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**Datasheet for the decision  
of 25 October 2018**

**Case Number:** T 2117/13 - 3.3.10

**Application Number:** 02723625.6

**Publication Number:** 1385810

**IPC:** C07C37/72, C07C39/04

**Language of the proceedings:** EN

**Title of invention:**

PROCESS FOR EXTRACTING PHENOL BY OPTIMIZATION OF ALKALI USAGE

**Patent Proprietor:**

Honeywell International Inc.

**Opponent:**

Ineos Phenol GmbH

**Headword:**

**Relevant legal provisions:**

EPC Art. 123(2), 123(3), 100(c), 84, 111(1)  
EPC R. 80

**Keyword:**

Main Request, First Auxiliary Request - extension beyond the content of the application as filed (yes)

Second Auxiliary Request - amendments allowable (no)

Third Auxiliary Request - Added subject-matter (no)

**Decisions cited:**

T 0288/92, T 0680/93

**Catchword:**



**Beschwerdekammern**  
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Case Number: T 2117/13 - 3.3.10

**D E C I S I O N**  
**of Technical Board of Appeal 3.3.10**  
**of 25 October 2018**

**Appellant:** Honeywell International Inc.  
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**Decision under appeal:** **Decision of the Opposition Division of the  
European Patent Office posted on 12 August 2013  
revoking European patent No. 1385810 pursuant to  
Article 101(3) (b) EPC.**

**Composition of the Board:**

**Chairman** P. Gryczka  
**Members:** C. Komenda  
C. Schmidt

## Summary of Facts and Submissions

- I. The appeal of the appellant (patent proprietor) lies from the decision of the opposition division which revoked European Patent Nr. 1 385 810.
- II. In the decision under appeal the opposition division found that the claims as granted contained amendments which did not meet the requirements of Article 123(2) EPC with the consequence that the ground for opposition under Article 100(c) EPC was justified. The same applied to the subject-matter of the claims according to the first to sixth auxiliary requests. Consequently, it revoked the patent in suit.
- III. Together with its statement of the grounds for appeal the appellant filed a new main request and new first to third auxiliary requests. Under cover of a letter dated 24 August 2018 it submitted further fourth to fifteenth auxiliary requests. The wording of claim 1 of the main request was as follows:

*"1. A method for optimizing the use of an aqueous sodium hydroxide stream in a process for extracting phenol from a phenol containing organic stream, said method comprising:*

*establishing an acceptable pH range of 11 to 12 for the aqueous stream;*

*feeding said aqueous sodium hydroxide stream at a feed rate to a phenol recovery system including a multi-stage scrubber unit comprising a plurality of tanks;*

*contacting the aqueous stream and phenol containing organic stream in counter-current flow;*

*measuring the pH of the aqueous stream at at least one point in said unit;*

*determining the equivalents of phenol in said aqueous stream based on said pH measured at said at least one point; and controlling said feed rate by decreasing the feed rate of said aqueous stream if the pH is above 12, increasing said feed rate of said aqueous stream if the pH is below 11, and holding constant the feed rate of said aqueous stream if the pH is within the acceptable range."*

The wording of claim 1 of the first to third auxiliary requests was based on the wording of claim 1 of the main request, wherein

- in the first auxiliary request the method was further restricted to the use of an aqueous sodium hydroxide stream, "wherein the concentration of the sodium hydroxide in the aqueous stream is 10% to 30%";
- in the second auxiliary request the method was further restricted to the use of an aqueous sodium hydroxide stream, "wherein the concentration of the sodium hydroxide in the aqueous stream is about 20%"; and
- in the third auxiliary request the method was further restricted to the use of an aqueous sodium hydroxide stream, "wherein the concentration of the sodium hydroxide in the aqueous stream is 20%".

IV. The appellant argued that all amendments made to the claims according to the main request or any of the first to fifteenth auxiliary requests fulfilled the requirements of Articles 123(2) and (3) EPC, as well as of Article 84 EPC, since the particular combination of

features was clear and did not extend the technical information beyond the content of the application as filed.

- V. In its reply to the statement of the grounds for appeal the respondent (opponent) maintained its objections as brought forward during the opposition proceedings and submitted its arguments in detail. It further requested that the fourth to fifteenth auxiliary requests be not admitted into the appeal proceedings, as they were late filed.
  
- VI. The appellant (patent proprietor) requested that the decision under appeal be set aside and that the case be remitted to the Opposition Division for further decision on the outstanding issues, based on its main request or on any of its first to fifteenth auxiliary request as filed under cover of a letter dated 17 December 2013 (main request and auxiliary requests 1 to 3) and a letter dated 24 August 2018 (auxiliary requests 4 to 15).
  
- VII. The respondent (opponent) requested that the appeal be dismissed, or as an auxiliary measure that the case be remitted to the Opposition Division for further decision.
  
