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**Datasheet for the decision  
of 5 October 2020**

**Case Number:** T 1570/16 - 3.2.07

**Application Number:** 07709869.7

**Publication Number:** 1977036

**IPC:** D21F1/02, D21H23/10, D21H23/20,  
B01F5/00, B01F5/04, B01J4/00,  
D21G9/00

**Language of the proceedings:** EN

**Title of invention:**  
METHOD AND ARRANGEMENT FOR FEEDING CHEMICALS INTO A PROCESS  
STREAM

**Patent Proprietor:**  
Nalco Company

**Opponent:**  
Akzo Nobel Chemicals International B.V.

**Headword:**

**Relevant legal provisions:**  
EPC Art. 54, 56, 123(2)  
RPBA 2020 Art. 13(1), 13(2), 15(1)  
RPBA Art. 12(4)

**Keyword:**

Late-filed document - admitted (no) - D9-D11' filed for the first time in appeal - D12-D14 filed after summons to oral proceedings

Novelty - (no) - main request

Amendments - added subject-matter (yes) - auxiliary request 1

Late-filed auxiliary requests - admitted (no) - auxiliary requests 2 and 3

Inventive step - (yes) - patent held in the contested decision to meet the requirements of the EPC

**Decisions cited:**

**Catchword:**



**Beschwerdekammern**

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**Chambres de recours**

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Case Number: T 1570/16 - 3.2.07

**D E C I S I O N**  
**of Technical Board of Appeal 3.2.07**  
**of 5 October 2020**

**Appellant:** Nalco Company  
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**Decision under appeal:** **Interlocutory decision of the Opposition  
Division of the European Patent Office posted on  
28 April 2016 concerning maintenance of the  
European Patent No. 1977036 in amended form.**

**Composition of the Board:**

**Chairman** I. Beckedorf  
**Members:** V. Bevilacqua  
A. Beckman

## **Summary of Facts and Submissions**

I. The patent proprietor and the opponent lodged appeals in the prescribed form and within the prescribed time limits against the interlocutory decision of the opposition division maintaining European patent EP 1 977 036 in amended form according to the then auxiliary request 2.

The ground of opposition invoked were those according to Article 100(a) EPC (lack of novelty, lack of inventive step).

II. The patent proprietor requests

that the decision under appeal be set aside  
and  
that the patent be maintained in amended form on the basis of one of the sets of claims filed as main request and as first auxiliary request with the statement setting out the grounds of appeal and as second and third auxiliary requests with letter dated 12 October 2017  
and  
that the appeal of the opponent be dismissed.

III. The opponent requests

that the decision under appeal be set aside  
and  
that the European patent No. 1 977 036 be revoked  
and  
that the appeal of the patent proprietor be dismissed.

IV. Claim 1 of the **main request** reads as follows:

"Use of an apparatus for feeding one or more chemicals into a process stream of a papermaking process, the apparatus comprising:

- (a) a first conduit having one or more inlets and outlets;
- (b) a second conduit having one or more inlets and outlets, wherein said first conduit secures to said second conduit and traverses said second conduit;
- (c) a mixing chamber that has one or more inlets and outlets, wherein said second conduit secures to said mixing chamber and wherein said outlets of said first conduit and said outlets of said second conduit are in communication with said mixing chamber; and
- (d) an adaptor that is in communication with said outlets of said mixing chamber and is secured to said mixing chamber."

Independent claim 1 of the **first auxiliary request** corresponds to claim 1 of the main request with the following features added at the end thereof:

"wherein the use of the apparatus comprises:

- (a) introducing one or more chemicals and a feeding liquid into said mixing chamber by introducing said chemical or feeding liquid into said inlets of said first conduit and said second conduit; and
- (b) mixing said chemicals and said feeding liquid in said mixing chamber to form a mixture of said chemical and said feeding liquid,

wherein said mixing is a staged mixing lasting from about 5 microseconds to about 500 milliseconds."

Independent claim 1 of the **second auxiliary request** corresponds to claim 1 of the main request with the following features added at the end thereof:

"wherein said chemicals are selected from the group consisting of: biocides, strength agents, brightening agents, colors, fillers, sizing agents, retention aids, drainage aids, flocculants, washing aids, defoamers, dispersing agents, nanoparticles, microparticles, fixatives, coagulants, and a combination thereof."

