

A		B		C	X
---	--	---	--	---	---

File Number: T 286/91 - 3.2.3

Application No.: 83 109 186.3

Publication No.: 0 110 039

Title of invention: Reinforcing composite for roofing membrane and process for making such composites

Classification: E04D 5/10, D06N 5/00, B32B 5/08, B32B 11/02

D E C I S I O N
of 9 March 1993

Proprietor of the patent: Bay Mills Limited

Opponent: I Enka AG
II Hoechst AG

Headword:

EPC Article 56

Keyword: "Inventive step (main request no; auxiliary request yes)"

Summary of Facts and Submissions

- I. European patent No. 0 110 039 was granted on 7 January 1988 with eighteen claims in response to European patent application No. 83 109 186.3, filed on 16 September 1983.
- II. Notices of Opposition to this patent were filed on 27 September 1988 by Opponent I, Enka AG, (party as of right in the following) and on 7 October 1988 by Opponent II, Hoechst AG (Appellant in the following) requesting the revocation of the contested patent in its entirety in accordance with Article 100(a) EPC inter alia in the light of the following documents:
- (D1) DE-U-7 739 489
 - (D2) DE-U-7 723 547
 - (D3) GB-A-1 496 197
 - (D6) WO 82/00837
 - (D7) DE-A-2 622 206, and
 - (D8) Encyclopedia of Chemical Technology, 3rd edition, vol. 8, John Wiley & Sons, pages 626, 627.
- III. The Opposition Division upheld the contested patent in amended form with its decision of 23 January 1991. Claim 1 thereof reads as follows:

"1. A process for making a means to be used for reinforcing a roofing membrane comprising the steps of selecting at least three materials, one of which is fiberglass, one of which is polyester, and the third of which is fiberglass or polyester;

one of said materials is in the form of a scrim coated with a thermoplastic adhesive, one of said materials is in the form of a mat, and the third of said materials is in the form of either a mat or a scrim;

said adhesive is used so that it is present in the finished means to be made in the amount of 30 to 250 parts by weight to 100 parts by weight of the scrim;

passing these layers through one or more hot nips at sufficient temperature and pressure to cause the thermoplastic adhesive to soften and bind the layers together and form the layers into a single, thin layer;

and cooling the composite thus created, said composite forming the prefabricated single composite."

In that decision the Opposition Division came to the conclusion that Claim 1 as cited above defined a novel and inventive process for making a means to be used for reinforcing a roofing membrane. Amongst others it was contended that from document (D1) there would be no teaching as to whether the laminating process of two layers was carried out in a cold or hot nip. The combination of documents (D6) and (D1) was consequently seen as not leading a skilled person to the claimed process according to above Claim 1, whereby it was felt that documents (D2), (D3), (D7) and (D8) were no more relevant than documents (D6) and (D1) dealt with in detail in the decision of 23 January 1991.

IV. On 28 March 1991 the Appellant filed a Notice of Appeal paying the appeal fee on the same day and setting out the grounds of appeal on 3 June 1991 (teletype). The Appellant cited in this context the documents

(D9) "Textilpraxis International", July 1973, page 684

and

(D10) "Vliesstoffe", J. Lünenschloß and W. Albrecht, published 28 February 1982, pages 277/278,

whereby he filed at a later stage of the proceedings

(D11) "Handbuch der Textilverbundstoffe" Edition 1980,
Dipl.-Ing. Dr. Radko Krčma, pages 212 to 215.

He requests that the impugned decision be set aside and that the patent be revoked.

The Respondent (Proprietor), however, requests the dismissal of the appeal since the late filed documents should be excluded by the application of Article 114(2) EPC and since the documents considered in the impugned decision would not render obvious the process of Claim 1 underlying the decision.

VI. Following the Board's communication pursuant to Article 11(2) RPBA dated 2 November 1992 oral proceedings were held on 9 March 1993 in which the Respondent requested

- (a) the dismissal of the appeal i.e. confirmation of the decision of the Opposition Division to maintain the patent in its existing version (main request), or
- (b) the setting aside of the impugned decision and maintenance of the patent on the basis of the single claim and the description filed with letter of 10 February 1993 (auxiliary request), whereby in column 1, line 3 of the first insert the word "claims" should be rectified into "claim".

VII. The single claim of the auxiliary request reads as follows:

"A process for making a means to be used for reinforcing a roofing membrane comprising the steps of selecting at least three materials, one of which is

fiberglass, one of which is polyester, and the third of which is fiberglass or polyester;

one of said materials is in the form of a scrim coated with a thermoplastic adhesive, one of said materials is in the form of a mat, and the third of said materials is in the form of either a mat or a scrim, at least one of the outside layers is selected as a fiberglass mat;

said adhesive is used so that it is present in the finished means to be made in the amount of 30 to 250 parts by weight to 100 parts by weight of the scrim;

passing all materials except the fiberglass mat through a first hot nip;

and adding the fiberglass mat to the other materials by passing them together through a second hot nip in which the pressure is less than the pressure in the first nip, that is in the range of 44 to 132 N per linear cm (25 to 75 pounds per linear inch) to cause the thermoplastic adhesive to soften and bind the layers together and form the layers into a single, thin layer;

and cooling the composite thus created, said composite forming the prefabricated single composite".

