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D E C I S I O N
of 1 December 2005

Case Number: T 0182/04 - 3.2.07

Application Number: 98933590.6

Publication Number: 0991600

IPC: C03B 37/05

Language of the proceedings: EN

Title of invention:
Production of man-made vitreous fibre products

Patentee:
Rockwool International A/S

Opponent:
Heraklith AG

Headword:
-

Relevant legal provisions:
EPC Art. 54, 56

Keyword:
"Novelty - yes"
"Inventive step - yes"

Decisions cited:
-

Catchword:
-

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Case Number: T 0182/04 - 3.2.07

D E C I S I O N
of the Technical Board of Appeal 3.2.07
of 1 December 2005

Appellant: (Opponent)	Heraklith AG Industriestrasse 18 AT-9586 Fürnitz (AT)
Representative:	Becker, Thomas Patentanwälte Becker & Müller Turmstrasse 22 D-40878 Ratingen (DE)
Respondent: (Proprietor of the patent)	Rockwool International A/S Hovedgaden 501 DK-2640 Hedehusene (DK)
Representative:	Lawrence, Peter Robin Broughton GILL JENNINGS & EVERY Broadgate House 7 Eldon Street London EC2M 7LH (GB)
Decision under appeal:	**Decision of the Opposition Division of the European Patent Office posted 30 December 2003 rejecting the opposition filed against European patent No. 0991600 pursuant to Article 102(2) EPC.**

Composition of the Board:

Chairman: C. Holtz
Members: P. O'Reilly
K. Poalas

Summary of Facts and Submissions

I. Opposition was filed against European Patent No. 0 991 600 as a whole and based on Article 100(a) EPC (lack of novelty and lack of inventive step) and Article 100(b) EPC (insufficiency).

The Opposition Division rejected the opposition. The Opposition Division held that the subject-matter of claim 1 of the patent as granted was novel and involved an inventive step. The Opposition Division further held that the ground of insufficiency had not been substantiated.

II. The appellant (opponent) filed an appeal against the decision to reject the opposition against the patent.

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

The respondent (proprietor) requested that the appeal be dismissed. Alternatively, the respondent requested that the decision under appeal be set aside and the patent be maintained in amended form in accordance with the first or second auxiliary request filed with letter of 31 August 2004 or the third auxiliary request filed with letter of 2 November 2005.

IV. Oral proceedings were held before the Board on 1 December 2005.

V. The independent claim of the patent as granted (main request) reads as follows:

"1. A process for making a desired MMVF product having a selected grade of ignition loss and/or wettability from (a) primary MMV fibre and (b) chopped MMV fibrous waste and optionally (c) binder and optionally (d) hydrophobic agent or wetting agent, comprising

fiberising a vitreous melt into an air stream which is moving towards a collector and thereby forming a cloud of the primary fibres moving towards the collector, mixing the chopped fibrous waste and optionally binder and optionally hydrophobic agent or wetting agent into the cloud,
collecting the material in the cloud on the collector as an MMVF web and
converting the web to the desired MMVF product,

characterised in that the chopped waste is selected so as to have ignition loss and/or wettability consistent with the selected grade of ignition loss and/or wettability and

the chopped waste has been made by chopping MMV fibrous waste to

(i) a density which is in the range 35 to 75Kg/m^3 and/or
(ii) to a density which is substantially the plateau density for the fibrous waste and/or
(iii) to a tuft size at least 90% by weight below 25 mm and at least 70% by weight above 3 mm

and wherein the ignition loss is the loss of weight upon combustion and the waste either (a) has a medium or high density such that chopping of the waste initially decreases the density of the chopped waste to

a minimum which is the plateau density and the further chopping then increases the density or (b) has a low density such that chopping of the waste initially increases the density of the chopped product, further chopping then causes the rate of increase to flatten out partially or wholly at a value which is the plateau density and further chopping then causes a significant increase in density."

VI. The document cited in the present decision is the following:

E1: DE-T2-691 08 456

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

(i) The subject-matter of claim 1 of the main request lacks novelty in view of E1. It should first be noted that claim 1 includes a number of features which are either optional, and hence are not necessarily present, or are merely definitions which do not add features. The presence of binder and hydrophobic agent or wetting agent is optional. As a result the feature whereby the chopped waste is selected so as to have ignition loss and/or wettability consistent with the selected grade of ignition loss and/or wettability must also be considered as an optional feature since ignition loss and wettability depend upon the presence of binder, hydrophobic agent or wetting agent which in the present case are optional.

