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**Datasheet for the decision
of 5 March 2009**

Case Number: T 0086/07 - 3.2.07

Application Number: 99934752.9

Publication Number: 1097268

IPC: D21G 7/00

Language of the proceedings: EN

Title of invention:

Method and apparatus in moistening of a web

Patentee:

Metso Paper, Inc.

Opponent:

Andritz Küsters GmbH

Headword:

-

Relevant legal provisions:

EPC Art. 54, 56
RPBA Art. 12(2), 13(1)

Keyword:

"Novelty - yes"
"Admissibility of ground of lack of inventive step - yes"
"Inventive step - no"

Decisions cited:

-

Catchword:

Point 2



Case Number: T 0086/07 - 3.2.07

D E C I S I O N
of the Technical Board of Appeal 3.2.07
of 5 March 2009

Appellant: Andritz Küsters GmbH
(Opponent) Eduard-Küsters-Strasse 1
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Representative: Henseler, Daniela
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Respondent: Metso Paper, Inc.
(Patent Proprietor) Fabianinkatu 9 A
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Representative: TBK-Patent
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Decision under appeal: Interlocutory decision of the Opposition
Division of the European Patent Office posted
27 November 2006 concerning maintenance of
European patent No. 1097268 in amended form.

Composition of the Board:

Chairman: H. Meinders
Members: P. O'Reilly
I. Beckedorf

Summary of Facts and Submissions

- I. Opposition was filed against European patent No. 1 097 268 as a whole based on Article 100(a) EPC (lack of novelty and lack of inventive step).

The opposition division decided to maintain the patent in amended form. It held that the subject-matter of claim 1 of the main request was novel and involved an inventive step.

- II. The appellant (opponent) filed an appeal against that decision.

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

The respondent (parent proprietor) requested that in setting aside the decision under appeal the patent be maintained in amended form on the basis of one of the sets of claims filed as main request and as first to third auxiliary request with letter of 2 February 2009.

- IV. The independent claims of the patent according to the main request read as follows:

"1. Method for moistening of a paper web (W) in the manufacture of SC paper, in which liquid is applied at a predetermined point on the surface of the paper web (W) passing by said point for wetting of the paper web (W), and the paper web is passed thereafter to a surface treatment by calendering with a multi-nip calender (C) with over four nips,
characterized

in that the liquid is applied at such an early stage (2), taking into account the running speed of the paper web (W) and the length of the path travelled by the paper web between said point of applying liquid and the calendering, that before the calendering, the fibres in the surface layer of the paper web (W) exposed to the wetting have the time to absorb it at least 80% of the liquid amount they are capable of absorbing, wherein the paper web (W) has a moisture gradient in its z-direction as a result of the application of the liquid.

20. Apparatus for moistening of a paper web (W) in the manufacture of SC paper, which comprises at least one wetting device (2) for applying liquid on the surface of the paper web (W) for wetting of the paper web (W), wherein the wetting device (2) is located in the travel direction of the paper web (W) before a calender (C) with over four nips (N) effecting a treatment of the surfaces of the paper web (W), characterized

in that the wetting device (2) is arranged at such a distance from the calender (C), taking into account the running speed of the paper web (W), that the liquid applied by means of the at least one wetting device (2) onto the paper web (W) has the time to be absorbed in the fibres in the surface layer of the paper web (W) exposed to the wetting at least 80% of the amount of the liquid the fibres in the surface layer are capable of absorbing, with the paper web (W) having a moisture gradient in its z-direction before reaching the calender (C)."

- V. The claims of the first auxiliary request differ from those of the main request only in that the apparatus claims are no longer present in the set of claims.
- VI. The independent claims of the second auxiliary request read as follows (amendments when compared to claim 1 of the main request are depicted in bold or struck through):

"1. Method for moistening of a paper web (W) in the manufacture of SC paper, in which liquid is applied at a predetermined point on the surface of the paper web (W) passing by said point for wetting of the paper web (W), and the paper web is passed thereafter to a surface treatment by calendering with a multi-nip calender (C) with over four nips,
characterized

in that the liquid is applied in a spray wetting, and
in that the liquid is applied at such an early stage (2), taking into account the running speed of the paper web (W) and the length of the path travelled by the paper web between said point of applying liquid and the calendering, that before the calendering, the fibres in the surface layer of the paper web (W) exposed to the wetting have the time to absorb it at least 80% of the liquid amount they are capable of absorbing, wherein the paper web (W) has a moisture gradient in its z-direction as a result of the application of the liquid.