- VIII. The decision was announced at the end of the oral proceedings before the board, which took place on 25 October 2018.

## Reasons for the Decision

1. The appeal is admissible.

### *Main request*

2. *Amendments (Articles 123(2), 123(3) and 100(c) EPC)*

- 2.1 During opposition the patent in suit was objected on the ground that the subject-matter of the claims as granted extended beyond the content of the application as filed, thus justifying an objection under Article 100(c) EPC.

- 2.2 In order to determine whether or not the subject-matter of a claim in a patent extends beyond the content of the application as filed it has to be examined whether that claim comprises technical information which a skilled person would not have objectively and unambiguously derived from the application as filed (see decisions T 288/92, point 3.1 of the reasons; T 680/93, point 2 of the reasons)

- 2.3 Claim 1 of the main request is directed to a process for optimizing the use of an aqueous sodium hydroxide stream in a process for extracting phenol from a phenol containing organic stream, wherein the following features had been introduced into claim 1 of the application as filed, namely that

- (i) the aqueous alkali metal hydroxide stream being defined as an aqueous sodium hydroxide stream;
- (ii) the acceptable pH range being within the range of 11 to 12;

- (iii) the aqueous sodium hydroxide stream being fed at a feed rate to a phenol recovery system including a multi-stage scrubber unit comprising a plurality of tanks; and the aqueous stream and phenol containing organic stream being contacted in counter-current flow;
- (iv) the pH of the aqueous stream being measured at at least one point in said unit;
- (v) the equivalents of phenol in said aqueous stream being determined based on said pH measured at said at least one point;
- (vi) the feed rate being controlled by decreasing the feed rate of said aqueous stream if the pH is above 12, increasing said feed rate of said aqueous stream in the pH is below 11, and holding constant the feed rate of said aqueous stream if the pH is within the acceptable range.

2.4 The features (iii), (iv) and (v) were already present in granted claim 1 and are, therefore, to be considered for the objection under Articles 123(2) and 100(c) EPC. For the amendments relating to features (i), (ii) and (vi) the requirements of Article 123(2) and (3) EPC have to be fulfilled.

2.5 *Feature (i)*

According to feature (i) the method of claim 1 has been restricted to the use of an aqueous alkali metal hydroxide stream, which was specified as being "an aqueous sodium hydroxide stream" (see paragraph 2.3 *supra*). As the appellant points out correctly, a basis for this amendment is to be found in original claim 5 or in granted claim 3, respectively. Therefore, the restriction of the aqueous alkali metal hydroxide



stream to an aqueous sodium hydroxide stream fulfils the requirements of Article 123(2) and (3) EPC.

2.6 *Feature (ii)*

2.6.1 According to feature (ii) the method of claim 1 has been restricted to "the acceptable pH range being within the range of 11 to 12" (see paragraph 2.3 *supra*). According to the appellant a basis for this amendment is to be found in original claim 8 or in granted claim 6, respectively.

2.6.2 However, the original claim 8 refers back to original claim 7 only, which defines the concentration of sodium hydroxide in the aqueous stream as being about 20%. Therefore, the original application discloses feature (ii) only in combination with a concentration of sodium hydroxide of 20%. Therefore, the amendment to claim 1, which incorporated only a part of the particular combination of features of original claim 8 violates Article 123(2) EPC.

2.7 *Feature (iii)*

2.7.1 Feature (iii) defines that the aqueous sodium hydroxide stream is fed "at a feed rate to a phenol recovery system including a multi-stage scrubber unit comprising a plurality of tanks; and the aqueous stream and phenol containing organic stream is contacted in counter-current flow" (see paragraph 2.3 *supra*). According to the appellant the basis for this passage was found in original claim 9.

2.7.2 However, original claim 9 refers back to original claim 8 only. Original claim 8 defines the acceptable pH range as being within about 11 to about 12 and refers

back to claim 7 only. Original claim 7 defines the concentration of sodium hydroxide as being about 20%. Therefore, the original application discloses feature (iii) only in a particular combination of features with a pH range of 11 to 12 and a concentration of sodium hydroxide of 20%. The pH range of 11 to 12 has been incorporated into claim 1 (see feature (ii) in paragraph 2.3 supra), but the concentration of sodium hydroxide in the aqueous stream being about 20% was omitted. Therefore, the amendment to claim 1, which incorporated only a part of the particular combination of features of original claim 9 offends against Article 123(2) EPC.

## 2.8 *Feature (iv)*

2.8.1 According to feature (iv) the wording differed from the corresponding wording in original claim 1 only in that the pH was measured at at least one point in the unit, whereas according to original claim 1 it was measured at at least one point in the process.

