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D E C I S I O N
of 24 June 2002

Case Number: T 0764/98 - 3.3.5

Application Number: 91303582.0

Publication Number: 0454392

IPC: B01D 33/073

Language of the proceedings: EN

Title of invention:
Method for thickening lime sludge

Patentee:
A. AHLSTROM CORPORATION

Opponent:
Kvaerner Pulping AB

Headword:
Lime sludge thickening/AHLSTROM

Relevant legal provisions:
EPC Art. 56

Keyword:
"Inventive step - yes"
"Non-obvious modification"
"Combination of documents based on hindsight"

Decisions cited:

-

Catchword:

-



Case Number: T 0764/98 - 3.3.5

D E C I S I O N
of the Technical Board of Appeal 3.3.5
of 24 June 2002

Appellant: Kvaerner Pulping AB
(Opponent) P.O. Box 1033
D-65115 Karlstad (DE)

Representative: -

Respondent: A. AHLSTROM CORPORATION
(Proprietor of the patent) FI-29600 Noormarkku (FI)

Representative: Marsh, Roy David
Hoffmann Eitle
Patent- und Rechtsanwälte
Postfach 81 04 20
D-81904 München (DE)

Decision under appeal: Decision of the Opposition Division of the
European Patent Office posted 26 June 1998
rejecting the opposition filed against European
patent No. 0 454 392 pursuant to Article 102(2)
EPC.

Composition of the Board:

Chairman: R. K. Spangenberg
Members: B. P. Czech
J. H. Van Moer

Summary of Facts and Submissions

- I. The appeal is from the decision of the opposition division rejecting the opposition against European patent No. 0 454 392.

Independent claim 1 of the contested patent reads as follows:

"1. A method of thickening lime sludge with a drum filter according to which method the lime sludge is thickened on a precoat filter layer of the lime sludge formed on the surface of a filter drum which is partially immersed in a vat containing lime sludge, characterized in that the precoat filter layer is subject to a liquid jet from above the surface of the lime sludge in the vat for removing a strip at a time from the precoat filter layer by means of said liquid jet reciprocating continuously in the longitudinal direction of the drum."

- II. In the contested decision the opposition division considered the following two documents:

D1: US-A-3 521 751 and

D2: US-A-2 839 194

Concerning inventive step, the opposition division was not convinced that, starting from D1 as nearest prior art, the skilled person would combine the teaching of D2 with that of D1 to arrive at the subject-matter of claim 1.

- III. In its written statement setting out the grounds of

appeal, the appellant (opponent) argued that in contrast to what was stated in the contested decision, the claimed method only differed from that of D1 in that the features "from above the surface of the lime sludge in the vat" and "continuously" were not disclosed in D1. It also submitted that the combination of D1 and D2 would in an obvious manner lead the skilled man to a method specified in claim 1 of the pending patent.

- IV. The respondent (patent proprietor) argued that the skilled person would not consider a combination of D1 and D2 in view of the fact that D2 did not relate to the technical field of the opposed patent, namely pre-coat technology and the problems associated therewith. Without hindsight considerations, even a combination of D1 and D2 could not lead the skilled person to the claimed method.

- V. The appellant requested that the decision under appeal be set aside and that the patent be revoked.

The respondent requested that the appeal be dismissed.

Reasons for the Decision

- 1. In the present case, only inventive step is at issue.

- 2. In the contested decision, the disclosure of D1 has been considered to represent the closest prior art. This has not been in dispute. Under these circumstances, the board can accept the disclosure of D1 as a starting point in the assessment of inventive step.

D1 discloses the use of a rotating vacuum drum filter for pre-coat filtration of solids suspended in a liquid. Upon operation, the filter cake is continuously removed from the surface of the rotating filter drum by means of a scraper extending along the whole length thereof. The edge of the scraper is positioned such that a thin layer of cake remains on the surface of the filter drum, acting as a pre-coat filtering layer in the sense of claim 1 of the contested patent. This pre-coat layer becomes clogged upon extended operation of the filter, and is entirely renewed "periodically", without a necessity to stop the filtering operation. For that purpose, the apparatus disclosed in D1 comprises a nozzle moving axially back and fourth along the rotating drum and directing a fluid, preferably liquid jet against the filter drum surface. The speed of the movement of the nozzle is such that after any revolution of the drum, the unit comprising the nozzle has travelled one working width. Hence a strip of the pre-coat layer is removed at a time. The nozzle is positioned below the level of the suspension to be filtered in such a way that a fresh pre-coat layer can be formed again before the cleaned strip emerges from the suspension. See claims 1 and 3, Figures 1 and 3, column 1, lines 39 to 58, column 2, lines 27 to 34 and lines 43 to 53.