~~20~~ **19.** Apparatus for moistening of a paper web (W) in the manufacture of SC paper, which comprises at least one wetting device (2) for applying liquid on the surface of the paper web (W) for wetting of the paper web (W), wherein the wetting device (2) is located in the travel direction of the paper web (W) before a

calender (C) with over four nips (N) effecting a treatment of the surfaces of the paper web (W), characterized

in that the wetting device is a spray wetting device, and

in that the wetting device (2) is arranged at such a distance from the calender (C), taking into account the running speed of the paper web (W), that the liquid applied by means of the at least one wetting device (2) onto the paper web (W) has the time to be absorbed in the fibres in the surface layer of the paper web (W) exposed to the wetting at least 80% of the amount of the liquid the fibres in the surface layer are capable of absorbing, with the paper web (W) having a moisture gradient in its z-direction before reaching the calender (C)."

VII. The claims of the third auxiliary request differ from those of the second auxiliary request only in that the apparatus claims are no longer present in the set of claims.

VIII. The documents cited in the present decision are the following:

D1: "Calendering of a moistened woodfree uncoated paper", A. Granberg, et. al., Nordic Pulp and Paper Research Journal, no. 3, 1996

D8: "Erste Praxiserfahrungen mit einem Kalandrer nach dem Janus Concept bei der Online-Satinage von SC-Papieren" Wochenblatt für Papierfabrikation" Nr. 11/12, Juni 1997

D12: US-A-5 378 497

- D13: Pappersordlista; SIS-Standardiseringskommisionen; Sverige, 1992, pages 418 and 419
- D14: Papier-Lexikon; L. Göttching, C. Katz; 1999, Band 3; Seite 138
- D15: "SC supercalendered papers: Does it mean "so-called" supercalendered papers?", Pehr-Eric Patt, Tappi Journal, December 1988.

VI. The arguments of the appellant may be summarised as follows:

- (i) The subject-matter of claims 1 and 20 of the main request and claim 1 of the first auxiliary request lacks novelty in view of the disclosure of D12.

The document is concerned with SC paper since the calender includes multiple nips which may be soft nips (see column 4, lines 8 to 15). This is the type of calender which produces SC paper.

The document refers in column 4, lines 13 to 15 to a calender with multiple nips. The term "multiple" when translated into German would be translated as "vielfach" which means more than four.

When surface fibres are wetted the liquid is immediately transmitted to the interior of the fibres by capillary action so that the surface fibres are immediately almost 100% saturated. This means that the requirements of the characterising feature of each of the claims is automatically fulfilled in the prior art method.

- (ii) The grounds of appeal contain a section directed to lack of inventive step even if only in the form of a reference to earlier submissions so that the ground is in the appeal proceedings.
- (iii) The subject-matter of claims 1 and 20 of the main request and claim 1 of the first auxiliary request lacks an inventive step.

There are a number of combinations of documents which lead to a lack of inventive step including starting from D12. Starting from D12 the distinguishing features of claim 1 are those that the Board found as leading to its novelty over D12.

The problem to be solved by the distinguishing features is to improve the smoothness of SC paper. It is clear that the skilled person when applying the method of D12 to the production of SC paper would use a supercalender with more than four nips since that is standard for supercalendering as illustrated in D8. The application of the method of D12 to SC paper would also automatically result in the characterising feature of claim 1 since the time elapsing between applying the liquid and passing through the calender nip is the same in D12 as in the description of the patent in suit.

The argument of the respondent that the method of D12 is only applicable to coated paper and hence excludes SC paper is clearly wrong since D15 lists coated paper under "SC products" in Table I on page 97. In any case D12 is only concerned with the wetting step and does not exclude using this

process on products which are not intended to be coated. D12 is applicable to products which require a smooth surface and hence to SC paper.

- (iv) The subject-matter of claims 1 and 19 of the second auxiliary request and claim 1 of the third auxiliary request lacks an inventive step.

