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**Datasheet for the decision
of 24 May 2007**

Case Number: T 1404/05 - 3.3.07

Application Number: 96926288.0

Publication Number: 0846023

IPC: B01D 63/02

Language of the proceedings: EN

Title of invention:

Vertical skein of hollow fiber membranes and method of
maintaining clean fiber surfaces

Patent Proprietor:

Zenon Technology Partnership

Opponents:

MEMCOR AUSTRALIA PTY LTD.

Headword:

-

Relevant legal provisions:

-

Relevant legal provisions (EPC 1973):

EPC Art. 100(b), 100(c), 111(1), 123(2), 123(3)
EPC R. 57a

Keyword:

"Main Request - extension of the subject-matter of the patent as granted beyond the content of the application as filed - (no)"

"Main Request - insufficiency of disclosure - (yes)"

"Auxiliary Request - Admissible (yes)"

"Auxiliary Request - extension of the subject-matter of the patent as granted beyond the content of the application as filed - (no)"

"Auxiliary Request - Amendments - extension of the subject-matter of the application as filed (no) - extension of the protection conferred by the patent as granted (no) - allowable (yes)"

"Auxiliary Request - Remittal (yes)"

Decisions cited:

T 0416/86, T 0265/88

Catchword:

Where a claim is vaguely formulated and leaves several constructions open as possibilities, and on one of these constructions part of the subject-matter claimed is not sufficiently described to be carried out, the claim is open to objection under Article 100(b) EPC. To avoid this objection the claim needs to be explicitly restricted to a construction which is also possible on the vague formulation of the claim, but which construction is not open to an Article 100(b) EPC objection. The mere fact that the description makes clear that this latter construction is the one intended does not mean that the claim can be treated as being confined to this latter construction. Article 69 EPC and its protocol were intended to assist a patent proprietor in contending for a broader interpretation of a claim than perhaps its wording warranted, not for cutting down the scope of a claim (see points 3.1 to 3.7).



Case Number: T 1404/05 - 3.3.07

D E C I S I O N
of the Technical Board of Appeal 3.3.07
of 24 May 2007

Appellants:
(Patent Proprietors)

Zenon Technology Partnership
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Respondents:
(Opponents)

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Decision under appeal: Decision of the Opposition Division of the
European Patent Office posted 19 October 2005
revoking European patent No. 0846023 pursuant
to Article 102(1) EPC.

Composition of the Board:

Chairman: S. Perryman
Members: G. Santavicca
B. ter Laan

Summary of Facts and Submissions

I. The appeal is against a decision of the Opposition Division to revoke European patent 0 846 023 for extension of the subject-matter beyond the content of the application as filed (Article 100(c) EPC).

II. The patent originates from international patent application PCT/CA96/00536, published as WO 97/06880 and claiming priority dates of 11 August 1995 and 31 July 1996. The international application as filed comprised 14 claims. Independent claims 1, 5 and 8 as filed read as follows:

"1. In a microfiltration membrane device, for withdrawing permeate essentially continuously from a multicomponent liquid substrate while increasing the concentration of particulate material therein, said membrane device including:
a multiplicity of hollow fiber membranes, or fibers, unconfined in a shell of a module, said fibers being swayable in said substrate, said fibers being subject to a transmembrane pressure differential in the range from about 0.7 kPa (0.1 psi) to about 345 kPa (50 psi);
a first header and a second header disposed in transversely spaced-apart relationship with said second header within said substrate;
said first header and said second header having opposed terminal end portions of each fiber sealingly secured therein, all open ends of said fibers extending from a permeate-discharging face of at least one header;
permeate collection means to collect said permeate, sealingly connected in open fluid communication with a permeate-discharging face of each of said headers;

and, means to withdraw said permeate;
the improvement comprising,
said fibers, said headers and said permeate collection means together forming a vertical skein wherein said fibers are essentially vertically disposed;
said first header being upper and disposed in vertically spaced-apart relationship above said second header, with opposed faces at a fixed distance;
each of said fibers having substantially the same length, said length being from 0.1% to less than 5% greater than said fixed distance so as to permit restricted displacement of an intermediate portion of each fiber, independently of the movement of another fiber."

"5. In a gas-scrubbed assembly comprising, a microfiltration membrane device in combination with a gas-distribution means to minimize build-up of particulate deposits on the surfaces of hollow fiber membranes ("fibers") in said device, and to recover permeate from a multicomponent liquid substrate while leaving particulate matter therein, said membrane device comprising,
a multiplicity of fibers, unconfined in a shell of a module, said fibers being swayable in said substrate, said fibers being subject to a transmembrane pressure differential in the range from about 0.7 kPa (0.1 psi) to about 345 kPa (50 psi);
a first and second header disposed in spaced-apart relationship within said substrate;
said first header and said second header having opposed terminal end portions of each fiber sealingly secured therein, all open ends of said fibers extending from a permeate-discharging face of at least one header;

permeate collection means to collect said permeate, sealingly connected in open fluid communication with a permeate-discharging face of each of said headers; and, means for withdrawing said permeate; and, said gas-distribution means, disposed within a zone beneath said skein, having through-passages therein adapted to flow sufficient gas therethrough to generate enough bubbles flowing in a column of rising bubbles between and around said skein fibers, to keep surfaces of said fibers awash in bubbles; the improvement comprising, said fibers, said headers and said permeate collection means together forming a skein wherein said fibers are essentially vertically disposed; said first header being upper and disposed in vertically spaced-apart relationship above said second header at a fixed distance; each of said fibers having substantially the same length, said length being from at least 0.1% greater, to less than 5% greater than said fixed distance so as to permit restricted displacement of an intermediate portion of each fiber, independently of the movement of another fiber; and, said through-passages discharge a cleansing gas in an amount in the range from 0.47 - 14 cm³/sec per fiber in bubbles which rise vertically substantially parallel to, and in contact with said fibers, movement of which is restricted within said column; whereby said permeate is essentially continuously withdrawn while concentration of said particulate matter in said substrate is increased."