2.8.2 The appellant argued that this amended wording would not change the technical content of original feature (iv).

2.8.3 The respondent objected that shifting the point of measuring the pH from the process to the unit was not originally disclosed and, thus, offended against Article 123(2) EPC.

2.8.4 The amendment consists in changing the wording from measuring the pH at "at least one point in the process" to "at at least one point in the unit". The claimed process is carried out in the unit. Consequently,

measuring the pH at at least one point in the process according to the wording of original claim 1 inevitably requires that the pH is measured at at least one point in the unit. Since, therefore, the amendment does not change the meaning of the technical feature, the Board accepts the amendment (iv) as fulfilling the requirements of Article 123(2) and (3) EPC.

2.9 *Feature (v)*

2.9.1 According to feature (v) the equivalents of phenol in said aqueous stream are determined based on the pH measured at said at least one point (see paragraph 2.3 *supra*).

2.9.2 The respondent argued that according to the application as filed the equivalents of phenol were determined in order to select the suitable pH. According to the now claimed process this is no longer necessary, since the pH is now fixed as being within the range of 11 to 12.

2.9.3 The tables 1 to 5 and the corresponding drawings of the original application teach that a particular pH corresponds directly to the equivalents of phenol. The step of determining the equivalents of phenol is originally disclosed for any acceptable pH range (see page 5, lines 5 to 8). Thus, the feature (v) does not add any technical information extending beyond the application as originally filed. Therefore, the Board accepts that the amendment does not offend against Article 123(2) and (3) EPC.

2.10 *Feature (vi)*

2.10.1 According to feature (vi) the method of claim 1 has been amended in that the feed rate being controlled by

decreasing the feed rate of said aqueous stream if the pH is above 12, increasing said feed rate of said aqueous stream if the pH is below 11, and holding constant the feed rate of said aqueous stream if the pH is within the acceptable range (see paragraph 2.3 *supra*). According to the appellant the basis for this amendment is to be found in original claims 1, 4 and 8, or in granted claims 1 and 6.

2.10.2 The respondent objected to this amendment, because in the granted claim 1 the respective feature related to "adjusting said feed rate to control the equivalents of phenol", whereas the amended feature (vi) controlled the feed rate to control the pH (emphasis added). This shift of object was not originally disclosed and, therefore, contravened the requirements of Article 123(2). Further, amending the wording "adjusting the feed rate" from granted claim 1 to "controlling the feed rate by decreasing the feed rate [...], increasing the feed rate [...], and holding constant the feed rate [...]" in the main request offended against Article 123(3) EPC.

2.10.3 However, it has to be stated that the tables 1 to 5 of the application as filed show a direct relationship of the pH value and the equivalents of phenol extracted into said aqueous sodium hydroxide stream. Monitoring and controlling of the pH value, therefore, inevitably results in controlling the equivalents of phenol extracted into the aqueous sodium hydroxide stream.

Further, the process step of "adjusting the feed rate" in granted claim 1 only offers the means of either increasing, or decreasing, or holding constant the feed rate, as indicated in original claim 4, or granted

claim 6, respectively. Therefore, the arguments of the respondent are not convincing.

- 2.10.4 The board is therefore satisfied that the amendment relating to feature (vi) fulfils the requirements of Article 123(2) and (3) EPC.
- 2.11 From the above the board concludes that the amendments referred to in features (i), (iv), (v) and (vi) do not offend against Article 123(2) and (3) EPC.
- 2.12 Further, with regard to features (ii) and (iii) the board concludes that omitting the sodium content of 20% as being part of the specific combination of features does not fulfil the requirements of Article 123(2) EPC.
- 2.13 Further, since feature (iii) was already present in claim 1 as granted the objection under Article 100(c) EPC in view of feature (iii) is well founded.

*First auxiliary request*

3. *Amendments (Articles 123(2), 123(3) and 100(c) EPC)*

- 3.1 The wording of claim 1 according to the first auxiliary request is based on the wording of claim 1 of the main request, which is further restricted to a concentration of sodium hydroxide in the aqueous stream of "10% to 30%" (see paragraph III *supra*).
- 3.2 The board stated in paragraph 2.7.2 *supra* that features (ii) and (iii) (see list of features in paragraph 2.3 *supra*) cannot be isolated from the originally disclosed specific combination of features. This specific combination of features requires the sodium concentration in the aqueous stream to be about

20%. Consequently, restricting the concentration of sodium hydroxide to a range of from 10% to 30% does not reflect the original combination of features as disclosed in original claims 7, 8 and 9.

- 3.3 Therefore, the board concludes that the amendment (iii) made to claim 1 of the first auxiliary request does not meet the requirements of Article 123(2) EPC. Since feature (iii) was already present in granted claim 1 the objection under Article 100 c) EPC is well founded.