These claims include the feature that the wetting is carried out by a spray wetting device. Spray wetting devices are well known equivalents to the liquid film applicator disclosed in D12. This is confirmed in the patent in suit in column 3, lines 48 to 58 and column 10, lines 27 to 31. The fact that D12 indicates that there may have been disadvantages with spray wetting devices does not alter the fact that they are conventional as indicated in column 1, lines 40 to 42 of D12 ,and that the claims under discussion do not specify anything other than the known conventional device.

VII. The arguments of the respondent may be summarised as follows:

- (i) The subject-matter of claims 1 and 20 of the main request and claim 1 of the first auxiliary request is novel over the disclosure of D12.

The document does not disclose the use of the method to produce SC paper. The document merely includes in column 3, lines 64 to 66 a generic reference to its use with any grade of paper.

The document does not disclose the provision of a calender with more than four nips. There is a reference in column 4, lines 13 to 15 to multiple nips which is a generic reference to more than one.

The document does not disclose the characterising feature of the claims since there is no reference to the position of the liquid applicator such that the surface fibres will have absorbed at least 80% of the liquid amount they are capable of absorbing. This parameter is not mentioned in the document and it cannot be assumed that this requirement will be automatically fulfilled in the use of the prior art method since this position depends upon the grade of paper being treated and that is only disclosed generically in the document.

- (ii) The ground of lack of inventive step does not form part of the appeal proceedings. In its grounds of appeal the appellant only dealt in detail with the ground of lack of novelty. For inventive step the appellant merely made a general reference to its submissions made during the opposition proceedings. In accordance with the case law of the Boards of Appeal such general references to previous submissions are not a sufficient justification. It is correct that it would have been difficult for the appellant to argue lack of inventive step starting from D12 since it has argued lack of novelty over this document which would mean that there were no distinguishing features to consider for inventive step.

(iii) The subject-matter of claims 1 and 20 of the main request and claim 1 of the first auxiliary request involves an inventive step.

D12 is concerned with producing coated products and deals with problems arising in their production. SC paper is not a coated product as evidenced by D14. The skilled person would not therefore consider applying the teaching of D12 to the production of SC paper.

D12 further does not teach or hint to the provision of a calender with more than four nips. Multiple nips as disclosed therein may mean just two nips.

The skilled person would receive no teaching towards providing the characterising feature of claim 1. As explained with respect to novelty the rate of absorption of the surface fibres depends upon their properties and D12 does not disclose any particular type of fibre. In general in the prior art fibres are wetted just before entering the nip. This is illustrated in D1, see page 132, right hand column, lines 8 to 10 and page 133, left hand column, third full paragraph, first sentence. According to the characterising feature of claim 1 the wetting takes place at a sufficiently early stage to achieve the required percentage of absorption. D12 contains no teaching as to when the wetting could take place in order to achieve this absorption percentage nor does it even consider the importance of this parameter.

- (iv) The subject-matter of claims 1 and 19 of the second auxiliary request and claim 1 of the third auxiliary request involves an inventive step.

It is clearly stated in D12 that there are disadvantages with conventional wetting devices with regard to controlling them in a predictable manner and that suitable film wetting devices had recently become available. The skilled person would therefore be prejudiced against the use of the conventional devices, including spray wetting devices. The fact that in the patent as granted it was indicated that film wetting devices were equivalent to spray wetting devices is not relevant since the concerned parts of the description have been deleted from the modified description which forms part of these requests.

Reasons for the Decision

Main and first auxiliary request

1. *Novelty*
 - 1.1 The only document for which the appellant considered that the ground of novelty was relevant was D12.
 - 1.2 The respondent argued that that D12 does not disclose the following features of claim 1:
 - (a) using the method in the manufacture of SC paper,

(b) calendering with a multi-nip calender with over four nips, and

(c) applying the liquid at such an early stage, taking into account the running speed of the paper web and the length of the path travelled by the paper web between said point of applying liquid and the calendering, that before the calendering, the fibres in the surface layer of the paper web exposed to the wetting have the time to absorb it at least 80% of the liquid amount they are capable of absorbing, wherein the paper web has a moisture gradient in its z-direction as a result of the application of the liquid.