"8. In a process for maintaining the outer surfaces of hollow fiber membranes essentially free from a build-up

of deposits of particulate material while separating a permeate from a multicomponent liquid substrate in a reservoir, said process comprising, submerging skein fibers within said substrate unconfined in a modular shell, said fibers being securely held in laterally opposed, spaced-apart first and second headers, said fibers being swayable in said substrate and having a transmembrane pressure differential in the range from about 0.7 kPa (0.1 psi) to about 345 kPa (50 psi); flowing a fiber-cleansing gas through a gas-distribution means proximately disposed relative to said skein, within a zone beneath said skein, and contacting surfaces of said fibers with sufficient physical impact of bubbles of said gas to maintain essentially the entire length of each fiber in said skein awash with bubbles and essentially free from said build-up; maintaining an equilibrium flux initially obtained after commencing operation of said process; collecting said permeate in said collection means; and, withdrawing said permeate, the improvement comprising, introducing said cleansing gas in an amount in the range from 0.47 - 14 cm³/sec per fiber to generate a column of said bubbles alongside and in contact with outer surfaces of said fibers; deploying said skein fibers within said column in an essentially vertical configuration, with said headers in fixed spaced apart relationship at a fixed distance, said skein having fibers of substantially the same length and from at least 0.1% greater, to about 5% greater than said fixed distance, said fibers being

independently swayable from side-to-side within a vertical zone of movement;
restricting movement of said fibers to said vertical zone defined by lateral movement of outer fibers in said skein;
vertically gas-scrubbing said fibers' outside surfaces with bubbles which flow upward in contact with said surfaces;
simultaneously, essentially continuously, withdrawing said permeate while increasing the concentration of said particulate material in said substrate."

III. The patent as granted comprises 8 claims. The independent claims as granted read as follows (Emphasis added by the Board to show certain amendments compared to the claims as filed):

"1. A microfiltration membrane device, for withdrawing permeate essentially continuously from a multicomponent liquid substrate, said membrane device including:

- a multiplicity of hollow fiber membranes, or fibers, unconfined in a shell of a module, said fibers being swayable in said substrate, said fibers being **subjectible in use** to a transmembrane pressure differential in the range from about 0.7 kPa (0.1 psi) to about 345 kPa (50 psi);
- a first header and a second header disposed in **vertically** spaced-apart relationship with said second header within said substrate **with opposed faces at a fixed distance**;
- said first header and said second header having opposed terminal end portions of each fiber sealingly secured therein **with potting resin**, all

- open ends of said fibers **open to** a permeate-discharging face of at least one header;
- permeate collection means to collect said permeate, sealingly connected in open fluid communication with a permeate-discharging face of **at least one of** said headers; and,
 - means to withdraw said permeate;
 - said fibers, said headers and said permeate collection means together forming a vertical skein wherein said fibers are essentially vertically disposed;
 - each of said fibers having substantially the same length, said length being from 0.1% to less than 5% greater than said fixed distance so as to permit restricted displacement of an intermediate portion of each fiber, independently of the movement of another fiber;

wherein said fibers of each said header are spaced apart to a desired lateral spacing between fibers by said potting resin which extends over only each terminal portion of said fibers near their ends, so as to maintain said ends in closely spaced apart relationship."

"5. A gas-scrubbed assembly comprising, a microfiltration membrane device in combination with a gas-distribution means to minimize build-up of particulate deposits on the surfaces of hollow fiber membranes **or fibers** in said device, and to recover permeate from a multicomponent liquid substrate while leaving particulate matter therein, said membrane device comprising:

- a multiplicity of fibers, unconfined in a shell of a module, said fibers being swayable in said substrate, said fibers being **subjectible in use** to a transmembrane pressure differential in the range from about 0.7 kPa (0.1 psi) to about 345 kPa (50 psi);
- a first and second header disposed in **vertically spaced-apart** relationship within said substrate **with opposed faces at a fixed distance, each header being formed with a potting resin cured in a resin-confining means;**
- said first header and said second header having opposed terminal end portions of each fiber sealingly secured therein, all open ends of said fibers **open to** a permeate-discharging face of at least one header;
- permeate collection means to collect said permeate **through at least one of said headers** sealingly connected in open fluid communication with a permeate-discharging face of each of said headers;
- means for withdrawing said permeate; and,
- said fibers, said headers and said permeate collection means together forming a skein wherein said fibers are essentially vertically disposed;
- said gas-distribution means **is located** within a zone beneath said skein, **said gas distribution means** having through-passages therein adapted to **have sufficient gas flowed** therethrough to generate enough bubbles flowing in a column of rising bubbles between and around said skein fibers, to keep surfaces of said fibers awash in bubbles;
- each of said fibers having substantially the same length, said length being from at least 0.1%