The last part of the claim defines the meaning of ignition loss and plateau density, which are mentioned in the preceding part of claim 1 and thus do not define extra features.

The chopped waste is chopped to having a property which is defined in one of the three alternative features (i), (ii) and (iii) set out in the claim. Although these are given as three alternatives in fact they are just one feature expressed in three different ways. This is made clear in column 4, lines 2 to 35 of the patent in suit.

The preamble of claim 1 is disclosed in E1. The only further mandatory feature of the claim is the property defined in alternative features (i), (ii) and (iii). In fact, the feature as expressed in alternative feature (i) is disclosed in E1. In E1 the waste material, which is cut from the band 5, is fed into a chopping device 10, 17 which is in the form of a hammer mill, see page 13, lines 17 to 18. In this respect the term "chopping" must be understood broadly, and as explained in the description of the patent in suit the term has a broad meaning which includes hammer milling, see column 7, lines 33 to 41 of the patent in suit. The chopping device of E1 chops the waste material to a certain density. The chopped material is passed to a distributor which divides it into at least two streams based on its density. These streams are then fed into separate silos 23, 24. In example 1 on page 18, lines 28 to 31 it is indicated that one of these silos may contain chopped material with a density of 60 kg/m^3, i.e. a

density that is within the range specified in alternative feature (i) of claim 1. Therefore, the chopping device of E1 has chopped waste to this density of 60 kg/m^3, i.e. to a density which lies within the range specified in alternative feature (i) of claim 1 of the patent in suit.

Therefore, also alternative feature (i) is disclosed in E1 so that E1 takes away the novelty of claim 1.

(ii) Even if the subject-matter of claim 1 of the main request is considered to be novel it still does not involve an inventive step. The respondent argues that the feature whereby the chopped waste is selected so as to have ignition loss and/or wettability consistent with the selected grade of ignition loss and/or wettability as well as alternative feature (i) are not disclosed in E1. However, it would be obvious for the skilled person to provide these features.

A fibre product has particular requirements with regard to ignition loss and/or wettability depending on its intended use. For instance, material intended for domestic insulation use may need to meet statutory standards regarding ignition loss. On the other hand, the waste material being added may have an uncertain origin. It is quite clear to the skilled person that the waste material must be selected with regard to its compatibility with the primary MMV fibres based on ignition loss and/or wettability since otherwise there is a risk that the required standards will

not be met by the material that is produced. This compatibility requirement is mentioned in E2 on page 9, lines 13 to 15.

Also, alternative feature (i) is obvious to the skilled person since it consists merely in the removal of the intermediate step of dividing the material.

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

(i) The subject-matter of claim 1 of the main request is novel. It is agreed that the term "chopped" as used in the patent in suit has a broad meaning which includes hammer milling as shown in an example mentioned in the description of the patent in suit. It is also agreed that the preamble of claim 1 is disclosed in E1 and that the last part of the claim comprises simply definitions of preceding terms used in the claim.

It is not however agreed that E1 discloses the feature whereby the chopped waste is selected so as to have ignition loss and/or wettability consistent with the selected grade of ignition loss and/or wettability as well as alternative feature (i).

The first of these features is not disclosed in E1 since the reference in E1 on page 9, lines 14 to 15 to a compatibility of the waste material with the end product is directed to the compatibility in qualitative terms, e.g. type of binder, rather

than quantitative terms as specified in claim 1, i.e. ignition loss or wettability.

Also, alternative feature (i) is not disclosed in E1. In E1 the waste material is first chopped, and then it is distributed into the silos which contain waste material of different densities. It is correct that one of these densities may be within the range specified in claim 1; however, that density has been achieved by selecting and dividing the material after chopping and not by chopping the whole material to the desired density range.

(ii) The subject-matter of claim 1 of the main request involves an inventive step. As already explained with respect to novelty the subject-matter of claim 1 is distinguished by two features over E1 and neither of these features is obvious to the skilled person.

With regard to the first feature whereby the ignition loss and/or wettability are selected for consistency with the selected grade of ignition loss and/or wettability, there is no indication of this feature in E1 or anywhere else. In E1 the only indication concerns the qualitative compatibility, whereas claim 1 specifies quantitative parameters, i.e. ignition loss and wettability. Therefore, the skilled person would not be led to this feature.

With regard to the second feature identified as alternative feature (i) in the claim, there is no

indication towards this feature in E1. In fact E1 chooses a different route, namely that of first chopping the waste material and then dividing it so as to obtain two or more silos containing material of differing densities. The material from the silos is then combined in an appropriate ratio to obtain a desired density. According to claim 1 however the waste is chopped just to the range specified therein.