Independent **claim 1 of the third auxiliary request** corresponds to claim 1 of the main request with the following features added at the end thereof:

"wherein the use of the apparatus comprises:

- (a) introducing one or more chemicals and a feeding liquid into said mixing chamber by introducing said chemical or feeding liquid into said inlets of said first conduit and said second conduit; and
- (b) mixing said chemicals and said feeding liquid in said mixing chamber to form a mixture of said chemical and said feeding liquid, wherein the use of the apparatus comprises:

wherein said chemicals are selected from the group consisting of: biocides, strength agents, brightening agents, colors, fillers, sizing agents, retention aids, drainage aids, flocculants, washing aids, defoamers, dispersing agents, nanoparticles, microparticles, fixatives, coagulants, and a combination thereof,

characterized in that said mixing is a staged mixing lasting from about 5 microseconds to about 500 milliseconds."

Independent **claim 1 of the patent as amended and as held by the opposition division to meet the requirements of the EPC (maintained version)**

corresponds to claim 8 of the main request and reads as follows:

"A method for feeding one or more chemicals into a process stream of papermaking process comprising:

- (a) providing one or more mixing apparatuses comprising a first conduit having one or more inlets and outlets; a second conduit having one or more inlets and outlets, wherein said first conduit secures to said second conduit and traverses said second conduit; a mixing chamber that has one or more inlets and outlets, wherein said second conduit secures to said mixing chamber and wherein said outlets of said first conduit and said outlets of said second conduit are in communication with said mixing chamber; and a adaptor that is in communication with said outlet of said mixing chamber and is secured to said mixing chamber;
- (b) mounting said adaptor over an opening in a thin stock line of said papermaking process, wherein said adaptor is in communication with said outlets of said mixing chamber and is secured to said mixing chamber;
- (c) running said papermaking process so that said process stream flows through said thin stock line;

- (d) introducing said chemicals and a feeding liquid into said mixing chamber by introducing said chemical or feeding liquid into said inlets of said first conduit and said second conduit;
- (e) mixing said chemicals and said feeding liquid in said mixing chamber to form a mixture of said chemical and said feeding liquid; and
- (f) dispensing said mixture into said process stream of said thin stock line through said adaptor that is in communication with said process stream."

V. Oral proceedings were held on 5 October 2020, during which the factual and legal situation was discussed with the parties. To prepare it, the Board had previously communicated its preliminary assessment of the case to the parties by means of a communication pursuant to Article 15 (1) RPBA 2020. For further details of the course of the oral procedure, reference is made to the minutes thereof.

The decision was pronounced at the end of the oral proceedings.

VI. The following documents, mentioned during opposition proceedings, will be referred thereto:

D2: US 2004/0230455

D6: Papermaking Science and Technology:

Book 8, Papermaking Part 1, Stock Preparation and Wet End, Ed. Hannu Paulapuro, Fapet Oy, 2000, pages 125 to 138  
D7: Papermaking Science and Technology: Book 8, Papermaking Part 1, Stock Preparation and Wet End, Ed. Hannu Paulapuro, Fapet Oy, 2000, pages



138 to 190.

The following documents, filed by the opponent with the statement setting out the grounds of appeal and relied upon by the opponent for the final decision, will also be referred thereto:

D9: US 2002/ 0131325 A1  
D10: WO 2005/ 032704 A1  
D11: WO 2006/008333A2  
D11': FI 116473 B

The following documents, filed by the opponent with its letter dated 12 August 2020, will also be referred thereto:

D12: statement of Mr. Matti Hientaniemi  
D13: "Pulp and paper chemistry and technology",  
part 3 - 2009, pages 138-139,  
D14: "Influence of retention aid mixing on paper  
quality", Master's thesis 2002, pages 35-51.

VII. Insofar as relevant to the present decision the patent proprietor argued substantially as follows.

*D9-D11', D12-D14*

The opponent filed D9-D11' and D12-D14 without any convincing justification about why these documents could not have been filed during opposition proceedings.

For this reason D9-D11' and D12-D14 should not be admitted into the appeal proceedings.

*Main request*

The opposition division was wrong in its conclusion that D2 was novelty destroying because this conclusion was based on an excessively broad interpretation of claim 1 of the main request, which failed to take account of the description and of the drawings of the patent in suit.

*First auxiliary request*

Claim 1 of the first auxiliary request was amended without contravening the requirements of Article 123(2) EPC by adding method features originally disclosed in the description and also mentioned in the dependent claims.

*Second and third auxiliary request*

The admittance of the second and third auxiliary requests was requested in event that the Board considered claim 1 of the main request not novel over D2 for the only reason that the term "chemicals" also included a "gaseous acidic substance" as disclosed in D2.

*Maintained version*

The opposition division correctly assessed that the feature "thin stock line" alone established novelty over the disclosure of document D2.