greater, to less than 5% greater than said fixed distance so as to permit restricted displacement of an intermediate portion of each fiber, independently of the movement of another fiber;

wherein

- said first header **is** upper and disposed in vertically spaced-apart relationship above said second header at a fixed distance;
- **said fibers of each said header are spaced apart to a desired lateral spacing between fibers by said potting resin which extends over only each terminal portion of said fibers near their ends, so as to maintain said ends in closely spaced apart relationship;** and,
- said through-passages discharge **in use** a cleansing gas in an amount in the range from 0.47 - 14 cm³/sec per fiber in bubbles which rise vertically substantially parallel to, and in contact with said fibers, movement of which is restricted within said column;
- whereby said permeate is essentially continuously withdrawn while concentration of said particulate matter in said substrate is increased."

"8. A process for maintaining the outer surfaces of hollow fiber membranes essentially free from a build-up of deposits of particulate material while separating a permeate from a multicomponent liquid substrate in a reservoir, said process comprising:

- submerging skein fibers **in an essentially vertical configuration** within said substrate **said fibers being** unconfined in a modular shell and securely held in **vertically** opposed, **upper and lower** headers **spaced-apart at a fixed distance, said fibers having substantially the same length and from at least 0.1% greater, to about 5% greater than said fixed distance**, said fibers being swayable in said substrate and having a transmembrane pressure differential in the range from about 0.7 kPa (0.1 psi) to about 345 kPa (50 psi);
- flowing a fiber-cleansing gas through a gas-distribution means proximately disposed relative to said skein, within a zone beneath said skein, and contacting surfaces of said fibers with sufficient physical impact of bubbles of said gas to maintain essentially the entire length of each fiber in said skein awash with bubbles and essentially free from said build-up;
- maintaining an equilibrium flux initially obtained after commencing operation of said process;
- collecting said permeate in said collection means; and,
- withdrawing said permeate,
- introducing said cleansing gas in an amount in the range from 0.47 - 14 cm³/sec per fiber to generate a column of said bubbles alongside and in contact with outer surfaces of said fibers;
- restricting movement of said fibers to said vertical zone defined by lateral movement of outer fibers in said skein;

- said fibers' outside surfaces are vertically gas-scrubbed with bubbles which flow upward in contact with said surfaces; and,
- withdrawing said permeate simultaneously, essentially continuously, while increasing the concentration of said particulate material in said substrate."

IV. The European patent had been opposed on the grounds that the claimed subject-matter lacked novelty and an inventive step (Article 100(a) EPC), that the patent did not disclose the invention in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art (Article 100(b) EPC) and that the claimed subject-matter extended beyond the content of the application as filed (Article 100(c) EPC).

V. The decision under appeal was based on the claims as granted as main request as well as on four sets of amended claims identified as SR1, SR1bis, Subsidiary Request 2 and Subsidiary Request 3.

The Opposition Division revoked the patent on the basis of reasoning which can be summarised as follows:

- (a) None of the objections relating to insufficiency of disclosure under Article 100(b) EPC had been made out. In particular, the meaning of the fibre length in claim 1 was sufficiently clear for the skilled person to carry out, because by reference to the description it was clear that "fibre length" referred to the fibre length between surfaces of opposite headers between which they extended, and

not, as argued for by the opponent, the distance between the terminal ends of fibre.

- (b) A feature that all open ends of said fibres open to a permeate-discharging face of at least one header in conjunction with the feature that opposed terminal end portions of each fibre were sealingly secured in said first header and said second header with potting resin, as given in claims 1 and 15 under consideration, was not disclosed by the cited occurrences on page 27, lines 16-24 of the application as filed. It was only implicit in the description on page 35, lines 1 to 5, that a conventional finished header might be used in which the ends of the fibres would be flush (in substantially the same plane) with the lower face of the header. The feature that all open ends of said fibres open to a permeate-discharging face of at least one header identified from claims 1 and 15 thus replaced disclosed specific structural features of how the fibres were potted in the header by the broad general expression that all open ends of said fibres open to the permeating-discharging face of at least one header. Such a generalization of an existing feature replacing a disclosed specific feature in a claim by a broad general expression was not allowable under Article 123(2) EPC (cf. T 416/86 (OJ EPO 1989, 308); T 265/88, Case Law of the Boards of Appeal of the European Patent Office, fourth edition, page 219).

(c) Since therefore the ground of opposition under Article 100(c) EPC (unallowable extension of subject-matter) prejudiced the maintenance of the patent in suit, the patent should be revoked.

VI. On 3 November 2005, the patent proprietors lodged an appeal against that decision and paid the appeal fee. In the statement setting out the grounds of appeal, received on 23 February 2006, the appellants enclosed two sets of amended claims as Auxiliary Requests 1 and 2 and announced that the further requests presented before the Opposition Division were maintained, possibly combined with further amendments during the appeal proceedings. In response to a communication of the Board in preparation for the oral proceedings, the appellants *inter alia* submitted an Annex 2 made up of six pages, Subsidiary Requests 3 and 4 and additional requests identified as Claim Set B made of three pages and concerning a Main Request B and Subsidiary Requests 1B to 4B (letter dated 27 April 2007).

