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Datasheet for the decision of 18 September 2018

Case Number: T 1376/16 - 3.3.02

Application Number: 10730483.4

Publication Number: 2459679

IPC: C10G3/00, C11C3/12, C11C3/00, C11C3/02

Language of the proceedings: EN

Title of invention:
A PROCESS FOR THE PRODUCTION OF BIO-NAPHTHA FROM COMPLEX MIXTURES OF NATURAL OCCURRING FATS&OILS

Applicant:
TOTAL RESEARCH & TECHNOLOGY FELUY

Headword:
TOTAL / PRODUCTION OF NAPHTHA / CRACKING OF NAPHTHA

Relevant legal provisions:
RPBA Art. 13(1)

Keyword:
Late-filed main request - request filed at the oral proceedings - admitted (no)

Decisions cited:

Catchword:

Europäisches Patentamt
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Case Number: T 1376/16 - 3.3.02

D E C I S I O N
of Technical Board of Appeal 3.3.02
of 18 September 2018

Appellant: (Applicant)	TOTAL RESEARCH & TECHNOLOGY FELUY Zone Industrielle C 7181 Seneffe (BE)
Representative:	Cabinet Chaillot 16/20, avenue de l'Agent Sarre B.P. 74 92703 Colombes Cedex (FR)
Decision under appeal:	**Decision of the Examining Division of the European Patent Office posted on 2 December 2015 refusing European patent application No. 10730483.4 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman	M. O. Müller
Members:	M. Maremonti
	P. de Heij

Summary of Facts and Submissions

I. The appeal by the applicant (hereinafter "appellant") lies from the decision of the examining division to refuse the European patent application No. 10 730 483.4.

II. The examining division came to the following conclusion:

> The subject-matter of claim 1 according to the then pending main request and auxiliary requests 1 to 5 did not meet the requirements of clarity set forth in Article 84 EPC.

III. With its statement setting out the grounds of appeal, the appellant filed four sets of claims submitted as main request and auxiliary requests 1 to 3. It contested the reasoning of the examining division and maintained that the subject-matter according to all claim requests was clear, novel and involved an inventive step.

IV. In preparation for the oral proceedings, the Board issued a communication drawing the attention of the appellant to salient issues that might possibly be debated at the oral proceedings. In particular, the Board expressed the preliminary opinion that none of the filed claim requests appeared to comply with Article 123(2) EPC and Article 84 EPC.

V. In its reply to the Board's communication dated 12 August 2018, the appellant filed a main request and three auxiliary requests. The main request contained four claims, the sole independent claim 1 reading as follows:

"*1 - Use of a bio-naphtha as a direct feedstock of a steamcracker, said bio-naphtha being used as such or together with bio-propane, in order to obtain cracked products including bio-ethylene, bio-propylene, bio-butadiene, bio-isoprene, bio-cyclopentadiene and bio-piperylenes, bio-benzene, bio-toluene, bio-xylene, bio-gasoline and methane and a ethylene to methane weight ratio of at least 3*

wherein in the steamcracking process the bio-naphtha is mixed with steam in a ratio of 0.3 to 0.45 kg steam per kg bio-naphtha

wherein said bio-naphtha or said bio-naphtha and said bio-propane are obtained from natural occurring fats & oils selected among vegetable oils and animal fats, and comprising triglycerides and free fatty acids, by the following process:

- *said natural occurring fats & oils are subjected to a refining treatment for removing the major part of non-triglyceride and non-fatty acid components thereby obtaining refined fats & oils, wherein the refining treatment consists in either a chemical refining including the steps of degumming, neutralisation, bleaching and deodorization, or a physical refining including the steps of degumming, bleaching and deodorization by vacuum stripping;*
- *said refined fats & oils are transformed into a composition of paraffins consisting of at least 90% of linear paraffins as the bio-naphtha together with bio-propane by an hydrodeoxygenation wherein said hydrodeoxygenation is performed in the presence of hydrogen and of at least one catalyst selected among Ni, Mo, Co, NiW, NiMo, CoMo, NiCoW, NiCoMo, NiMoW and CoMoW oxides or sulphides as catalytic phase, preferably supported on high surface area carbon, alumina, silica, titania or*

zirconia and is carried out at a temperature from 200 to 500°C, under a pressure from 1 MPa to 10 MPa (10 to 100 bars) and with a hydrogen to feed ratio from 100 to 2000 Nl/l

