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**Datasheet for the decision
of 16 February 2021**

Case Number: T 2515/17 - 3.3.06

Application Number: 11802115.3

Publication Number: 2643442

IPC: C11B13/00, B01D3/14, C10L1/18,
C10G3/00

Language of the proceedings: EN

Title of invention:

PROCESS AND APPARATUS FOR PURIFYING MATERIAL OF BIOLOGICAL
ORIGIN

Patent Proprietor:

UPM-Kymmene Corporation

Opponents:

Sunpine AB
Neste Oyj

Headword:

PURIFYING AND HYDROPROCESSING TALL OIL MATERIAL/UPM

Relevant legal provisions:

EPC Art. 83, 123(2), 56

Keyword:

Sufficiency of disclosure - (yes)

Amendments - allowable (yes)

Inventive step - non-obvious combination of modifications

Decisions cited:

T 0025/03

Catchword:



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Case Number: T 2515/17 - 3.3.06

D E C I S I O N
of Technical Board of Appeal 3.3.06
of 16 February 2021

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Decision under appeal:

**Interlocutory decision of the Opposition
Division of the European Patent Office posted on
25 September 2017 maintaining European Patent
No. 2643442 in amended form.**

Composition of the Board:

Chairman J.-M. Schwaller
Members: P. Ammendola
 C. Brandt

Summary of Facts and Submissions

I. The appeals by the patent proprietor (appellant I) and opponents 1 and 2 (appellants II and III) lie from the interlocutory decision of the opposition division to maintain European patent No. 2 643 442 in amended form on the basis of the third auxiliary request filed during the oral proceedings of 30 June 2017, claim 1 of which reads:

"1. A process for purifying tall oil material, comprising the following steps

- (a) evaporating the tall oil material in a first evaporation step (E) to produce a first fraction comprising hydrocarbons having a boiling point of up to 250°C (NTP) and water and a second fraction comprising fatty acids, resin acids, neutral substances and residue components, wherein the evaporation step is performed at a temperature of 50 to 250°C and at a pressure of 5 to 100 mbar,*
- (b) evaporating said second fraction in at least one further evaporation step (G; F,G) to produce a third fraction comprising fatty acids, resin acids and neutral substances having a boiling point under 500°C (NTP), and a residue fraction, and*
- (c) recovering said first fraction, third fraction and residue fraction,*
characterized in that said at least one further evaporation step (G; F,G) is performed in one step (G) in a second evaporator at a temperature of 300 to 390°C and at a pressure of 0.01 to 15 mbar; or characterized in that said at least one further evaporation step (G; F,G) is performed in two steps (F,G) in two further evaporators, whereby the first step (F) of said two further evaporation steps is

performed at a temperature of 180 to 350°C and at a pressure of 0.1 to 40 mbar and the second step (G) of said two further evaporation steps is performed at a temperature of 300 to 390°C and at a pressure of 0.01 to 10 mbar, one or more hydroprocessing steps (C1,C2) to convert the recovered first and third fraction to biofuels or components thereof, after an optional water separation step (11) and one or more optional further purification steps (11', 17)."

Dependent claims 2 and 3 define preferred embodiments of the **process** for **purifying** and **hydroprocessing tall oil material** of claim 1 (herein after referred to as **TOM-P/H process**).

II. During the opposition proceedings the parties had referred to, *inter alia*, documents

D1 WO 2009/131510 A1

D2 "*Tall Oil*", Ulmann's Encyclopedia of Industrial Chemistry, 2005

D3 US 3,644,179 A

D4 US 5,705,722 A

D6 *Opportunities for biorenewables in oil refineries - final technical report*, 2005

D8 Zinkel et al, *Naval Stores Production Chemistry Utilization*, 1989, pages 28-37, 176-183, 225-235, 354-363)

D16 WO 2009/011639 A1

D17 WO 2010/097519 A1

D18 US 2009/0163744 A

D22 WO 2009/125072 A1

III. In the decision under appeal the opposition division found that the claims according to the third auxiliary

request then on file were not objectionable under Articles 123(2), 83 and 56 EPC.