VII. In response to the statement setting out the grounds of appeal, the opponents (herein after, the respondents) maintained the grounds of opposition that the claimed subject-matter was insufficiently disclosed and that the amendments carried out during the examination proceedings extended the subject-matter beyond the content of the application as filed, referring to the arguments submitted during the written opposition proceedings. Furthermore, they objected that also the amendments in the claims of Auxiliary Requests 1 and 2 added subject-matter beyond the content of the application as filed. No response to the communication of the Board in preparation for the oral proceedings or

the latest submissions of the appellants were made by the opponents during the written appeal proceedings.

VIII. Oral proceedings were held on 24 May 2007. After hearing and questioning the parties on the issues under Articles 100(b) and 100(c) EPC, the Board expressed the preliminary view that the replacement of "extend from" by "open to" in Claims 1 and 5 as granted (Main Request) did not extend beyond the content of the application as filed but the introduction of "flexible support means" in Claims 2 and 6 as granted did, and that on one possible reading of the term "fibre length" in these claims, not excluded by the terms of these claims, part of the subject-matter of Claims 1 and 5 as granted was insufficiently disclosed for it to be carried out by a person skilled in the art. Consequently, the ground of opposition under Article 100(b) EPC prejudiced maintenance of the patent as granted (Main Request). In reaction, the appellants submitted a fresh Auxiliary Request made up of three claims, to be considered before the further requests then on file.

Claims 1 to 3 of the Auxiliary Request read as follows (Emphasis added by the Board to show the amendments compared to the claims as granted):

"1. A microfiltration membrane device, for withdrawing permeate essentially continuously from a multicomponent liquid substrate, said membrane device including:

- a multiplicity of hollow fiber membranes, or fibers, unconfined in a shell of a module, said fibers being swayable in said substrate, said fibers being subjectible in use to a transmembrane

- pressure differential in the range from about 0.7 kPa (0.1 psi) to about 345 kPa (50 psi);
- a first header and a second header disposed in vertically spaced-apart relationship with said second header within said substrate with opposed faces at a fixed distance;
 - said first header and said second header having opposed terminal end portions of each fiber sealingly secured therein with potting resin, all open ends of said fibers open to a permeate-discharging face of at least one header;
 - permeate collection means to collect said permeate, sealingly connected in open fluid communication with a permeate-discharging face of at least one of said headers; and,
 - means to withdraw said permeate;
 - said fibers, said headers and said permeate collection means together forming a vertical skein wherein said fibers are essentially vertically disposed;
 - each of said fibers having substantially the same length **between said opposed faces of the headers**, said length being from 0.1% to less than 5% greater than said fixed distance so as to permit restricted displacement of an intermediate portion of each fiber, independently of the movement of another fiber;

wherein said fibers of each said header are spaced to a desired lateral spacing between fibers by said potting resin which extends over only each terminal portion of said fibers near their ends, so as to maintain said ends in closely spaced apart relationship."

"2. A gas-scrubbed assembly comprising, a microfiltration membrane device in combination with a gas-distribution means to minimize build-up of particulate deposits on the surfaces of hollow fiber membranes or fibers in said device, and to recover permeate from a multicomponent liquid substrate while leaving particulate matter therein, said membrane device comprising:

- a multiplicity of fibers, unconfined in a shell of a module, said fibers being swayable in said substrate, said fibers being subjectible to a transmembrane pressure differential in the range from about 0.7 kPa (0.1 psi) to about 345 kPa (50 psi);
- a first and second header disposed in vertically spaced-apart relationship within said substrate with opposed faces at a fixed distance, each header being formed with a potting resin cured in a resin-confining means;
- said first header and said second header having opposed terminal end portions of each fiber sealingly secured therein, all open ends of said fibers open to a permeate-discharging face of at least one header;
- permeate collection means to collect said permeate through at least one of said headers sealingly connected in open fluid communication with a permeate-discharging face of each of said headers;
- means for withdrawing said permeate; and,
- said fibers, said headers and said permeate collection means together forming a skein wherein said fibers are essentially vertically disposed;

- said gas-distribution means is located within a zone beneath said skein, said gas distribution means having through-passages therein adapted to have sufficient gas flowed therethrough to generate enough bubbles flowing in a column of rising bubbles between and around said skein fibers, to keep surfaces of said fibers awash in bubbles;
- each of said fibers having substantially the same length **between said opposed faces of the headers**, said length being from at least 0.1% greater, to less than 5% greater than said fixed distance so as to permit restricted displacement of an intermediate portion of each fiber, independently of the movement of another fiber;

wherein

- said first header is upper and disposed in vertically spaced-apart relationship above said second header at a fixed distance;
- said fibers of each said header are spaced apart to a desired lateral spacing between fibers by said potting resin which extends over only each terminal portion of said fibers near their ends, so as to maintain said ends in closely spaced apart relationship; and,
- said through-passages discharge in use a cleansing gas in an amount in the range from 0.47 - 14 cm³/sec per fiber in bubbles which rise vertically substantially parallel to, and in contact with said fibers, movement of which is restricted within said column;

- whereby said permeate is essentially continuously withdrawn while concentration of said particulate matter in said substrate is increased."