The Board agrees with the respondent in this assessment.

1.3 With regard to feature (a) it was not disputed by the parties that D12 does not explicitly disclose the use of the method disclosed therein in the production of SC paper. The appellant argued, however, that it is implicitly disclosed in the document.

The main argument of the appellant relates to the reference that the calendering can be carried out by stacked multiple nips (column 4, lines 8 to 15) which may be soft nips and which may operate at a temperature of 300°F (approximately 150°C). The Board cannot agree that this disclosure is an implicit disclosure of the use of the method to produce SC paper. The fact that soft nips can under particular conditions be used to produce SC paper does not mean that they always do. Nor does the mention of multiple nips mean that the paper must be SC paper since multiple nips can mean just two nips, as will be explained in more detail below with

respect to feature (b), which would not necessarily lead to SC paper. According to D13 supercalendering requires alternate elastic and steel rolls with only one driven. According to D14 the material for SC paper comprises a mixture of wood and cellulose material with at least 30% filler. D12, however, does not provide specific disclosures of these properties for the stacked calender and the paper passing therethrough, so that the conclusion cannot be drawn that the paper produced before it is coated must be SC paper.

- 1.4 With respect to feature (b) the appellant argued that the term "multiple" as used in D12 must mean more than four. The Board cannot accept this argument. The term is generally used as an opposite to singular and hence means two or more. This is also the way in which it is used in D12 wherein in column 4, lines 13 to 15 the reference to multiple nips is made as a alternative to "One nip".

The appellant argued that the translation of the term into German was "vielfach" and that this term meant more than four in German. It is not necessary to discuss whether the suggested translation is correct and whether the term in German has the meaning suggested by the appellant since the term in English is quite clear and means "two or more". There is therefore no implicit disclosure in D12 of a calender having more than four nips.

- 1.5 Feature (c) defines a position for applying liquid such that the surface fibres have had enough time before calendering to have absorbed at least 80% of the amount they are capable of absorbing. D12 discloses the

application of liquid before calendaring and indicates a time range of 0.2 to 2 seconds (column 7, lines 39 to 43) which is the same as the time range disclosed in the patent in suit (column 5, lines 4 to 6) as being suitable. However, as noted in the patent, the time depends upon the paper grade. D12 does not indicate any particular grade of paper so that it is not possible to deduce the percentage of water absorption that will have occurred during the passage from the point of liquid application to the entry into the calender.

The appellant argued that due to capillary action the liquid take up would be so fast that the surface fibres would have reached close to their maximum capacity in the available time. The appellant, however, did not have any evidence to back up this factual argument with which the respondent disagreed. This assertion therefore rests unproven.

The appellant further argued that the percentage of liquid contained in the surface layer of the web, which is given in D12 as 30-50% (column 7, lines 35 to 39), is very high and implies that the fibres must have absorbed close to their maximum capacity. The appellant, however, did not have any evidence to back up this factual argument with which the respondent disagreed. Also, this assertion therefore rests unproven.

- 1.6 Claim 20 relates to an apparatus and includes, in a form of wording adapted to an apparatus claim, the features (a), (b) and (c) as set out in point 1.2 above. The Board considers that at least feature (b) of the apparatus is not disclosed in D12. This feature is undoubtedly a structural feature of the claimed

apparatus and is present in the apparatus independently of its intended use. The reasons why it is not disclosed in D12 have already been given in point 1.4 above.

1.7 Therefore, the subject-matter of claims 1 and 20 is novel over D12 in the sense of Article 54 EPC.

2. *Admissibility of ground of inventive step in the appeal proceedings*

2.1 The respondent has challenged the admissibility of the ground of inventive step in the appeal proceedings.

2.2 With regard to the patent in its maintained form the opposition division in its decision considered novelty in particular with respect to D1 and D12 and also with respect to D2 to D11 and D13. It considered inventive step in particular considering D8 as nearest prior art.

In its grounds of appeal the appellant provided detailed grounds regarding lack of novelty of claim 1 in view of each of D1 and D12. With respect to inventive step the appellant merely made a general reference to its submissions before the opposition division (see section V of its appeal grounds).