The arguments with which the opponent questioned the conclusions of the appealed decision on inventive step

were based on unsubstantiated allegations on what a skilled person would have done with the apparatus known from D2.

VIII. The opponent argued substantially as follows.

*D9-D11'*

D9-D11' were *prima facie* relevant and were filed in view of the erroneous interpretation of the opposition division of the feature "thin stock line".

This interpretation came as a surprise because it was taken in spite of the fact that documents D6 and D7, showing what the correct interpretation was, had been submitted before oral proceedings in opposition proceedings.

*D12-D14*

The filing of D12-D14 was also admissible because these documents were also submitted to show that the opposition division wrongly considered that the short circulation was substantially different from the thin stock line and that the short circulation and the thin stock line were not overlapping.

*Main request*

The opposition division's conclusion that D2 was novelty destroying was correct. The arguments with which the patent proprietor contested this assessment were based on an excessively narrow interpretation of claim 1 of the main request.

*First auxiliary request*

The requirements of Article 123(2) EPC were not met by claim 1 of the first auxiliary request, because this claim refers to staged mixing in the context of the use of a specific apparatus, but there was no original disclosure for this specific combination of apparatus features and method features.

*Second and third auxiliary requests*

These requests were late filed without any justification and should not be admitted.

*Maintained version*

The opposition division wrongly acknowledged inventive step on the basis of an incorrect interpretation of the feature "thin stock line".

Clearly, no inventive step was required to mount the mixing apparatus known from D2 over an opening in a thin stock line, because this is the position where a skilled person would position the pH buffering means necessary to avoid dissolution of the calcium carbonate used as a filler.

**Reasons for the Decision**

1. D9-D11' - admittance into the proceedings
- 1.1 The patent proprietor requests that documents D9-D11' were not to be admitted.

- 1.2 The Board notes that the above question of admissibility raised by the patent proprietor are to be discussed in the light of Article 12(4) RPBA 2007 as these documents were filed by the opponent for the first time with its statement setting out the grounds of appeal.
- 1.3 In this respect the opponent puts forward that documents D9-D11' were filed as a reaction to the **surprising** and erroneous interpretation of the opposition division of the feature "thin stock line".
- 1.4 This justification is not convincing, for the following reasons:

The opponent had already submitted, with letter dated 4 March 2016 (see point 2.2.3 thereof), new documents (D6 and D7) to show that the "thin stock line" was an element of the "short circulation" mentioned in D2, and submitted documents D6 and D7 in support of this interpretation, and has not explained why at that time they failed to submit D9-D11'.

In addition the patent proprietor specifically contested the admissibility of D6 and D7 (see letter of 1 April 2016).

As the appealed decision on this feature follows the above arguments of the patent proprietor, the Board does not see how the opponent could have been surprised by the stance taken by the opposition division.

The Board therefore decides not to admit D9-D11' into the appeal proceedings.

2. D12-D14 - admittance into the proceedings

2.1 The opponent requests that D12-D14, although having been filed after notification of the summons to oral proceedings, be admitted.

These documents were also a reaction to the wrong conclusion of the opposition division that the short circulation was substantially different from the thin stock line and that the short circulation and the thin stock line were not overlapping.

D12 explained what the skilled person commonly understood as a thin stock line and was filed to show together with D13 and D14, why the above opinion of the opposition division was not correct.

2.2 The Board notes that the question of admittance into the proceedings is to be discussed in the light of Article 13(2) RPBA 2020, according to which an admittance is possible only in the presence of exceptional circumstances, justified with cogent reasons.

As the Board followed the interpretation of the opponent that the thin stock line is a portion of the short circulation (see point 6.1.3 second paragraph of the communication pursuant to Article 15(1) RPBA 2020), it is not apparent, from the above argumentation of the opponent, which exceptional circumstances are put forward to justify the late filing of D12-D14.

The Board therefore decides not to admit D12-D14 into appeal proceedings.

3. Main request - lack of novelty

3.1 On the issue of novelty of the subject-matter of claim 1 of the main request the Board fully concurs with the analysis given under point 2.1 of the reasons for the appealed decision.

3.2 According to the patent proprietor the apparatus of D2 was not suitable for feeding one or more chemicals into a process stream of a papermaking process as defined in the patent in suit.

This was because there was a clear difference between the apparatus described in the patent in suit, whose purpose it was to achieve very short mixing times, and the pH buffering apparatus disclosed in D2.

The Board disagrees, and sees no reason for considering that the rather restrictive interpretation of claim 1 proposed by the patent proprietor would be the one chosen by a skilled reader of claim 1 of the main request.