"3. A process for maintaining the outer surfaces of hollow fiber membranes essentially free from a build-up of deposits of particulate material while separating a permeate from a multicomponent liquid substrate in a reservoir, said process comprising:

- submerging skein fibers in essentially vertical configuration within said substrate said fibers being unconfined in a modular shell and securely held in vertically opposed, upper and lower headers spaced apart at a fixed distance, said fibers having substantially the same length **between opposed faces of the headers** and from at least 0.1% greater, to about 5% greater than said fixed distance, said fibers being **independently** swayable in said substrate **from side-to-side within a vertical zone of movement** and having a transmembrane pressure differential in the range from about 0.7 kPa (0.1 psi) to about 345 kPa (50 psi);
- flowing a fiber-cleansing gas through a gas-distribution means proximately disposed relative to said skein, within a zone beneath said skein, and contacting surfaces of said fibers with sufficient physical impact of bubbles of said gas to maintain essentially the entire length of each fiber in said skein awash with bubbles and essentially free from said build-up;
- maintaining an equilibrium flux initially obtained after commencing operation of said process;

- collecting said permeate in said collection means;
and,
- withdrawing said permeate,
- introducing said cleansing gas in an amount in the range from 0.47 - 14 cm³/sec per fiber to generate a column of said bubbles alongside and in contact with outer surfaces of said fibers;
- restricting movement of said fibers to said vertical zone defined by lateral movement of outer fibers in said skein;
- said fibers' outside surfaces are vertically gas-scrubbed with bubbles which flow upward in contact with said surfaces; and,
- withdrawing said permeate simultaneously, essentially continuously, while increasing the concentration of said particulate material in said substrate."

IX. The appellants essentially argued as follows:

Main Request

Extension of subject-matter (Article 100(c) EPC)

- (a) The term "open to" was mentioned in several passages of the application as filed concerning the ends of the fibres, in particular of the fibres which were flush with the surface of the header. Figure 2 did not represent a prior art apparatus but a skein according to the invention using conventional headers. In general, the method for potting the fibre was not critical. Hence, "open to" was based on the application as filed. As regards the term "extend", it was used throughout

the description without indicating that it was related to any specific direction of the extension. In any case, the term "open to" did not exclude the embodiments where the fibres protruded from the surfaces of the header. Therefore, the replacement of "extending from" by "open to" in Claims 1 and 5 did not extend the subject-matter as filed, so that the Main Request was allowable.

Insufficiency of the disclosure (Article 100(b) EPC)

- (b) The invention defined in Claims 1 and 5 was sufficiently clear for the skilled person if the description was considered, in line with Article 69 EPC. It was clear from the claims that a restricted movement of the fibres should be permitted, i.e. the fibres should not be taut, otherwise they would vibrate instead of sway. It was apparent from the description that to permit such restricted movement the length of the fibre should be greater than the fixed distance between opposed faces of the headers. Since the fibre length was that typically used to calculate the surface area, there was no doubt that the free length of the fibre was meant. Hence, no basis whatsoever for an interpretation such as that brought forward by the respondents was available. Given that, and given the examples, the skilled person interpreting the patent in a positive way had no problem to carry out the invention. In particular, the fibre length was typically up to 5 m, and at least for the lengths about the upper limit even the calculations made by the respondents gave reasonable thicknesses for the headers. The respondents thus had failed to establish that the

disclosure was insufficiently clear for it to be carried out by a person skilled in the art. They were simply trying to show that an example was outside the scope of the protection. The appellants were nevertheless prepared to amend Claims 1 and 5 in order to make clear which fibre length was meant by the wording of said claims.

Auxiliary Request

Admissibility

- (a) The Auxiliary Request had been filed to overcome the ground of opposition under Article 100(b) EPC, newly argued by the respondents, which the Board considered prejudiced maintenance of the patent as granted, as well as to take into account the objections raised during the oral proceedings. The filing of the request was not an abuse of and did not protract the appeal proceedings. Since the admissibility of the Auxiliary Request was at the discretion of the Board, the appellants asked for the Board's indulgence towards admission of the request.

Amendments

- (b) Claims 1 and 2 of the Auxiliary Request, which corresponded to Claims 1 and 5 as granted, had been amended to overcome the ground of opposition under Article 100(b) EPC. Claim 3, which corresponded to Claim 8 as granted, in addition to the modification also carried out in Claims 1 and 2 to overcome the ground under Article 100(b) EPC, had also been

modified to overcome the ground under Article 100(c) EPC, by reinstating the feature concerning the independent swayability of the fibres. Although the introduction of the wording "flexible support means" in Claims 2 and 6 as granted had not been decided by the Opposition Division, and thus was outside the ambit of the appeal, Claims 2 to 4 and 6 to 7 as granted had nevertheless been cancelled.

- (c) The amended claims of the Auxiliary Request were based on the application as filed.
- (d) Some of the terms objected to as lacking clarity were either present in the claims as granted or expressly described in connection with the headers. Therefore, the objection of lack of clarity either could not be raised or was not well founded.
- (e) As regards the alleged extension of the protection conferred, the amendments limited the length of the fibre to a shorter length. That limitation had been made within a context that neither required any particular thickness for the headers nor specified that the fibres must be flush with the surface of the headers. Therefore, the question of a possible extension of protection did not arise.