- IV. Appellants II and III (hereinafter **opponents 1 and 2**) disputed these findings and requested that the decision under appeal be set aside and that the patent be revoked.
- V. With letter of 22 April 2020 appellant I (hereinafter **the proprietor**) filed thirteen requests numbered as Main Request and Auxiliary Requests 1 to 12. Auxiliary Request 4 corresponded to the set of claims as upheld by the opposition division.
- VI. At the oral proceedings before the board the proprietor withdrew the Main Request and the Auxiliary Requests 1 to 3 and made the dismissal of the appeal of the opponents its final Main Request.

The proprietor then **withdrew its appeal**, with its final requests being that the appeals of opponents 1 and 2 be dismissed (**Main Request**), or auxiliarily, that the patent be maintained on the basis of one of **Auxiliary Requests 5 to 12** as filed with letter of 22 April 2020.

Reasons for the Decision

Main Request

1. Alleged added subject-matter (Article 123(2) EPC)

According to the opponents claim 1 at issue introduced subject-matter extending beyond the content of the application as filed in the following respects:

- (a) the wording "*hydrocarbons having a boiling point of up to 250°C (NTP)*" that replaces the term "*light hydrocarbons*" originally present in claim 1 of the application as filed, corresponded to part of the definition provided for such term in page 8, lines 26 to 29 as filed;
- (b) the wording "*neutral substances having a boiling point under 500°C (NTP)*" that replaces the term "*light neutral substances*" originally present in claim 1, corresponded to part of the definition provided for such term in page 8, lines 30 to 33 as filed;
- (c) the parameters "*at a temperature of 300 to 390°C and at a pressure of 0.01 to 15 mbar*" (present twice in claim 1, one for each of the two alternative embodiments of the evaporation step "G", preceded or not by step "F") were only disclosed in the application as filed in combination with the other features of the "*embodiment of Figure 1*" (see page 9, lines 14 to 19, of the original application) or of the "*embodiment of Figure 2*" (see page 9, lines 23 to 33 of the original application).

1.1.1 According to objection (a), the original disclosure provided by the complete sentence on page 8, lines 26 to 28, of the original application, reading: "*In connection with the present invention, the light hydrocarbons recovered from the first evaporation step E refer to hydrocarbons having a boiling point of up to 250°C (NTP).*" would be (implicitly) further limited by the teaching in the immediately subsequent sentence, reading: "*These hydrocarbons mainly comprise terpenes, of which most is turpentine*".

1.1.2 The board finds instead that the latter sentence only provides additional information (as to the chemical species comprised in the "*light hydrocarbons*"). Hence, it does not change the fact that the former sentence provides a definition of the term "*light hydrocarbons*" as used in the patent application in terms of their boiling point.

Thus, the board finds that no subject-matter extending beyond the content of the application as filed results from the presence in claim 1 under consideration of the wording "*hydrocarbons having a boiling point of up to 250°C (NTP)*", as this manifestly results from the replacement of the term "*light hydrocarbons*" originally present in claim 1 by the corresponding definition in page 8, lines 26 to 28n as filed.

The board also finds that no addition of subject-matter is caused by the fact that the definition of "*light hydrocarbons*" recited above is still identically present in paragraph [0038] of the patent in the amended form under consideration, while in claim 1 the term "*light hydrocarbons*" is no longer present. In the board's view the skilled reader would simply conclude that the term "*light hydrocarbons*" mentioned in paragraph [0038] is just a further label for the "*hydrocarbons having a boiling point of up to 250°C (NTP)*" recited in claim 1.

1.1.3 The same considerations apply *mutatis mutandis* to the objection (b) above. Also in this case the presence in a distinct sentence (on page 8, lines 30 to 32 of the application as filed) of further information as to the chemical species comprised among the "*light neutral substances*" recovered from the "*at least one further evaporation step (G; F,G)*" does not change the fact

that the original application on page 8, lines 32 to 33, in the immediately subsequent sentence recites: "*The light neutral substances typically have a boiling point under 590°C (NTP)*", which amounts to a definition of the term "*light neutral substances*" as used in the patent application in terms of their boiling point.

Thus, the board finds that the presence in claim 1 under consideration of the wording "*neutral substances having a boiling point under 500°C (NTP)*" does not result in an extension beyond the content of the application as filed, as this manifestly results from the replacement of the term "*light neutral substances*" present in claim 1 as originally filed by a definition that differs from that in page 8, lines 32 to 33, of the application as filed only for the omission of the adverb "*typically*", omission which does not add new subject-matter to such definition.