- 3. Some of the features of the claimed subject-matter are not disclosed in D1.
- 3.1 D1 does not disclose a liquid jet applied above the surface of the level of the suspension to be filtered. This was not disputed.
- 3.2 The board concurs with the appellant that a "liquid jet

reciprocating continuously" is not clearly and unambiguously disclosed in D1. The expression "periodically", as used in column 1, lines 48 to 49 and column 2, line 28 and line 45 of D1 does not necessarily imply a continuously reciprocating movement of the nozzle. Rather, these passages can also be understood to mean that the movement of the nozzle is only initiated after a certain fixed time of operation (ie periodically), when the pre-coat layer has become fouled to a degree which is not acceptable. This construction of the term periodically is in conformity with the requirement that the overall filtering process of D1 is a continuous one, see column 1, line 39 and also item 6.3 below.

- 3.3 Moreover, D1 does not mention the application of the method disclosed to the filtering of lime sludge. This was not under dispute and was already pointed out by both the examining division and the respondent during the examination of the case. See in particular the notification of the examining division dated 26 August 1993, item 2 and the appellant's letter dated 23 September 1994, second paragraph.

4. *Technical problem*

- 4.1 According to the contested patent, the technical problem to be solved by the claimed subject-matter consists in providing an improved method for thickening lime sludge, which overcomes some of the disadvantages of prior art methods, including the one according to D1, see column 1, lines 8 to 58 of the contested patent.

- 4.2 The continuously reciprocation movement of the cleaning

jet implies that the properties of the entire cake and pre-coat layer on the surface of the filter drum vary very little over time. The board, therefore, finds it credible that, as mentioned in the contested decision, reasons 7., disturbances in an operation downstream thereof resulting from stoppage or change in volume and/or dry solids content of the thickened material due to the pre-coat renewal are effectively prevented by the claimed method.

4.3 Moreover, the provision of a liquid jet above the liquid level in the vat, rather than below the liquid level as required by D1, has certain advantages in connection with lime sludge filtration. As pointed out by the respondent in the course of the examination proceedings, such an arrangement allows for the provision of a rake-like agitator in the vat and results in a better cleaning operation. See letter dated 23 September 1994, page 1 letter dated 10 October 1994, items "1)" and "3)". These advantages have not been questioned by the appellant.

4.4 In view of the above considerations the board is convinced, and it was not disputed by the appellant, that the stated technical problem is solved by the subject-matter of claim 1.

4.5 Hence, it remains to be seen whether the method as claimed is rendered obvious by the prior art cited by the appellant.

5. D1 explicitly requires the nozzles to be disposed below the liquid level in the vat (see claim 1: "within the body of the mixture"), in order to avoid "vacuum leaks". See in particular column 1, lines 53 to 58 and

column 2, lines 54 to 62. Accordingly, D1 taken alone cannot possibly suggest the positioning of the nozzle above the liquid level, let alone any advantages associated therewith in connection with lime sludge filtration.

6. Document D2 discloses the continuous operation of rotating vacuum drum filters for filtering - inter alia - calcium carbonate suspensions. See Figures 1 and 9, column 2, lines 60 to 73.

6.1 In the contested decision, the opposition division held that D2 did not disclose a pre-coat filtration in the sense of the contested patent, as the entire filter cake is continuously removed from the entire breadth of the filter cloth. Stationary spray headers were used for simultaneously removing any remaining cake from the whole width of the filter. These findings were not disputed by the appellant.

6.2 The board notes that it was undisputedly known to carry out pre-coat filtration of lime sludge using rotating vacuum drum filters, see the contested patent, column 1, lines 8 to 27. Hence the board concurs with the respondent and the opposition division in that, due to the differences in terms of the filter technologies relied upon, a skilled person trying to modify the method of D1 would not consider D2 at all. Therefore, D2 cannot possibly suggest any modification whatsoever concerning an arrangement for the renewal of a pre-coat layer.

6.3 The reference, by the appellant, to the term "continuous" used in the title of D2 cannot alter this finding. Although the movement of the nozzle according

to D1 is not necessarily "continuously reciprocating", the overall filtration method of D1 is nevertheless continuous and needs not to be interrupted for the renewal of the pre-coat layer. See D1, column 1, line 39 and lines 48 to 51 (see "without the necessity that the apparatus has to be stopped"). Hence, the term "continuous" as used in D2 would not particularly incite the skilled person to consider this document relating to a different technology when trying to improve the method of D1.

6.4 The mere fact that D2 discloses stationary spray headers disposed alongside the entire drum filter above the liquid level is not sufficient to support the appellant's allegation that it was obvious to modify the method of D1 accordingly. In particular, the appellant has not presented any arguments as to why a skilled person "aiming at improving the lime sludge filtering process" would opt for such a modification. Hence, the board holds that D2 cannot, without considerations based on hindsight, suggest the arrangement of the nozzles above the liquid level in the pre-coat filtration process of D1 at all, let alone in view of any advantages thereof achievable in lime sludge filtration.

7. Therefore, the documents cited by the appellant cannot render the claimed subject-matter obvious. The subject-matter of claim 1, and consequently of dependent claims 2 to 6, is thus based on an inventive step.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar

The Chairman

P. Martorana

R. Spangenberg