In the annex to its summons to oral proceedings the Board noted that the appellant had only argued lack of novelty, and that the respondent had argued presence of inventive step with respect to D8 (see point 5 of annex).

In its submission dated 2 February 2009 the appellant gave grounds for lack of inventive step in addition to

lack of novelty. Lack of novelty of the subject-matter of claim 1 was argued on the basis of D12.

During the oral proceedings before the Board the appellant for lack of novelty relied solely on D12. After being informed of the finding of the Board with respect to novelty, the appellant argued the ground of lack of inventive step to which the respondent objected.

2.3 Article 12(2) Rules of Procedure of the Boards of Appeal (RPBA) indicates that the appellant should state its full case in its grounds of appeal. Article 13(1) RPBA indicates that any amendment to a party's case is at the discretion of the Board. The present situation may therefore be considered to be an amendment to the case of the appellant which the Board may admit at its discretion.

2.4 When a party argues lack of novelty of a claim based on a particular document, here D12, it is clear that it is difficult for the party to also argue lack of inventive step based on the same document since by definition there are no distinguishing features to be discussed. It would therefore have been unreasonable to have expected such an argument. It will be seen below that it is indeed this document which the Board considers to be the most relevant with respect to inventive step. The Board considers therefore that at least with respect to D12 as the nearest prior art document the amendment to the case of the appellant stems from the finding of the Board at the oral proceedings that the subject-matter of claims 1 and 20 is novel over the disclosure of this document.

2.5 The Board therefore allowed the appellant to amend its case so as to argue lack of inventive step starting from D12.

3. *Inventive step*

3.1 The Board considers that D12 represents the closest prior art document. As explained with respect to novelty the subject-matter of claim 1 is distinguished over the disclosure of D12 by the features (a), (b) and (c).

3.2 The appellant proposed that the problem to be solved by these features was to improve the smoothness of SC paper. The Board agrees with the appellant in this respect.

3.3 The method according to D12 is directed to improving surface smoothness. According to column 3, lines 64 to 65, of D12 its invention, i.e. the method of achieving a smooth finish as set out in independent claims 1 and 11 thereof, may be practised on any grade of paper which contains moisture sensitive fibres. SC paper is such a grade of paper which has moisture sensitive fibres and is also very smooth as explained in D14.

The respondent argued that the skilled person would not consider using the method of D12 for SC paper since the method is for use in the production of coated products whereas SC paper is an uncoated product.

With regard to whether or not SC paper is coated the Board notes that D13 refers to SC paper as uncoated, whereas D15 names certain coated products under a list of SC products. There may therefore be some uncertainty on this point.

It is not, however, necessary to come to a conclusion on whether or not SC paper includes coated products since even if it does not include such products the Board still considers that the skilled person would not be prejudiced against applying the method disclosed in D12 for producing an uncoated product. D12 is not in fact directed towards producing a coated product but rather to producing a product that is suitable for subsequent coating because its surface has already been smoothed before the coating step (see column 3, lines 3 to 8). The detailed description and the claims of the document are solely concerned with the features of the method of achieving a smooth surface without a description of a coating step. There is merely a reference in column 5, lines 23 to 26 to a "subsequent coating application" after the calendered paper has been dried. Since as already noted, SC paper has a smooth surface the skilled person would also consider using the method for producing SC paper.

- 3.4 When considering the use of the method of D12 for SC paper the skilled person would be aware of the need to use an appropriate number of nips in the calender so as to form a supercalender. In D8 relating to the production of SC paper the number of nips in the supercalender disclosed for this purpose is five so that this number can be considered to be a conventional number of nips for a supercalender. In this respect D12 already indicates that multiple nips may be used though without giving any concrete values (column 4, lines 13 to 15). Therefore the skilled person, when considering the necessary calender, would provide one which has more than four nips as indicated in D8.