- 1.1.4 As to the objection (c) the opponents stressed that the disclosure in page 9, lines 14 to 19 and lines 23 to 33, of the preferred process parameters "*at a temperature of 300 to 390°C and at a pressure of 0.01 to 15 mbar*" for each of the two alternative embodiments of the evaporation step "G" (i.e. preceded or not by a step "F"), is introduced by the wording "*According to the embodiment of Figure 1...*" or "*According to the embodiment of Figure 2...*".

The board finds such wording somewhat vague (for instance less precise than "In the embodiment of Figure ..."). In any case, whether or not any such wording might imply that the immediately following description relates exclusively to the depicted embodiments or not, also depends on the context. The board notes that the first sentence at the top of the

preceding page 8, the original application explicitly states: "*In the following, the process of the invention will be explained by referring to Figures 1 and 2, which are here to be contemplated as a flowchart of the process. Figure 1 discloses a process comprising two-step evaporation. Figure 2 discloses a process comprising three step evaporation.*"

In the board's view this passage renders apparent to the skilled reader of the original application that in the passages of page 9 identified above the reference to the embodiments (flow charts) of either Figure 1 and Figure 2, has essentially the function of presenting as clearly distinguished

- the description that relates to the process of the invention with "*two-step evaporation*" (in which, there is just one "*further evaporation step*" G), and
- the description that relates to the process of the invention with "*three-step evaporation*" (in which, there are two "*further evaporation step*"s F and G).

Incidentally, the same appears further confirmed by the fact that in the immediately preceding part of page 9, lines 5 to 7, the process parameters of the evaporation step E, which also is depicted in both flow charts of Figures 1 and 2, is described without making any reference to one or the other of the two flow charts.

Accordingly, the process parameters "*at a temperature of 300 to 390°C and at a pressure of 0.01 to 15 mbar*" are found originally disclosed in the cited passages of page 9 as features of respectively the two options for the "*further evaporation step*" (b) of the process of the invention as defined e.g. in original claim 1, and not as features only present in the embodiments

depicted in Figures 1 and 2 (and, thus, not as features only disclosed in combination with the other features of these flow charts).

Therefore, the established case law that it is normally not admissible under Article 123(2) EPC to extract isolated features from a set of features which have originally been disclosed in combination for an embodiment of the invention - referred to by opponent 1 by citing as example thereof the decision T 0025/03 (unpublished in the OJ) - is found not relevant for the present case.

Hence, the board finds that no subject-matter extending beyond the content of the original disclosure of the application as filed results from the presence (twice) in claim 1 under consideration of the wording "*at a temperature of 300 to 390°C and at a pressure of 0.01 to 15 mbar*", as this is based on the corresponding disclosure in page 9, lines 17 to 20 and 30 to 33 of the application as filed.

1.2 For these reasons, it is concluded that claim 1 does not contain added subject-matter and thus the patent in the form as upheld by the opposition division is found not objectionable under Article 123(2) EPC.

2. Alleged insufficiency of disclosure (Article 83 EPC)

2.1 According to the opponents the patent specification would not contain sufficient information for the alleged invention to be carried out by the skilled person over the entire breadth of the claims essentially because in claim 1 at issue the expression "*NTP*" would not be understandable and, thus, the skilled person would not be provided with the knowledge

how to measure the boiling points "*up to 250°C (NTP)*" and "*under 500°C (NTP)*" disclosed in that claim. Furthermore according to paragraph [0025] of the patent specification the "*tall oil material*" used as a material to be purified (raw material) may consist of e.g. fatty acids, thus the patent would not disclose how to produce e.g. "*hydrocarbons having a boiling point of up to 250°C (NTP) and water*" (hereinafter referred to as "**heads**") or "*neutral substances having a boiling point under 500°C (NTP)*" from fatty acids by evaporation.