As established in the case law (see Case Law of the Boards of Appeal, 9th edition 2019, II.A.6.1), broad terms used in a claim (such as, for example, "mixing chamber") are not to be construed narrowly, even if, as in the case at issue, the narrower interpretation corresponds to an embodiment described or depicted in the patent in suit.

Reading a broadly formulated claim only technically illogical interpretations should be excluded.

D2 discloses the use of an apparatus for adding alkaline and acidic substances into an industrial process (paragraph [0022]) being a papermaking process

(paragraph [0049]) and more specifically to a pulp suspension in a short circulation (paragraph [0053]).

- 3.3 The Patent proprietor further argues that contrary to the conclusions of the opposition division, the tube reactor 1 of D2 corresponded to a mixing chamber, and not to the second conduit because the (gaseous) substance fed via the perforated tube was dispersed (mixed) in the aqueous medium in its interior.

The Board disagrees.

Figure 1 of D2 clearly shows that the outer tube (1) has all the features foreseen in claim 1 for the second conduit, namely one or more (two) inlets (2, 4) and one or more outlets (one, at the right portion of the tube). This outer tube is secured and is in communication with the first conduit (tube 5) and also to a mixing chamber (the segment of the apparatus that comprises bend 11 and static mixer 10).

- 3.4 The patent proprietor then argues that the perforated tube 5 of D2 did not qualify as the first conduit of claim 1, because it had the function of distributing the (gaseous) acidic substance, which was dispersed (mixed) in the aqueous medium in the external tube (1) before reaching the end of the perforated tube (5).

The patent proprietor also argues that the outlets of the first conduit (perforated tube 5) were not in communication with the mixing chamber (static mixer 10).

The Board disagrees again.



The perforated tube 5 of D2 qualifies as the first conduit of claim 1 of the main request because it has one or more inlets (3) and outlets (the perforations) and at least part of the substance entering via the inlet exits via the openings at the distant end. A skilled person, looking at figure 1, showing perforations along the complete length of this tube, understands that the gaseous substance is not only distributed but also conducted via tube 5.

As the content of tube 5 then inevitably enters into the bent tube (11) belonging to the mixing chamber (10, 11), the outlets of the first conduit (the perforations) are considered as being in communication with the mixing chamber.

- 3.5 The patent proprietor further argues that the adaptor (outlet means 9 in D2) was not secured to an element where mixing occurs (static mixer (10) or tube reactor (1)).

The Board disagrees again. The segment of the apparatus that comprises bend (11) and static mixer (10) acts as the mixing chamber of claim 1, has one or more inlets and outlets, and the adaptor (9) is secured thereto (see figure 1).

- 3.6 The patent proprietor has therefore not convincingly demonstrated the incorrectness of the decision under appeal that the subject-matter of claim 1 of the main request lacks novelty over the disclosure of D2.

4. First auxiliary request - added subject-matter

- 4.1 The patent proprietor argued in writing, that the subject-matter of claim 1 of the first auxiliary

request was disclosed in the originally filed claims, as there was support for the use of an apparatus (claim 1) in a method (claim 9) for feeding one or more chemicals into a process stream of a papermaking process, wherein the apparatus is only used in the staged mixing modus disclosed in dependent claims 15 and 16 of the patent in suit (corresponding to dependent claims 16 and 17 as originally filed).

- 4.2 The Board concurs with the opponent that there is no basis in the originally filed claims for the subject-matter of claim 1 of the first auxiliary request.

This is because the only method which was originally disclosed in which a staged mixing lasting from about 5 microseconds to about 500 milliseconds occurs (see the combination of claims 9, 16, 17) is performed with the apparatus mounted over an opening in a thin stock line.

As claim 1 also extends to uses (and therefore methods) in which the apparatus is not mounted over an opening in a thin stock line, the requirements of Article 123(2) EPC are not satisfied.

- 4.3 The patent proprietor also argued, during oral proceedings, that the following passages of the originally filed description provide a basis for the amendments done to claim 1 of the first auxiliary request:

page 6, first paragraph,  
page 5, lines 21-24,  
page 1, lines 5-10.

- 4.4 The Board disagrees, because none of these passages discloses the use of an apparatus having the structural

features in combination with the staged mixing step listed in claim 1 of the first auxiliary request.

This is because a staged mixing step is neither mentioned at page 1, lines 5-10, nor at page 5, lines 21-24, and only disclosed in the first paragraph of page 6, but in the context of a specific method embodiment, and without giving any information on the structural features of the apparatus to be used therefor.