Remittal

- (f) Since therefore the grounds of opposition had been overcome, and novelty and inventive step had not been decided by the Opposition Division, the case should be remitted for further prosecution.

X. The respondents essentially maintained that:

Main Request

Extension of subject-matter (Article 100(c) EPC)

- (a) The application as filed disclosed conventional and novel headers, whereby the fibres of the prior art headers were flush with the lower face of the header and the fibres of the novel headers protruded from their faces. In particular, the conventional headers had been exemplified only in combination with further specific details and embodiments with two conventional headers had not been disclosed, let alone in combination with the possible withdrawal of permeate from each header. Since the wording "extending from" meant that the fibres protruded away from the surface of the header into the permeate collector, and since the wording "open to" had no basis in the application as filed outside the conventional headers, the replacement of "extending from" by "open to" in the claims as granted was such that more arrangements between fibres and header surfaces than those disclosed were now encompassed, e.g. recessed fibres as shown on pages 3 and 4 of Annex 2 enclosed in the letter dated 27 April 2007 of the appellants. Thus, "open to" was a generalization of the wording "extend from" as filed that went beyond the novel headers with protruding fibres as filed, which was an essential element of the invention. That generalization was consequently unallowable.

Insufficiency of the disclosure (Article 100(b) EPC)

- (b) The natural meaning of the wording "fibre length" in Claims 1 and 5 was the effective length of the fibre. Since the meaning of length was clear, there was no need for interpretation. If the description was nevertheless taken into account, different definitions for the fibre length would be found. Therefore, if the clear wording of Claims 1 and 5 was not what was meant on filing, then the claims should be modified. Taking the effective length of the fibre as the fibre length, the calculations made in Annex 1 (to the Minutes of the oral proceedings before the Opposition Division) showed that the limitation for the fibre length relative to the fixed distance, as defined in Claims 1 and 5, led to very thin headers, which contradicted the examples of the patent in suit and could not be reproduced either. The alleged invention was thus insufficiently disclosed. However, if the length were properly defined in the claims, insufficiency of disclosure would no longer be objected to.

Auxiliary Request

Admissibility

- (a) Since nothing new had been put forward by the respondents, the filing of the Auxiliary Request at a late stage of the oral proceedings before the Board was unjustifiable. In particular because the Opposition Division gave the proprietors the possibility to file further requests during the oral proceedings but the latter then decided not to

file any further requests, which, if filed, could have been discussed before two instances. Thus, the late filing was against procedural fairness. The Board should consequently apply the strictest criteria developed to prevent any tactical abuse of the proceedings as well as to ensure fairness and reject the late filed request.

Amendments

- (b) In any case, the Auxiliary Request was not allowable, because the amended claims extended the protection conferred, added subject-matter and were not clear either. As regards the extension of the protection conferred, this was apparent from the fact that the fibre length was no longer the entire length of the fibre, as granted, and that any header of any thickness could now be used in the embodiments encompassed by the new claims. In the claims as granted, the fibre had to go at least flush to the faces of the headers, so that its length, i.e. its overall length, encompassed the thickness of the headers and the thickness of the headers was implicitly defined in the claims as granted. As to added subject-matter, apart from a deeper analysis not being immediately possible, there were problems in view of the use of "faces" instead of "surfaces" as well as of the deletion of Claim 3. Finally, features such as "side-to-side movement within a vertical zone of movement" and "vertical zone of movement", and terms such as "faces" and "surfaces" referring to the headers, were not clear.

(c) The claimed subject-matter did not fulfil the requirements of the EPC and the appeal should be dismissed.

XI. The appellants (patent proprietors) requested that the decision under appeal be set aside and the case be remitted to the first instance for further prosecution on the basis of the claims as granted (Main Request), or, alternatively, the Auxiliary Request as filed during the oral proceedings of 24 May 2007.

XII. The respondents (opponents) requested that the appeal be dismissed.

Reasons for the Decision

1. The appeal is admissible.

Main Request

2. *Extension of the subject-matter of the patent as granted beyond the content of the application as filed (Article 100(c) EPC)*

2.1 The reasons why the Opposition Division revoked the patent for extension of subject matter relate to the passages in claim 1 reading (additions to claim 1 as filed being indicated in bold and deletions by being struck through):

"...said first header and said second header having opposed terminal end portions of each fiber sealingly secured therein **with potting resin**, all open ends of

said fibers ~~extending from~~ **open to** a permeate-discharging face of at least one header;
permeate collection means to collect said permeate, sealingly connected in open fluid communication with a permeate-discharging face of each of said headers;
and,..."

...wherein said fibers of each said header are spaced to a desired lateral spacing between fibers by said potting resin which extends over only each terminal portion of said fibers near their ends, so as to maintain said ends in closely spaced apart relationship."

- 2.2 Looking at the feature "extending from a permeate-discharging face" in the context of the claim as filed, this relates to a path for permeate, and the change to "open to a permeate discharging face" is just a clearer and more concise way of saying the same thing. No addition of subject matter exists here.
- 2.3 The respondents have argued that the wording "extending from" is to be equated to "protruding from", so the change is a broadening having no basis. The description does indeed contain references to ends of fibres left protruding from the permeate-discharging aft faces of the headers, but this is in the context of a particularly preferred method of potting with both a first fugitive lamina and a second fixing lamina. The fugitive lamina is then removed, for example by melting away with hot air, leaving the ends of the fibres protruding from the header as a by-product of this particular process. To equate the original "extending from" with this use of "protruding from" in the

description violates the general principle of construction that the use of different words indicates that something different is meant.