- 2.2 For the board none of these two objections is found convincing for the following reasons.
- 2.2.1 The board concurs with the finding of the opposition division that a skilled person reading claim 1 with a mind willing to understand would conclude that "*(NTP)*" can only refer to normal pressure. In particular, a skilled person would immediately recognise that NTP is the acronym for "Normal Temperature and Pressure" and that it contains an obvious error in encompassing the letter "*T*" for temperature. Since no other meaning than normal pressure - i.e. "*(NP)*" - appear to make sense to the board and no other plausible meaning has been offered by the opponents, this error is at most a minor clarity issue, not an issue of sufficiency of disclosure.
- 2.2.2 As regards the objection based on paragraph [0025] of the description, the board notes that the opponents appear to implicitly equate the "*fatty acids*" mentioned in this paragraph to pure fatty acids. However, already upon reading the claim *per se* a person skilled in the relevant technical field would reasonably presume that the "*tall oil material*" must comprises "impurities" to

be removed prior of the hydroprocessing stages. Upon considering the whole patent disclosure, the skilled person finds therein plenty of teachings confirming that the purification steps (E and G or E, F and G) of the claimed process aim at isolating (in the "*residue fraction*") impurities already present in the tall oil material of departure that could affect the further hydroprocessing of the valuable components of this material (these latter being, for instance fatty acids, resin acids and terpene hydrocarbons that are normally found e.g. in crude tall oil) to obtain biofuels of components thereof.

Accordingly, also paragraph [0025] of the patent in suit, when read in the context of the reminder of the patent disclosure, necessarily implies to the skilled person the presence of these impurities in the "*fatty acids or free fatty acids obtained from tall oil*" (emphasis added) that paragraph [0025] recites as possible "*tall oil material*".

Moreover, the board is also not aware of any reason for excluding the possible existence of materials (e.g. among those obtainable by means of distillation from crude tall oil) which, in spite of being essentially made of "*fatty acids or free fatty acids*" and comprising these impurities, may also contain substantial amounts of "*water*" and/or "*hydrocarbons having a boiling point of up to 250°C (NTP)*" and/or even further "*neutral substances having a boiling point under 500°C (NTP)*". Thus, paragraph [0025] discloses to the skilled person that the TOM-P/H process of the present invention can be carried out starting from these existing impure materials as well (and it does not teach the use as starting material of already pure substances, as implied by the opponents' objection.

2.2.3 For these reasons it is concluded that the subject-matter of claim 1 is sufficiently disclosed and the patent in the amended form as upheld by the opposition division is thus found not objectionable under Article 83 EPC.

3. Inventive step of the subject-matter of claim 1 (Article 56 EPC)

The opponents based this objection essentially on the combination of D4 either with D3 or with the common general knowledge apparent from D2, D8 or D22.

3.1 The closest prior art

As already stressed in point 2.2.2 above, the patent in suit clearly teaches that the present invention aims at converting impure tall oil material of biological origin into purified fractions which are further hydroprocessed to produce biofuels or components thereof.

3.1.1 The board notes that the prior art disclosed in D4 has the same aim, namely a process for producing a component of diesel fluid by hydroprocessing a previously purified tall oil. In D4 (claim 1 in combination with column 3, lines 26 to 32) the tall oil is purified ("depitched") in a (single) evaporation step under conditions that are the same as those of the evaporation step "G" of claim 1 under consideration. Hence, the prior art disclosed in D4 is a suitable starting point for the assessment of inventive step for the TOM-P/H process of present claim 1. This is undisputed among the parties.

3.1.2 Opponent 2 also submitted that the closest prior art could as well be represented by any of D1, D6, D16, D17 and D18, or by the common general knowledge resumed in D22 (also described in D2 and/or D8).

The board notes however that:

- (a) In the process of D1 the single depitching step (step "c)" in claim 1) occurs under conditions (see page 21 lines 12 to 15) that are different from those of step "G" of claim 1 under consideration. Moreover step "b)" of claim 1 of D1 is only embodied by a sequence of heating, expansion and stripping stages (see D1: page 18, last paragraph to the end of page 20, and claims 6 and 7), i.e. process steps very different from the evaporation step "E" of present claim 1. Finally, D1 describes no hydroprocessing of the "volatile fraction" recovered in step "b)".
- (b) The passages in D6, D16 and D18 referred to by opponent 2 (i.e. Figure 14 and the corresponding text in page 18 of D6; claims 1 and 10, page 4, lines 1-13, and page 8, lines 11-18 of D16; claims 1 and 2 and paragraph [0006] of D18) do not describe any evaporation step for purifying or fractionating the material of biological origin that is hydroprocessed into biofuels.
- (c) In D17 (claim 1, 13 and 14; page 5, lines 26-30; page 11 and page 15, lines 27 to 30) the purification of crude tall oil prior of its hydroprocessing is performed via a totally different purification technique (namely washing steps) and turpentine appears only disclosed

therein as a different further feed in the hydroprocessing of the previously washed tall oil.

