.
  - 2.4.2 However, also this step, as the previous ones, does not specify that the untreated oil contains dispersed catalyst and thus it does not comply with the requirements of Article 123(2) EPC.
- 2.5 The additional process step of dependent claim 2 concerning the catalyst recovery separator (18) (see point IV above), is supported according to the



Appellant by page 4, lines 6 to 8, 30 to 31 and figure 1. However, the wording of claim 2 does not require that the treated heavy oil passes through a hydrogen recovery separator (20) **before** the catalyst recovery separator (18) as disclosed in the application as originally filed.

Therefore, also this claim does not comply with the requirements of Article 123(2) EPC.

- 2.6 The additional process step of dependent claim 3 concerning the hydrogen recovery separator (20) (see point IV above), is supported according to the Appellant by page 4, lines 8 to 11 and 30 to 31 and figure 1. However, the wording of this claim does not require that the treated heavy oil, **after** passing the hydrogen recovery separator, passes also through a catalyst recovery separator (18) as disclosed in the application as originally filed.

Therefore, this claim does not meet either the requirements of Article 123(2) EPC.

3. Since the Appellant (see point VI above) did not submit any reply to these objections, also raised in the Board's communication of 15 October 2014, the Board has no reason to deviate from its provisional opinion expressed in the said communication.
4. Therefore, claims 1 to 3 according to the only Appellant's claim request include subject-matters which are not directly and unambiguously derivable from the application documents as originally filed. Consequently, Claims 1 to 3 at issue do not meet the requirements of Article 123(2) EPC and the Appellant's

claim request does not fulfil the requirements of the EPC, i.e. is not allowable.

**Order**

**For these reasons it is decided that:**

The appeal is dismissed.

The Registrar:

The Chairman:



D. Magliano

G. Santavicca

Decision electronically authenticated