- 2.4 Further claim 1 as filed is directed to a product and the Board can see no reason for presuming that it was to be limited to a feature which is a by-product of a particular process described. In the passage at page 12, lines 14 to 19 of the application as filed it is stated:

"The particular method of securing fibres in each of the headers is not narrowly critical, the choice depending on the materials of the fibre, and the cost of using a method other than potting. However it is essential that each of the fibres be secured in fluid-tight relationship within each header to avoid contamination of permeate. This is effected by potting the fibres essentially vertically, in closely-spaced relationship, substantially concentrically."

- 2.5 This cited passage serves both to show that having the fibre ends protruding from the permeate-discharging faces is not an essential requirement, and to provide a basis for the final passage from ".. wherein relationship." (see point 2.1 above) added to the claim as originally filed. To meet the requirements of Article 100(c) EPC or Article 123(2) EPC, respectively, it is not necessary to show that something has been described in identical words, but that the technical message conveyed remains the same. Unlike the Opposition Division, the Board cannot here see any generalization having no basis.

2.6 The arguments by the respondents based on an embodiment in which the fibres are recessed in the header seem irrelevant to the question of basis for the purposes of Article 100(c) EPC. Leaving aside the question whether this is a practicable embodiment at all, in the Board's view this hypothetical embodiment could be argued to fall under both claim 1 as filed and as granted or alternatively under neither. This is not a question the Board need decide.

2.7 Similar arguments also apply *mutatis mutandis* to the changes between claim 5 as filed and as granted.

2.8 Consequently, the ground of opposition under Article 100(c) EPC invoked against Claims 1 and 5 as granted does not prejudice maintenance of the patent in suit.

3. *Insufficiency of disclosure (Article 100(b) EPC)*

3.1 Claim 1 as granted contains the requirement of "each of said fibers having substantially the same length, said length being from 0.1% to less than 5% greater than said fixed distance [at which the headers are fixed apart] so as to ...".

3.2 The appellants contend that in accordance with the description said length must mean the length of the fibres between opposed faces of the headers, a view shared by the Opposition Division. The respondents contend that it must mean the overall length of the fibres. The vague wording of the claim leaves both constructions open as possibilities.

3.3 On the construction of length as "overall length", the respondents have shown convincingly that certainly for the lower figure of 0.1% of the range claimed, a skilled person would neither be told by the application as filed, nor know from his common general knowledge how to pot fibres if the overall length is only 0.1% greater than the distance between headers, for this would require fibres to be held fixed in headers less than one twentieth of the thickness illustrated in the description. Given this discrepancy between what would be needed to meet the requirements of the claim on this construction of "fiber length", and what is described, the Board is prepared to consider the objection of insufficiency as to at least part of what is claimed as made out, in the absence of evidence that the skilled person could succeed even if the overall length of the fibres is only 0.1% greater than the distance between headers.

3.4 The appellants have not seriously even argued, and certainly provided no evidence, that even if length is construed as overall length then the whole range can nevertheless be put into practice. Rather they submit that length should mean only the length of the fibres between opposed faces of the headers, in reliance on Article 69 EPC and its protocol. However, Article 69 EPC and its protocol were intended to assist a patent proprietor in contending for a broader interpretation of a claim than perhaps its wording warranted, not for cutting down the scope of the claim.

3.5 Hence, the claim as granted must be construed as covering embodiments falling within the claim both under the construction put forward by the respondents,

and that put forward by the appellants. The vague wording does not exclude either. Under the construction put forward by the opponents parts of the range claimed cannot be put into practice, and the claim is open to objection under Article 100(b) EPC as argued by the respondents. To avoid this objection it is necessary for the appellants to restrict the claim so that it covers only the construction the appellants seek to put forward.

3.6 Whether a court considering infringement might choose to limit the extent of protection conferred by a claim to less than the literal meaning of the claim because of some limitation stated in the description is a matter for such court. In proceedings before the European Patent Office, if a proprietor wishes to argue for a narrow scope of the claim this should be on the basis of the wording of the claim, and not on the basis of something appearing only in the description, as in such EPO proceedings the proprietor has the possibility, subject to meeting the requirements of Article 123(2) EPC, of restricting the wording of the claim to reflect the meaning he is contending for.

3.7 The ground of opposition under Article 100(b) EPC therefore prejudices the maintenance of the patent in the form of the Main Request.