- (d) D22 is not even indirectly referring to the production of biofuels by hydroprocessing tall oil, but rather exclusively describes the production of stilbene compounds from tall oil (see claim 1). Hence, the skilled reader of D22 has also no particular reason to presume that the raw tall oil in one or more of the purification steps by means of distillation described in the flow chart of Figure 1 and the corresponding text in pages 4 to 7, (which, according to the opponents, summarise common general knowledge on tall oil distillation) could also be effective and/or convenient for separating those contaminants of crude tall oil material that must be removed prior of the subsequent hydroprocessing of the tall oil material into biofuels.

The board considers it appropriate to stress that this last observation applies identically to the common general knowledge on the conventional distillation of crude tall oil proved by means of D2 and/or D8 (see in particular points 3.2.1 and 3.2.2 of D2 or the several passages in D8 describing the well known "LUWA" process depicted in Figure 16 "E", page 33).

Hence, in comparison with the process disclosed in D4 for purifying and hydroprocessing crude tall oil into biofuels or components thereof, the processes of these documents cited as further suitable starting points appear more distant from the subject-matter of claim 1, either because they do not relate at all to the conversion of tall oil materials into biofuels (D2, D8 or D22), or because they describe methods of

hydroprocessing that have less (clearly disclosed) features in common with that of claim 1 under consideration (D1, D6, D16, D17 and D18).

3.1.3 Opponent 2 additionally argued that D17 should be regarded the closest prior art at least in respect of the hydroprocessing steps of the claimed process. The board stresses however that the subject-matter of claim 1 is a unitary integrated process for converting (impure) tall oil material of biological origin into biofuels, wherein the purification steps and hydroprocessing steps are interdependent and all contributing to the aimed conversion. Hence, the board finds that there is no reason that could justify identifying a "distinct" closest prior art by arbitrarily only focusing on the hydroprocessing stages in the claimed TOM-P/H process, rather than on the process of the invention in its entirety.

3.1.4 Thus, the board concludes that the closest prior art is that of D4 identified in 3.1.1 above.

3.2 The technical problem addressed in the patent in suit

3.2.1 The board stresses preliminarily that the patent in suit explicitly states in paragraph [0006] that the prior art disclosed in D4 provides a "poor" yield of biofuels or biofuel components.

The technical advantages of the invention are then described in paragraphs [0015] to [0020] and [0083]. The board notes in particular that, after having specified in paragraph [0015] that the invention *"is based on the idea of purifying tall oil material to obtain purified hydrocarbon fractions"* which *"can be used as feedstock for the production of biofuels, such*

as biogasoline, biodiesel and/or components thereof", paragraph [0016] explicitly states that in the purification steps of the process of the invention "as much as possible of the neutral components of the tall oil material are withdrawn with the recovered fractions for further utilization, instead of being withdrawn with the residue as in the prior art tall oil depitching process". Paragraph [0017] additionally clarifies that the higher yield of the purification stages according to the process invention is due to the removal of the "heads" in the first evaporation step "E", which renders the subsequent evaporation step(s) ("G" or "F" and "G") "more efficient" in that it prevents that low boiling compounds are carried over in the subsequent evaporation step(s) also "as impurities in the vapor" (paragraph [0017], penultimate sentence).

A corresponding teaching is given in paragraph [0083] where the process of the invention is described as "a very efficient method for removing impurities" from the tall oil material, whereby "the amount of the residue fraction, pitch, is minimized". It is to be stressed that the contribution provided by the initial separation of (all) low boiling hydrocarbons (with the "first fraction") to the yield of the process of the invention is also explicitly underlined in paragraph [0083] where it recites: "by using the process according to the invention, light neutral components can be separated to be processed to raw materials for valuable transportation fuel products" (emphasis added by the board).