- *or from said refined fats & oils are obtained fatty acids that are transformed into a composition of paraffins consisting of at least 90% of linear paraffins as the bio-naphtha as such by hydrodeoxygenation or decarboxylation of the fatty acids wherein said fatty acids are obtained by*
  - *physical refining, including a steam distillation or vacuum distillation of refined fats & oils or*
  - *said fatty acids are obtained by hydrolysis of the refined fats & oils into glycerol and fatty acids, removal of the glycerol*

  wherein said hydrodeoxygenation or decarboxylation being conducted in the presence of hydrogen and of at least one catalyst selected among Ni, Mo, Co, NiW, NiMo, CoMo, NiCoW, NiCoMo, NiMoW and CoMoW oxides or sulphides as catalytic phase, preferably supported on high surface area carbon, alumina, silica, titania or zirconia, or group 10 i.e. Ni, Pt and Pd and group 11 i.e. Cu and Ag metals or alloy mixtures supported on high surface area carbon, magnesia, zinc-oxide, spinels i.e. Mg_2Al_2O4, $ZnAl_2O_4$; perovskites i.e. $BaTiO_3$, $ZnTiO_3$; calciumsilicates, like xonotlite, alumina, silica or silica-alumina's or mixtures of the latter or wherein said decarboxylation of the fatty acids is carried out on alkaline oxides, alkaline earth oxides, lanthanide oxides, zinc-oxide, spinels for instance $Mg_2Al_2O_4$ or $ZnAl_2O_4$; perovskites for instance $BaTiO_3$, $ZnTiO_3$; calciumsilicates like xonotlite; either as bulk material or dispersed on

neutral or basic carriers, alkali or alkaline earth low silica/alumina zeolites obtained by exchange or impregnation;

and wherein the hydrodeoxygenation is carried out at a temperature from 200 to 500°C, under a pressure from 1 MPa to 10 MPa (10 to 100 bars) and with a hydrogen to feedstock ratio from 100 to 2000 Nl/1,

and wherein the decarboxylation is carried out at a temperature from 100 to 550°C, under a pressure from 0.1 MPa to 10 MPa (1 to 100 bars) and with a hydrogen to feedstock ratio from 0 to 2000 Nl/1."

Dependent claims 2 to 4 defined specific embodiments of the use of claim 1.

VI. Oral proceedings before the Board were held on 18 September 2018. During the oral proceedings, the appellant filed a new main request. All previous requests were withdrawn. Independent claim 1 of the new main request recites as follows (amendments as compared to claim 1 of the main request filed on 12 August 2018 emphasized by the Board):

"*1 - Use of a bio-naphtha as a direct feedstock of a steamcracker, said bio-naphtha being used as such or together with bio-propane, in order to obtain cracked products including bio-ethylene, bio-propylene, bio-butadiene, bio-isoprene, bio-cyclopentadiene and bio-piperylenes, bio-benzene, bio-toluene, bio-xylene, bio-gasoline and methane and a ethylene to methane weight ratio,* ***resulting from the cracking of bio-naphtha****, of at least 3*
~~*wherein in the steamcracking process the bio-naphtha is mixed with steam in a ratio of 0.3 to 0.45 kg steam per kg bio-naphtha*~~

wherein said bio-naphtha or said bio-naphtha and said bio-propane [...]

- *said refined fats & oils are transformed into a composition of paraffins consisting of at least 90% of linear paraffins as the bio-naphtha together with bio-propane by an hydrodeoxygenation wherein said hydrodeoxygenation is performed in the presence of hydrogen and of at least one catalyst selected among Ni, Mo, Co, NiW, NiMo, CoMo, NiCoW, NiCoMo, NiMoW and CoMoW ~~oxides or sulphides~~ as catalytic phase, [...]*

  and with a hydrogen to feedstock ratio from 0 to 2000 Nl/1."

Previous dependent claim 2 was deleted. Dependent claims 3 and 4 were renumbered as claims 2 and 3.

VII. Final Requests

The appellant requested that the decision under appeal be set aside and that a patent be granted on the basis of the claims of the new main request filed during oral proceedings.

VIII. The appellant's arguments as regards the new main request where relevant for the present decision may be summarised as follows:

- The amendments carried out to claim 1 overcame the objections of added matter raised by the Board in its preliminary opinion and at the beginning of the oral proceedings.

- In particular, the embodiments disclosed in original independent claims 12 and 16 were not combined anymore.

- The subject-matter of claim 1 found basis in the original claims, in particular in claim 16 as filed.

- The new main request, though only filed at the oral proceedings, overcame the raised objections and should thus be admitted into the proceedings.

Reasons for the Decision

New main request - admittance into the proceedings

1. Objections against the former main request filed with letter dated 12 August 2018

1.1 At the beginning of the oral proceedings, the Board drew the appellant's attention to the fact that at least part of the objections under Article 123(2) EPC raised by the Board in its communication issued on 23 May 2018 in preparation for the oral proceedings had not been overcome by the main request filed by the appellant on 12 August 2018.

1.2 The appellant had indicated original claim 16, particularly when referring back to original claims 5, 7 and 8, as the basis for claim 1 of the main request submitted on 12 August 2018.