*Second auxiliary request*

4. *Amendments (Articles 123(2), 123(3) and 100(c) EPC)*

- 4.1 The wording of claim 1 according to the second auxiliary request is based on the wording of claim 1 of the main request, which is further restricted to a concentration of sodium hydroxide in the aqueous stream of "about 20%" (see paragraph III *supra*).

- 4.2 The restriction of the claim to a concentration of sodium hydroxide being "about 20" removed the objection under Article 100(c) EPC discussed above (see Paragraph 2.6 and 2.7 *supra*), because it clearly incorporates all elements of the originally disclosed specific combination of features (ii) and (iii) of original claims 1, 7, 8 and 9. The respondent, however, objected to the amendment, because the respective granted claims only refer to a concentration of sodium hydroxide in the aqueous stream of "20%". The reintroduction of the word "about" in claim 1 offended against Article 123(3) EPC (see letter dated 21 February 2014 paragraph 5).

- 4.3 The appellant argued that a specific concentration of precisely 20% of sodium hydroxide in the aqueous stream

cannot be achieved under laboratory conditions. Therefore, reinstating the word "about" for a single value parameter should be allowed.

- 4.4 However, the skilled man is aware of the problems of achieving single value parameters under laboratory conditions. Granted claim 1 clearly defines the concentration of sodium hydroxide in the aqueous stream as being 20%. The insertion of the relative term "about" extends this limiting value beyond the scope of the granted claim. Therefore, the board concludes that claim 1 according to the second auxiliary request offends against Article 123(3) EPC.

*Third auxiliary request*

5. Claim 1 of the third auxiliary request is based on the wording of the second auxiliary request, wherein the word "about" has been deleted from the feature defining the concentration of sodium hydroxide in the aqueous stream. The only objection under Article 123(3) to the wording of claim 1 of the second auxiliary request was the presence of the word "about" (see paragraph 4. *supra*), all other amendments were found to meet the requirements of Article 123 (2) and (3) EPC (see paragraphs 2.5, 2.8 to 2.10 and 4.2, *supra*). Claim 1 of the third auxiliary request does no longer contain the word "about". Therefore, the board concludes that the amendments made to claim 1 of the third auxiliary request fulfil the requirements of Article 123(2) and (3) EPC.
6. Article 84 EPC
- 6.1 The respondent objected to the wording of claim 1 as being unclear in the sense of Article 84 EPC. In

particular, the claim defined that the acceptable pH for the aqueous stream was set to a range of 11 to 12. Therefore, this had to be the pH for the aqueous sodium hydroxide stream mentioned in the preamble of the claim. Consequently, there is a contradiction between the pH set for the initial sodium hydroxide stream and the step of controlling the feed rate of the aqueous sodium hydroxide stream during the process.

6.2 However, the claim is clear in defining an acceptable pH of 11 to 12 to be established during the process. The aqueous sodium hydroxide stream mentioned in the preamble of claim 1 has a sodium hydroxide concentration of 20%. Therefore, the argumentation of the respondent is not convincing.

6.3 Consequently, the board concludes that the wording of claim 1 of the third auxiliary request is clear.

## 7. *Rule 80 EPC*

7.1 The respondent objected to claim 1 of the third auxiliary request as offending against Rule 80 EPC. In particular, the amendment relating to "measuring the pH of said aqueous stream at at least one point" and "determining the equivalents of phenol in said aqueous stream based on said pH measured at said at least one point" (emphasis added) was merely editorial and, therefore, not allowable.

7.2 According to Rule 80 EPC a European patent may be amended, provided that the amendments are occasioned by a ground for opposition under Article 100 EPC, even if that ground has not been invoked by the opponent.



7.3 In the present case the appellant argued that this amendment was not merely editorial, but reflected the wording used in original claim 1 and was made to counter a further objection under Article 123(2) EPC. Therefore, the board concludes that the amendment does not offend against Rule 80 EPC.

8. *Remittal (Article 111(1) EPC)*

The opposition division revoked the patent in suit on the ground of added subject-matter in the sense of Articles 123(2) and 100(c) EPC. As stated above the amendments made to the claims of the third auxiliary request remove all objections brought forward in the decision under appeal. Consequently, the decision under appeal has to be set aside. The opposition division has, however, not yet decided on the other outstanding issues.

Thus, under the present circumstances the Board finds it appropriate to remit the case to the Examining Division for further prosecution.

*Fourth to fifteenth auxiliary requests*

9. Since the board remits the case to the department of first instance for further decision on the outstanding issues, a decision on the fourth to fifteenth auxiliary request and on the request of the respondent not to admit these requests into the proceedings before the board is superfluous.

## Order

### For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the department of first instance for further prosecution on the basis of claims 1 to 4 of the third auxiliary request submitted under the cover of the letter dated 17 December 2013.

The Registrar:

The Chairman:



C. Rodríguez Rodríguez

P. Gryczka

Decision electronically authenticated