Hence, the board concurs with the opposition division that the patent in suit identifies the advantage of the claimed process (vis-à-vis that of D4) in that it

allows "to minimise the amount of raw material that is not valorised".

3.2.2 Accordingly, the technical problem that the patent in suit solves vis-à-vis D4 can be described as the provision of a process for converting impure tall oil material of biological origin into biofuels or components thereof with improved yield.

3.3 The solution and its success

3.3.1 The solution offered in claim 1 to the posed technical problem is a TOM-P/H process that comprises:

- recovering by means of a first evaporation step under specified conditions a first fraction comprising the "heads" (i.e. hydrocarbons having a boiling point of up to 250°C (NTP) and water),
- recovering by means of at least one further evaporation step under specified conditions a third fraction comprising fatty acids, resin acids and neutral substances having a boiling point under 500°C (NTP),
- hydroprocessing these two fractions, possibly after subjecting them to water separation or further purification steps.

3.3.2 The opponents - pointing to the abundant common general knowledge on the upgrading of crude tall oil by distillation apparent from D2, D8 and/or D22 - argued that the initial separation of the "heads" from any raw tall oil material to be purified by means of evaporation, would appear to the skilled person very advantageous or even mandatory before any subsequent "high-vacuum" (and thus also dry) evaporation steps. Hence the removal of the "heads" represented an implicit prerequisite also of the "depitching" step

disclosed in column 3, lines 26 to 32, of D4 and/or of the process used for producing the commercial "depitched" tall oil material used in the hydroprocessing step of example 1 of D4.

For the board this allegation is not supported by any direct evidence and it has been convincingly disputed by the proprietor by underlining, *inter alia*, that the disclosure in D4 already *per se* raises doubts as to whether the "depitching" step actually described therein (see column 3) is a conventional (dry) distillation step or rather a wet purification (see the term "Wet Method" in the table also present in column 3 of D4). Thus, the board concludes that D4 neither explicitly discloses nor necessarily implies, in view of the common general knowledge, that an evaporation step for removing the "heads" necessarily preceded the disclosed "depitching" step or had necessarily been used in preparing the commercial "depitched" tall oil material used in Example 1 of D4.

Thus, it is concluded that the process of claim 1 at issue differs from the disclosure in D4 in that it additionally foresees the evaporation step "E" for collecting a first fraction (made of the "heads") as well as the hydroprocessing of this latter (optionally after separation of water and further purification steps).

- 3.3.3 The opponents then argued that, given the breadth of the definition given in claim 1, any advantage over D4 alleged in the patent or possibly proved by the two patent examples would not appear to the skilled person to plausibly occur across the whole scope of claim 1.

The board notes however that this amounts to a generic allegation deprived of any supporting experimental evidence or detailed theoretical reasoning and, thus, is unconvincing. Moreover, this argument appears at least to some extent in contradiction with the previous submissions of the opponents that the removal of "heads" would be manifestly so advantageous to any subsequent purification by evaporation to represent a prerequisite of any "depitching" step.

3.3.4 Thus, the opponents have presented no convincing argument that could deprive of plausibility the statements on the advantages of the claimed process contained in the patent in suit (paragraphs [0017] and [0083] and the other passages already cited in 3.2.1 above). In particular, the board finds it plausible that the initial evaporation of the "heads" in the first evaporation step "E" reduces the amount of initial matter that is not hydroprocessed, because it prevents the carry over of low boiling components that may be predicted to interfere with the optimisation of the high-vacuum evaporation step(s) "G" or "F" and "G" (thereby plausibly causing e.g. the formation of additional residue fraction). Incidentally, the board finds also plausible the indication in paragraph [0017] that the collection of (all) the light components in the first evaporation step "E" further prevents that part of the hydrocarbons be carried over (in the high-vacuum evaporation step(s) "G" or "F" and "G") as "*impurities in the vapor*" and thus collected neither as part of the residue fraction (to be discarded) nor as part of condensed fraction (to be further processed).

Thus, the disclosure of the patent in suit renders it plausible that the amount of purified components of the initial raw tall oil rendered available for the final

hydroprocessing steps of the claimed processes is larger than that possibly hydroprocessed in any (corresponding) processes in which the starting material is instead not deprived of the "heads" before being "depitched".