VIII. The Appellant mainly attacked the main request in that the combination of documents (D6) and (D1) was seen as an obstacle for the inventiveness of the process of the upheld Claim 1. With documents (D9) to (D11) it was intended to emphasise that not only document (D1) teaches the use of a hot nip but that the use of hot nips forms part of the common knowledge in the technical field of multilayers.

With respect to page 6, paragraph 2 of the impugned decision it was argued that (D1) was not correctly interpreted since on page 5 "Beispiel 1" thereof the use of a hot nip is disclosed; the misinterpretation of

document (D1) would have misled the Opposition Division, so that their findings consequently are not convincing. The request to reject the main request was therefore upheld.

Though the Appellant admitted that no prior art is available which renders the process according to the auxiliary request obvious, it was felt that a skilled person would have foreseen such a process i.e. the application of two hot nips for firstly joining two webs before in the second hot nip the third layer is applied to them whereby the pressure in the first hot nip is higher than in the second hot nip.

The Appellant's requests were thus that both the main and the auxiliary request be rejected and the patent in suit revoked.

- IX. Opponent I, apart from informing the Board that he was not willing to attend the oral proceedings, was not active in the proceedings before the Board. The oral proceedings had to be continued according to Rule 71(2) EPC without Opponent I, who had been duly summoned to oral proceedings before the Board.

- X. At the end of the oral proceedings the Chairman gave the decision of the Board.

Reasons for the Decision

- 1. The appeal complies with Articles 106 to 108 EPC and Rule 64 EPC and is admissible.

2. Opponent I has not appealed against the interlocutory decision of the Opposition Division and is a party of right, Article 107 EPC, second sentence.

3. Amendments (Article 123 EPC)

3.1 Main Request

3.1.1 Claim 1 comprises all features of original Claim 1 plus the features derived from page 4, lines 13 to 16 (adhesive and its weight ratio), page 5, lines 25 to 30 (sufficient temperature and pressure) as well as page 5, lines 12 to 17 (single, thin layer). The features of Claim 2 are derived from original Claim 14 and those of Claim 3 are based on original Claim 14 as well as on page 5, lines 15 to 17 ("is less than the pressure in the first nip").

3.1.2 Claims 1 to 3 are therefore not open to an objection under Article 123(2) EPC.

3.1.3 Claim 1 is based on all features of granted Claim 16 plus the features of granted Claim 17 (sufficient temperature/pressure and softening and bonding to form a single, thin layer) as well as the weight ratio between the adhesive and the scrim.

Claim 2 is based on granted Claim 18, and Claim 3 is based on granted Claim 18 together with a restriction in the form of the use of less pressure in the second hot nip in comparison to the first hot nip.

3.1.4 The scope of protection has as a consequence not been extended so that the requirements of Article 123(3) EPC are also met.

3.2 Auxiliary Request

- 3.2.1 The single claim of this request is a combination of features claimed in Claims 1 and 3 of the main request.
- 3.2.2 Under these circumstances it follows that the auxiliary request also complies with the provisions of Article 123(2) EPC.
- 3.2.3 By incorporating further features to the single claim of the auxiliary request the extent of protection is not extended (Article 123(3) EPC), so that this request is also not open to an objection under Article 123 EPC.

Main Request

4. Novelty

In the proceedings before the Board novelty of the process according to Claim 1 was no longer disputed so that this issue needs no further argument.

5. Inventive step

- 5.1 The process of Claim 1 being novel it has now to be assessed whether or not this process is based on an inventive step within the meaning of Article 56 EPC.
- 5.2 Nearest prior art document is (D6).

The impugned decision, see remark 5, contains a convincing statement of the features known from (D6) and of the distinguishing features (a) to (c) of Claim 1 in respect of (D6), namely:

- (a) said adhesive is used so that it is present in the finished means to be made in the amount of 30 to 250 parts by weight to 100 parts by weight of the scrim;
- (b) passing these layers through one or more hot nips at sufficient temperature and pressure to cause the thermoplastic adhesive to soften and bind the layers together and form the layers into a single, thin layer; and
- (c) cooling the composite thus created, said composite forming the prefabricated single composite.

Following this statement the advantages achieved by the process of Claim 1 are set out and the technical problem to be solved by the invention is indicated.

- 5.3 It is true that from document (D6) it is only known to make use of a "wet" process i.e. the layers to be assembled are produced in situ, see Fig. 1, reference signs "16" and "30" for "hydroformer". The layers formed in these hydroformers are, however, compacted by the application of a vacuum, so that the original thickness of these layers is diminished. Before combining the layers formed in the hydroformer and the central layer "25", the latter is coated with an adhesive "26'", obviously in an amount sufficient to achieve a satisfactory bond between the three layers.
- 5.4 The Appellant argued that, in a process in which layers are to be bonded together, it is well known to a skilled person to use the hot nip (= calender) as the means to achieve this result, especially in cases where an adhesive is used as bonding agent.