- 4.5 As a consequence of the above, claim 1 of the first auxiliary request 1 contains added subject-matter contrary to the requirements of Article 123(2) EPC.
- 5. Second and third auxiliary requests - admittance into the proceedings
  - 5.1 The second and third auxiliary requests were submitted, as argued by the patent proprietor, for the eventuality that the Board considered claim 1 of the main request not novel over D2 for the only reason that the feature "chemicals" also included the "gaseous acidic substance" disclosed in D2.
  - 5.2 As noted by the opponent, the above explanation given by the patent proprietor does not contain any argument as to why these auxiliary requests are submitted so late, namely after the reply to the statement setting out the grounds of the appeal of the opponent (with letter of 12 October 2017).

What follows from the fact that the decision under appeal was based on lack of novelty of the subject-matter of claim 1 of the main request, is also the question why the patent proprietor could not have filed

these auxiliary requests already during the opposition proceedings.

For these reasons, the second and third auxiliary requests are not admitted into the appeal proceedings (Article 13(1) RPBA 2020 and Article 12(4) RPBA 2007).

6. Hence, since none of the requests submitted by the patent proprietor in support of their appeal were admissible and allowable, the patent proprietor's appeal is to be dismissed.

7. Maintained version

7.1 D2 - content of the disclosure, difference

The opposition division correctly assessed (see item 4.2 of the decision) that the feature b (mounting said adaptor over a thin stock line) alone established novelty over the content of the disclosure of document D2.

This is because the mention in D2 that the feeding apparatus is used in a short circulation (general disclosure, mentioned at paragraph [0053] of D2) does not amount to a disclosure that the apparatus is mounted on a particular portion thereof (the thin stock line).

7.2 Discussion of inventive step

The opponent contested the inventive step assessment done in point 4.3 of the reasons of the appealed decision and argued that it was evident to a skilled person to mount the mixing apparatus known from D2 over an opening in a thin stock line.

This was because, reading paragraph [0049] of D2, stating that the apparatus disclosed in this document may be used in a "short circulation" a skilled person would not have identified any location on such a short circulation as a suitable point for introducing pH buffering means.

Knowing that calcium carbonate is a typical filler in paper (paragraphs [0012] and [0067] of D2), a skilled person would naturally have used the mixing apparatus known from D2 in a thin stock line, for preventing dissolution of this substance due to a too low pH.

Clearly no inventive step was required for such an approach, because the thin stock line was the last section before paper formation, in which typically chemicals were added (see see in particular point 2.2. of the letter of 12 August 2020).

This was also confirmed by the last paragraph at page 128 of D6, where figure 3 was described.

The skilled person would also have used the apparatus known from D2 to add calcium carbonate into a process stream of papermaking process by mounting it over an opening in a thin stock line.

- 7.3 The Board does not follow the above line of argument of the opponent because, as noted by the patent proprietor during oral proceedings, it is based on a plurality of unsubstantiated assumptions, and as D2 does not mention any thin stock line there would be no reason to mount the apparatus of D2 on a thin stock line of a papermaking process.

Even if a skilled person had not identified any location on a short circulation as a suitable point for introducing chemicals, this does not necessarily imply that the apparatus would be mounted on a particular portion thereof (the thin stock line).

The allegation that the skilled person would have done that because this was the last section before paper formation, in which **typically** chemicals were added, is not supported by any of the available pieces of evidence.

In this context the Board notes that the opponent has referred to the last paragraph at page 128 of D6, but has not been able to show where, in this passage and in figure 3, to which this passage relates, a feeding location for chemicals positioned on a thin stock line was disclosed.

As D2 mentions the use of calcium carbonate, but does not disclose that this filler is introduced in a thin stock line (see paragraphs [00012] and [000667] thereof), the Board sees no reason why a skilled person **would** apply the mixing apparatus known from D2 for avoiding that calcium carbonate dissolves due to a low pH, by mounting it on a thin stock line.

A skilled person would also not have used the mixing apparatus known from D2, which is not designed for adding solid substances, for adding calcium carbonate as a filler.

7.4 The opponent has therefore not convincingly demonstrated the incorrectness of the reasoned finding of the opposition division in point 4.3 of the reasons of the appealed decision that the subject-matter

claimed in the then second auxiliary request is inventive over the available prior art. As confirmed at the oral proceedings, there were no other objections to the patent in maintained version. Thus, the opponent's appeal is to be dismissed.

## Order

### For these reasons it is decided that:

The appeal of the patent proprietor and the appeal of the opponent are dismissed.

The Registrar:

The Chairman:



G. Nachtigall

I. Beckedorf

Decision electronically authenticated