3.3.5 Hence, and in the absence of any evidence to the contrary, the board concludes that the separation and hydroprocessing of the "first fraction" which distinguish any embodiments of the claimed process from the prior art of departure, plausibly ensure to the former a yield in biofuels or components thereof, superior to that obtainable by the (corresponding) process according to D4 (in which the starting material is only subject to "depitching" before its "hydroprocessing").

3.3.6 Therefore the board concludes that the subject-matter of claim 1 succeeds in solving the posed technical problem across the whole ambit of the claim.

3.4 Obviousness of the proposed solution

3.4.1 In view of the above considerations it is immediately apparent to the board that, in order to arrive in an obvious manner at the TOM-P/H process of claim 1, a skilled person should consider it obvious to solve the posed technical problem by modifying the prior art of departure under two aspects, namely by:

- adding therein an initial evaporation process designed to separate a first fraction comprising water and hydrocarbons with a boiling point of up to 250°C (**modification 1**); and

- hydroprocessing this first fraction (**modification 2**) optionally after water separation and/or further purification steps.

3.4.2 The opponents have argued in essence that modification 1 would be rendered obvious by the combination of D4 with the teaching - allegedly provided by any of D3, D6 or D16 and/or within the common general knowledge resumed in D2, D8 or D22 - that a previous evaporation of the "heads" contributes to the efficiency of the subsequent "depitching". As to the modification 2 the opponents considered it obvious in view of the disclosure in D17 which would (allegedly) suggest the possibility of hydroprocessing to biofuels also of the hydrocarbons (e.g. terpenes) that are comprised in the "heads".

3.4.3 The board notes that the opponents thus combine the disclosure of D4 with at least two further, distinct teachings allegedly present in the prior art.

Hence, even assuming for the sake of an argument in favour of the opponents, that the skilled person would consider it obvious to solve the posed technical problem by means of modification 1 of the prior art of departure (e.g. because this person would already be aware or learn from one of the cited documents that the evaporation of the "heads" from raw tall oil material could be beneficial to the yield of the subsequent "depitching"), still in order to find D17 (i.e. the prior art that the opponents have identified as suggesting the hydroprocessing of the "heads") this skilled person would have to arbitrarily decide to search further for other measures that could solve the (already solved) posed problem (and even to also do that in a more distant technical field, namely that of

D17 in which the crude tall oil hydroprocessed is purified using a "washing" technique, which is totally unrelated to the dry "depitching" by evaporation under high-vacuum).

Moreover, the relevant disclosure of D17 (summarised above) does not directly disclose the possibility of hydroprocessing the "heads" of the distillation of crude tall oil. Hence, the opponents' line of reasoning implies that the skilled person must also infer from the possibility disclosed in D17 to convert (also) turpentine into biofuels, that a similar conversion could also be applicable to the terpenes that are predictably also present (presumably together with water) in the "heads" fraction obtained after having applied modification 1 to the prior art of departure.

- 3.4.4 For the board, it is immediately apparent that the combination of teachings of the prior art proposed by the opponents for demonstrating obvious the subject-matter of claim 1 under consideration, is only possible with hindsight from the claimed process.
- 3.4.5 If only for these reasons the board comes to the conclusion that the solution of the posed technical problem by the combination of modifications 1 and 2 of the prior art of D4 required to arrive at the TOM-P/H process of claim 1, is not obvious in view the other documents cited by the opponents.
- 3.5 For these reasons it is concluded that the subject-matter of claims 1 to 3 as upheld by the opposition division is not rendered obvious by the available prior art and, thus, the patent in the amended form found to comply with the EPC by the opposition division is found

also by the board not objectionable under Article 56 EPC.

Refund of the appeal fee to appellant I

4. Appellant I (patent proprietor) having withdrawn its appeal during the oral proceedings before the board issued the decision, its appeal fee is reimbursed at 25% in accordance with Rule 103(4)a) EPC.

Order

For these reasons it is decided that:

1. The appeals of appellant II (opponent 1) and appellant III (opponent 2) are dismissed.
2. The reimbursement at 25% of the appeal fee of appellant I (patent proprietor) is ordered.

The Registrar:

The Chairman:



A. Pinna

J.-M. Schwaller

Decision electronically authenticated