From document (D1) - also dealing with the production of reinforcements for roofing membranes - it is known to use a calender as the means to link the layers together whereby an adhesive is used which is activated at a temperature of 120°C (see page 5 "Beispiel 1") or at the higher temperature of 200°C (see page 5, "Beispiel 2"). In contrast to the findings of the impugned decision, see 6, second paragraph, document (D1) discloses a hot nip and is highly relevant.

Documents (D9) to (D11) - cited to support the common knowledge of a skilled person and not as anticipations in the narrow sense - clearly prove that hot nips are used in cases where several layers have to be assembled, at least when thermoplastic adhesives are used, see documents (D9) and (D10) dealing with the "Codor process" in which textiles are bonded together by the application of heat and pressure i.e. in a dry process, or see document (D11), particularly page 215, in which document again a dry process for combining layers by the application of heat and pressure is disclosed, whereby it is also taught that the bonding step is to be followed by a cooling step.

5.5 The features (a) to (c) according to the characterising clause of Claim 1 under these circumstances cannot be seen as an inventive contribution to the art, since the amount of the adhesive in the claimed broad range (covering a ratio of 1:8), is nothing more than the consequence of the layers to be used, i.e. whether they require more or less adhesive to ensure their bonding together, and cannot be seen as the exercise of inventive skills, see also impugned decision page 8, paragraph 3.

5.6 The use of a hot nip according to feature (b) of Claim 1 has to be seen as an equivalent to the known compaction step using a vacuum and is moreover widely known in the

technical field of roofing membranes, see document (D1), or in the more general field of forming multilayers, see documents (D9) to (D11). It has therefore to be expected that a skilled person starting from document (D6) at least would have considered the immediate technical field in which roofing membranes are produced and/or the more general technical field of multilayer production, especially in cases in which the problem to be solved has to be seen in the production of thin multilayers so that documents (D1) or (D9) to (D11) would have been revealed by a skilled person and would have shown the advantages of the hot nip as the means for bonding the layers together.

5.7 The remaining feature (c) of Claim 1 is nothing more than a logical consequence of the use of a hot nip which is a continuous process and which necessitates a quick cooling of the obtained product in order to be able to coil it, see in particular document (D11), page 215, in which document the cooling step is clearly mentioned.

5.8 Summarising the above observations Claim 1 of the main request does not define an inventive process for making a means to be used for reinforcing a roofing membrane in the meaning of Article 56 EPC, so that the main request had to be rejected.

5.9 The Respondent pointed to the fact that the features of Claim 1 are claimed in combination and that it would be irrelevant whether or not single features are known from the prior art.

It has, however, to be observed that document (D1) does not only disclose distinct features of Claim 1 of the main request but the crucial feature "hot nip". From page 4, paragraphs 1 and 2 of document (D1) it can clearly be seen that an adhesive is used for bonding the layers, whereby

it is literally mentioned in this context that pressure and heat are applied for bonding the layers. The temperature is so high that the adhesive comes into effect. The argument of the Respondent that the adhesive is applied in a wet process (spraying) is not convincing since this step is only applied in "Beispiel 1" of document (D1) and is only one of several possibilities of applying an adhesive, see page 4, paragraph 3. Document (D1) taken as a whole is therefore highly relevant, since the aspect of how a multitude of layers can be bonded is dealt with in this document so that a skilled person could readily apply its bonding technology (hot nip) when looking for a solution to the problem i.e. to produce a thin multilayer.

The further argument of the Respondent that the prior art does not disclose the step of cooling the bonded product can at least not be maintained in respect of document (D11) as exemplified above.

5.10 The Board could therefore not allow the main request.

Auxiliary Request

6. This request is based on a single claim which is distinguished from the non-allowable Claim 1 according to the main request by the provision of two hot nips, the bonding of the three layers being carried out in two steps i.e. firstly two out of three layers are bonded in the first hot nip and secondly the third layer is bonded thereafter in the second hot nip, whereby the pressure applied in the second hot nip is less than the pressure of the first hot nip.

The Appellant himself has admitted that there is no prior art available which discloses this teaching. Novelty is

therefore beyond any discussion and the argument of the Appellant that a skilled person knowing one hot nip from document (D1) would also envisage a second hot nip and reduce the pressure therein in respect of the first hot nip is not convincing since it obviously is the result of an ex-post-facto analysis.

The Board came therefore to the conclusion that the skilled person was not given a hint from the prior art or from his own knowledge for achieving the subject-matter of the single claim according to the auxiliary request so that this claim clearly defines novel and inventive subject-matter in the meaning of Articles 54 and 56 EPC.

The auxiliary request is therefore allowable and can justify the maintenance of the attacked patent in amended form.

Order

For these reasons, it is decided that:

1. The decision under appeal is set aside.
2. The main request is rejected.
3. The case is remitted to the first instance with the order to maintain the European patent on the basis of the following documents:

- Single claim filed on 10 February 1993
- Description filed on 10 February 1993.

The Registrar:



N. Maslin

The Chairman:



C.T. Wilson

01522

Br. 1st, Moser