1.3 The Board observed, however, that claim 1 (see V, *supra*) appeared to derive *inter alia* from the combination of original independent claims 12 and 16. In particular, original claim 16 disclosed the ethylene to methane weight ratio of at least 3, whereas original claim 12 disclosed the steam to hydrocarbon feedstock weight ratio of 0.3 to 0.45 kg/kg. Even though the two features were thus present in the application as filed,

there was no direct and unambiguous disclosure for their combination.

1.4 Additionally, original claim 16 required said ethylene to methane weight ratio to result from the cracking of bio-naphtha, whereas claim 1 (see V, *supra*) covered embodiments wherein this ratio resulted from the cracking of bio-naphtha and bio-propane. For such embodiments, no basis was found in the application as filed.

1.5 Furthermore, the use of bio-naphtha together with bio-propane as defined in original claim 12 was limited to bio-propane produced by the process of original claim 5. This process neither encompassed the hydrodeoxygenation conditions set out in original claim 6, nor any decarboxylation condition, while all these conditions had been, however, included in claim 1 (see V, *supra*).

1.6 Moreover, original claim 12 required the steam to hydrocarbon feedstock weight ratio to fall between 0.3 and 0.45 kg/kg. In claim 1 (see V, *supra*), the term "*hydrocarbon feedstock*" was replaced by "*bio-naphtha*" but no basis for this replacement had been found in the application as filed.

1.7 Claim 1 (see V, *supra*) further encompassed embodiments, in which the mentioned hydrodeoxygenation or decarboxylation reactions were conducted in the presence of one catalyst selected *inter alia* among Ni, Mo and Co oxides and sulphides. No basis for these embodiments was found in the application as filed, which mentioned Ni, Mo and Co as such as catalysts for the mentioned reactions (see e.g. original claims 5 and 7, page 25, line 18 to page 26, line 6 and page 28, lines 26 to 31).

2. The new main request

2.1 In the attempt to overcome the above objections raised by the Board under Article 123(2) EPC, the appellant filed during oral proceedings a new main request including amendments to claim 1 (see VI, *supra*).

2.2 A request filed at such a late stage of the proceedings may only be admitted at the discretion of the Board, pursuant to Article 13 RPBA.

2.3 The Board observes that in claim 1 of the new main request, the feature concerning the steam to bio-naphtha weight ratio deriving from original claim 12 was deleted (VI, *supra*). However, the specification of the cracked products resulting from the claimed use, also deriving from original claim 12, was retained in the claim. Thus in order to arrive at the specification of the cracked products of claim 1, this specification has to be isolated from the remaining disclosure of original claim 12 (the steam to hydrocarbon feedstock weight ratio). No basis could be found in the application as filed for such an isolation, and none could be indicated by the appellant during the oral proceedings. Furthermore, contrary to what was submitted by the appellant (VIII, *supra*), claim 1 at issue still derives from the combination of original claim 16 with the isolated part of original claim 12. More specifically, it still contains a combination of an ethylene to methane weight ratio of at least 3 (coming from original claim 16) and the specification of the cracked products (the isolated part of original claim 12). The Board could not find any basis for such a combination in the application as filed. The appellant could indicate none.

2.4 Moreover, the term "*oxides or sulphides*" when referred to the first hydrodeoxygenation reaction was deleted from claim 1 (VI, *supra*). This deletion now implies that the catalyst of said first hydrodeoxygenation is selected *inter alia* among NiW, NiMo, CoMo, NiCoW, NiCoMo, NiMoW and CoMoW **as such**. This possibility is not directly and unambiguously derivable from the application as filed, which only discloses the oxides or sulphides of these compounds as possible catalysts (see original claims 5 and 7, page 25, line 18 to page 26, line 6 and page 28, lines 26 to 31).

2.5 On the other hand, the feature was retained in claim 1 that the catalyst of the second mentioned hydrodeoxygenation or decarboxylation is selected *inter alia* among Ni, Mo and Co oxides and sulphides. As already mentioned under 1.7, *supra*, no basis for this feature exists in the application as filed.

2.6 Claim 1 of the new main request further specifies (VI, *supra*) that the mentioned ethylene to methane ratio of at least 3 results "*from the cracking of bio-naphtha*". However, claim 1 still includes embodiments in which the feedstock of the steamcracker includes bio-naphtha **together with bio-propane**. It is thus *prima facie* unclear how the specified ethylene to methane ratio should be understood for these embodiments.

3. For the reasons mentioned under 2.3 to 2.6 above, the Board comes to the conclusion that the new main request filed by the appellant during oral proceedings rather than overcoming previous objections already set out in the Board's preliminary opinion, actually raises new issues under both Article 123(2) and 84 EPC at an extremely late stage of the proceedings.

4. In exercising its discretion under Article 13(1) RPBA, the Board thus decided not to admit this request into the proceedings.

5. The new main and sole claim request of the appellant is therefore not admissible under Article 13(1) RPBA.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

N. Maslin M. O. Müller

Decision electronically authenticated