3.5 The skilled person is aware that the aim of the calendering method disclosed in D12 is to produce a surface which has been permanently smoothed by the passage through the multiple nip calender without a change in the bulk properties of the paper. This is the reason why a moisture gradient is produced. The skilled person also knows that the higher the moisture content the lower the temperature and pressure at which this permanent change takes place. The lower temperature and pressure reduces energy costs and has less effect on the bulk properties of the interior part of the paper with a low moisture content. There is therefore clearly a desire to have the maximum moisture content in the area to be deformed but with a minimum in the area not to be deformed. Claim 1 only requires a specific amount of liquid to be absorbed and the presence of a moisture gradient. The feature (c) of claim 1 is thus a feature that the skilled person would in any way desire. In this respect the Board has already noted in point 1.4 above that both in D12 and in the patent in suit the same range of times is specified to elapse between applying the liquid to the web and the web entering the calender. This means that when the skilled person applies the teaching of D12 to producing a SC paper then already with the time range specified in D12 a high surface absorption and a moisture gradient will be achieved.

The respondent argued, referring to D1, that the skilled person would normally wet the paper just before the calender nip and that there was no teaching in the prior art to choose such an early stage as set out in the characterising feature of claim 1. The Board cannot agree with the respondent on this point. D1 may well

have indicated wetting the web just before entering the calender. However, from D12 the skilled person clearly learns that surface smoothness is improved if the wetting takes place with a time delay before entering the nip; a time delay which is the same as that proposed in the patent in suit.

The claim specifies that the surface fibres absorb the value of at least 80% of the liquid they are capable of absorbing. The skilled person desires in any case a high value of liquid absorption in order to reduce the required temperature of treatment and there is nothing in the patent in suit to suggest any surprising effect being achieved when the specified minimum amount of absorbed liquid is surpassed.

- 3.6 Therefore, the subject-matter of claim 1 of each of the main request and the first auxiliary request does not involve an inventive step in the sense of Article 56 EPC.

Second and third auxiliary requests

4. *Inventive step*

- 4.1 In the method according to D12 the liquid is applied to the paper web in the form of a liquid film. D12 was published approximately three and a half years before the priority date of the patent in suit. It is indicated in column 1, lines 40 to 44 of D12 that conventional processes include a water box, water sprays or steam showers. These processes are stated to be haphazard and difficult to control. Then in column 1, lines 47 to 51 it is indicated that recent innovation allowed applying controlled amounts of water to a web. The document in

its detailed description then specifically discloses a liquid application device which applies a liquid film to a roll which is in contact with the web surface and lists suitable application devices, including a Valmet Sym Sizer.

Although the claims of the patent in suit according to this request are limited to a spray wetting device, in the patent as granted it was made clear that also other methods of applying liquid were suitable. These other methods include spray wetting and film transfer wetting for which a "sym sizer" is mentioned in column 3, lines 48 to 58. Also in column 10, lines 27 to 31 of the patent in suit it is emphasized that although the example is described with respect to spray wetting the advantages of the invention can be attained with other wetting methods. It is thus clear that there are no special effects obtained in the use of a spray wetting device which is a well known alternative to film wetting.

- 4.2 The respondent has argued that the skilled person was prejudiced against the use of a spray wetting device in view of the comments in D12 regarding difficulties with the use of such devices. The Board notes, however, that the claim does not include any special features of the spray wetting device which would overcome the alleged disadvantages mentioned in D12. Also, the fact that the liquid is applied at an early stage does not distinguish the method of claim 1 over the disclosure of D12 since the liquid is applied at the same stage in both cases as explained in point 3.5 above. The claims specify using a known type of device in a situation where the patent itself indicates that this device is an alternative to other known devices including the one disclosed in D12.

The Board considers that the respondent has not shown that in using the known device a result has been obtained that is anything different to that which the skilled person might have expected so that its use cannot involve an inventive step.

4.3 The respondent argued that since the parts of the description that referred to liquid application devices which are equivalent to the claimed devices have been deleted from the descriptions which form part of the requests, the statements contained therein are no longer applicable. The Board cannot agree with the respondent on this point. The relevant passages were contained in the application as filed and published, and in the patent as granted and published. They are statements of fact which do not change with the amendment to the claims and description. The deletion of the passages was necessary since the description was no longer consistent with the amended claims in this respect, but that does not alter their factual content.

4.4 Therefore, the subject-matter of claim 1 of each of the second and third auxiliary requests does not involve an inventive step in the sense of Article 56 EPC.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The patent is revoked.

The Registrar:

The Chairman:

G. Nachtigall

H. Meinders