4. *Auxiliary Request*

4.1 *Admissibility*

- 4.1.1 The Auxiliary Request was filed during the oral proceedings before the Board to overcome the ground of opposition under Article 100(b) EPC.
- 4.1.2 During the written appeal proceedings, in order to argue their case of insufficiency, the respondents, in their sole submission dated 11 September 2006 (II.1), had merely made reference to the arguments submitted in writing during the opposition proceedings. These arguments however do not concern the fibre length and the implications on the alleged insufficiency as shown in Annex 1 presented by the opponents and attached to Minutes of the oral proceedings before the Opposition Division. Based on those arguments, the Board, in said communication in preparation for oral proceedings, had indicated that it saw no reason to take a different position than that taken by the Opposition Division on those issues. However, during the oral proceedings before the Board, the respondents represented Annex 1 and argued again the alleged insufficiency of the disclosure resulting from the definition of fibre length in Claims 1 and 5.
- 4.1.3 The Board found that the ground of insufficiency based on those arguments was well founded and prejudiced maintenance of patent as granted, thus reversing the decision of the Opposition Division.
- 4.1.4 The filing of the Auxiliary Request in reaction to that decision, is not regarded to constitute an abuse of the proceedings. Nor can an amendment restricting claims explicitly to a construction accepted by the Opposition Division as implicit be regarded as a surprise.

4.1.5 Also, since the modifications concerned objections raised by the respondents and were hand-made on a copy of the claims as granted, the contentious nature of the oral proceedings was safeguarded, so that no prolongation of the proceedings resulted thereby.

4.1.6 Therefore, the Board exercises its discretion to admit the Auxiliary Request into the proceedings.

4.2 *Extension of the subject-matter of the patent as granted beyond the content of the application as filed (Article 100(c) EPC)*

4.2.1 Claims 1 to 3 of the Auxiliary Requests based on Claims 1, 5 and 8 as granted, have been objected to as extending the claimed subject-matter beyond the content of the application as filed. This ground is however either not well founded (Claims 1 and 5 as granted) or overcome by the amendments made in the claims of the Auxiliary Request, for the following reasons:

(a) As regards Claim 1 and 5 as granted, see Section 2, *supra*.

(b) Whereas Claim 8 as granted no longer defines the feature "independently swayable from side-to-side within a vertical zone of movement" defined in Claim 8 as filed, that feature of Claim 8 as filed has been reintroduced in Claim 3 according to the Auxiliary Request.

(c) Also, Claims 2 and 6 as granted have been cancelled, i.e. they are no longer present in the Auxiliary Request. Hence, the objected to feature "a flexible support means" is no longer present in the claims of the Auxiliary Request.

4.2.2 Therefore, it only remains to decide whether the further amendments made during the appeal oral proceedings, compared to Claims 1, 5 and 8 as granted, fulfil the requirements of the EPC.

4.3 *Amendments made during the appeal oral proceedings*

Compared to Claims 1, 5 and 8 as granted, Claims 1 to 3 of the Auxiliary Request submitted during the appeal oral proceedings comprise the following amendments:

- (a) The inclusion in each of Claims 1 to 3 of the feature "between said opposed faces of the headers", after the feature "said fibers having substantially the same length";
- (b) The inclusion in Claim 3 of the features "independently" and "from side-to-side within a vertical zone of movement", to further define how the fibres are swayable.

4.4 *Basis for the amendments (Article 123(2) EPC)*

4.4.1 The feature "said fibers having substantially the same length between opposed faces of the headers and from at least 0.1% greater, to about 5% greater than said fixed distance", which is present in each of Claims 1 to 3 of the Auxiliary Request, has a basis in the application as filed (page 4, lines 22 to 25; page 49, lines 15 to 17).

4.4.2 The feature "said fibers being independently swayable from side-to-side within a vertical zone of movement", in Claim 3 of the Auxiliary Request, is mentioned as such in Claim 8 as filed (page 55, lines 13 to 15).

4.4.3 Therefore, the amendments do not extend the subject-matter of the application as filed (Article 123(2) EPC).

5. *Extension of the protection conferred by the patent as granted (Article 123(3) EPC)*

5.1 The respondents have objected that the inclusion in Claims 1 to 3 of the Auxiliary Request of the feature "between said opposite faces of the headers", after "said fibers having substantially the same length", extends the protection conferred by the patent.

5.2 In the Board's view this change merely confines the scope of the claims to a possible construction which was within the scope of the claims as granted, so that no extension of the protection has occurred.

5.3 Therefore, the replacement of the term "said fibers having substantially the same length" by the term "said fibres having substantially the same length between opposed faces of the headers" does not violate the requirements of Article 123(3) EPC.

6. The amendments to the claims of the Auxiliary Request aim at overcoming a ground of opposition (insufficiency of the disclosure) and thus comply with the requirements of Rule 57a EPC.

7. *Remittal*

- 7.1 The sole ground for refusal in the decision under appeal was the extension of the subject-matter beyond the content of the application as filed in view of the replacement of the term "extending from" by "open to". The appeal on this ground has succeeded.
- 7.2 Claims 1 to 3 of the Auxiliary Request filed during the oral proceedings before the Board overcome the grounds of opposition and the objections raised by the respondents under Articles 84, 123(2) and 123(3) EPC.
- 7.3 The examination has to be continued on a new basis according to the above request and the outstanding issues such as novelty and inventive step of the claimed subject-matter have not been dealt with in the decision under appeal. The Board consequently considers it appropriate to remit the case to the Opposition Division for further prosecution, in the exercise of its discretion under Article 111(1) EPC, so that the parties are given the opportunity of arguing the issues raised in two instances, if necessary.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the first instance for further prosecution on the basis of the three claims of the Auxiliary Request filed during the oral proceedings of 24 May 2007.

The Registrar:

The Chairman:

C. Eickhoff

S. Perryman