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**Datasheet for the decision
of 18 May 2010**

Case Number: T 2039/08 - 3.3.06

Application Number: 02781058.9

Publication Number: 1544277

IPC: C10L 1/02

Language of the proceedings: EN

Title of invention:

Method and apparatus for converting mixture of water and ethanol into fuel

Applicant:

Zhang, Puhua

Opponent:

-

Headword:

Conversion of water/ZHANG

Relevant legal provisions:

EPC Art. 123(2)

Relevant legal provisions (EPC 1973):

EPC Art. 54(1)

Keyword:

"Amendments originally disclosed (yes)"

"Novelty (yes)"

"Remittal to Examining Division (yes)"

Decisions cited:

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Catchword:

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Case Number: T 2039/08 - 3.3.06

D E C I S I O N
of the Technical Board of Appeal 3.3.06
of 18 May 2010

Appellant:

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Representative:

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Decision under appeal:

Decision of the Examining Division of the
European Patent Office posted 19 June 2008
refusing European application No. 02781058.9
pursuant to Article 97(2) EPC.

Composition of the Board:

Chairman: P.-P. Bracke
Members: E. Bendl
U. Tronser

Summary of Facts and Submissions

I. The appeal is against the decision of the Examining Division to refuse the European patent application 02 781 058.9.

II. The set of claims forming the basis of the Examining Division's decision comprises eight claims. The only two independent Claims 1 and 3 read as follows:

"1. A method for converting water into fuel, being characterized in mixing water with ethanol in a certain ratio by weight, heating and evaporating the obtained mixture to obtain a vapor mixture and passing the said vapor mixture through a DC electric field having a voltage of no less than 6V."

"3. An apparatus for converting water into fuel, comprising mainly an evaporating system and a DC electric field system, wherein the said evaporating system consists of a tank (8) and an evaporator (11), and the said DC electric field system consists of a riser pipe (1), a negative electrode (2) fixed in the riser pipe (1) and a positive electrode (3) fixed outside of the riser pipe (1),
in the said evaporating system of the apparatus, a flow control valve (9) is provided between the tank (8) and the evaporator (11), the evaporator (11) is of an indirect heating type in which a heating pipe (14) heats the mixture of water and ethanol indirectly in the evaporator (11) to obtain the mixed vapor, and said vapor produced by the evaporator (11) is transferred into a vapor reserving pipe (13) through a connecting pipe (12) connected with the evaporator (11), and the

vapor reserving pipe (13) is connected with an outer casing (15) of the positive electrode of the DC electric field system and the riser pipe (1), in the DC electric field system of this apparatus, the riser pipe (1) is made of an insulating material, the negative electrode (2) is fixed inside the riser pipe (1) and the positive electrode (3) corresponding to the negative electrode (2) is fixed outside, the outer casing (15) is equipped around the positive electrode (3), an outlet hole for the combustible gas is formed at the top of the riser pipe (1) and is connected with a fuel gas pipe (4) which is connected with a fuel gas collecting pipe (5), and an exhausting vent is formed at the top of the outer casing (15) of the positive electrode (3) and is connected with an exhaust gas pipe (6) which is connected with a exhaust gas collecting pipe (7)."

III. In examination procedure inter alia document

D1 = EP-A-0 846 847

was cited. On the basis of D1 the Examining Division refused the patent application due to lack of novelty of Claim 1.

IV. On 13 August 2008 the Applicant, now Appellant, filed an appeal against the decision of the Examining Division together with the grounds of appeal; the appeal fee was paid on the same day.

V. In an annex to the summons for oral proceedings the Board of Appeal presented a preliminary opinion that

novelty of Claim 1 might be considered to be taken away by the disclosure of D1.

As a reaction thereupon the Appellant submitted with letter of 27 April 2010 a new main request, which contains the following amendments compared to the set of claims on which the Examining Division decided:

Claim 1: the feature "by electrolysis" was inserted after "converting water into fuel"; the text "consisting of water and ethanol" was added after "to obtain a vapor mixture" and "to form a combustible gas containing hydrogen" was appended at the end of Claim 1.

Claim 3: the text "by electrolysis" was added after "an apparatus for converting water into fuel".

The wording of the remaining Claims 2,4-8 corresponds to the wording of Claims 2,5-9 as originally filed.

- VI. Appellant's main arguments with regard to novelty of this main request were, that document D1 did not disclose the conversion of water into fuel and that according to D1 hydrocarbons were present in the water/ethanol vapour mixture, in contrast to the method of Claim 1 of the main request.
- VII. The Appellant requests to set aside the decision of the Examining Division and to grant the patent on the basis of the main request filed with letter of 27 April 2010, or, alternatively, to remit the file to the Examining Division for continuation of examination on the basis of the main request filed with letter of 27 April 2010.

Reasons for the Decision

1. *Article 123(2) EPC*

1.1 Claim 1 of the main request differs from Claim 1 **as originally filed** in the following features:

- (a) "by electrolysis"
- (b) "consisting of water and ethanol"
- (c) "having a voltage of no less than 6V"
- (d) "to form a combustible gas containing hydrogen".

1.2 Feature (a)

Although the patent application only makes explicit reference to electrolysis in the paragraph referring to prior art disclosures, it is derivable from the passages on page 2, lines 13-20 and page 5, lines 11-14 of the description, that the step of passing the vapour mixture of water and ethanol through a DC electric field with a voltage of at least 6V is sufficient to obtain the hydrogen containing gas. Given this teaching, the Board does not see any reason to doubt that the described process implicitly refers to electrolysis.

1.3 Feature (b)

Page 5, lines 11-12 of the application as originally filed states, that the "present invention mixes water with ethanol, and heat to evaporate the mixed solution into vapor" [sic].

Also the passage on page 3, lines 23-24 of the description as originally filed refers to "the mixed vapor of water and ethanol". Furthermore, the text in lines 10 and 11 on page 4 refers to "the mixture of water and ethanol".

These passages teach to use exclusively the two compounds water and ethanol and to further process the mixture obtained into a vapour. Consequently the resulting vapour mixture prior to electrolysis does not contain ingredients other than water and ethanol.

1.4 Feature (c)

The voltage of "no less than 6V" has been originally disclosed in Claim 3 as originally filed.

1.5 Feature (d)

According to page 5, lines 13/14 of the description as originally filed, a combustible gas containing hydrogen is produced by the method described.

1.6 Claim 3 differs from Claim 3 as originally filed in the addition of the term "by electrolysis". The considerations of paragraph 1.1 above apply.

1.7 Thus, the set of claims as filed with letter of 27 April 2010 meets the requirement of Article 123(2) EPC.

2. *Novelty*

2.1 In the decision the Examining Division based the refusal on the ground of lack of novelty of Claim 1 vis-à-vis D1. Particular reference to the embodiment on page 3, lines 11-24 of D1 was made, where a mixture of

water, alcohol **and turpentine** was mixed with hydrocarbon vapours to form a gaseous mixture. The latter product was exposed to direct current.

2.2 In contrast to D1, Claim 1 of the main request requires that a mixture of water and ethanol is heated and evaporated to result in a vapour **consisting of** these two compounds.

2.3 Since one distinguishing feature is sufficient to establish novelty and D1 describes more compounds than only ethanol and water being present in the vapour, novelty of Claim 1 of the main request is given.

3. *Article 111(2) EPC (1973)*

3.1 The only ground for the refusal of the patent application mentioned in the decision of the Examining Division was lack of novelty of the then pending Claim 1. Although the decision contains a remark that inventive step of the same claim possibly might not be acknowledged, this comment cannot be considered as a ground for the refusal, but rather as an obiter dictum.

3.2 Furthermore, the Examining Division did not comment at all on the patentability of the independent Claim 3 relating to the apparatus for converting water into fuel.

3.3 Thus, the case is remitted to the first instance for further examination.

Order

For these reasons it is decided that:

The case is remitted to the Examining Division with the order to continue examination of the patent application on the basis of the main request as filed with the letter of 27 April 2010.

The Registrar

The Chairman

G. Rauh

P.-P. Bracke