Reasons for the Decision

1. *Novelty and Inventive step*

1.1 The discussion between the parties concentrated on just two features of claim 1.

1.2 The first feature is that the chopped waste is selected so as to have ignition loss and/or wettability consistent with the selected grade of ignition loss and/or wettability.

1.2.1 The appellant has sought to persuade the Board that this feature is an optional feature of the claim based on the fact that the binder and hydrophobic or wetting agents are optional features and the origin respectively of ignition loss and wettability. The Board does not agree with the appellant in this respect. It is correct that the binder and hydrophobic or wetting agents are optional components of the desired MMVF product. However, this does not make the selection process optional since, even if the desired MMVF should not contain these components, the waste must also in

this case be subject to a selection process to achieve the target grade of ignition loss and/or wettability, the target range being in such a case zero. The selection step is thus not an optional step in the claim.

1.2.2 The appellant also sought to persuade the Board that the feature is known from E1. In E1 it is indicated (see page 9, lines 10 to 20) that a selection of the waste material is made on the basis of compatibility with the actual production based on having the same binder and similar density. These criteria do not however fall within the wording of the feature of claim 1. According to the feature under discussion the compatibility of the chopped waste is chosen on the basis of ignition loss and/or wettability. Ignition loss depends not only on the type of binder but also on the quantity of binder as well as the type and quantity of other materials that may be present, e.g. wetting agent. Therefore, there is no disclosure in E1 of a selection made on the basis of ignition loss. Wettability is not mentioned at all in E1. Therefore, this feature is not disclosed in E1.

1.2.3 The Board however considers that this feature would be obvious to the person skilled in the art. MMVF products are produced for various purposes. They are used in agriculture where high wettability may be desirable and in domestic insulation where low ignition loss is required for safety reasons. It is clear therefore that when waste is being added to primary MMV fibre that the waste must be so selected that the desired product has the required properties with respect to wettability and ignition loss. If low ignition loss is desired the

skilled person will select the waste material appropriately. If this were not done then in fact the manufactured product would not correspond to the required product. This would automatically be detected, since these products are commonly tested for the purpose of identifying whether they conform to statutory safety standards. Hence, this selection step is an obligatory step in the manufacturing process and therefore obvious to the skilled person.

1.3 The second feature is the alternative feature (i) of claim 1, which also has the alternative features (ii) and (iii). These are stated to form three alternative definitions of the same feature (see description column 4, lines 10 to 35). The terms used in the alternative features (ii) and (iii) are not to be found in E1 so that for the assessment of inventive step it is appropriate to concentrate on the definition given in alternative feature (i) and indeed the parties concentrated on this alternative in their submissions.

1.3.1 This definition requires that the waste be chopped to a density which is in the range 35 to 75 kg/m^3. The Board understands this to mean that the waste is chopped until a density in this range is reached and then the chopping is stopped. Moreover, the Board considers that the term "density" must be considered to mean the average density. Indeed, density can only ever mean average density over a specified volume, since if sufficiently small volumes are considered there will always be density variations, i.e. at the tuft size level. In the case of chopped fibre waste there will clearly be variations if smaller volumes are considered. The Board considers that on a reasonable interpretation

of the claim the term "density" must be considered to mean the average density of the chopped waste material.

These interpretations of the claim terminology are also supported by the description of the patent in suit. In the description in column 3, lines 21 to 33 it is explained that waste, whatever its origin, is chopped until it has a certain density. Chopped wastes from various origins which all have a similar density are then stored. The waste is then selected for a particular product on the basis of ignition loss or wettability. This procedure requires that the waste is chopped to the required density, the chopping is stopped, and that the density being measured is the average density since no subsequent separation takes place.

Having regard to the above interpretation of the meaning of alternative feature (i) the Board concludes that this feature is not disclosed in E1. According to E1 the waste is chopped in a chopping device 10 to some unknown average density. This material is then divided into two or more streams of differing densities. E1 explains that this division is effected on the basis of the volume based masses of the tufts (see page 14, lines 28 to 31). This explanation implies that the division is based on dividing the stream of fibres into at least two sub-streams based on the density of the individual tufts and some border value for the density (see for example page 18, lines 27 to 28) which determines into which stream a tuft is directed. One of these streams may lead to a silo 23, 24 in which the fibres have a density of for example 60 kg/m^3 (see page 18, line 31). In E1 therefore the fibres with a

density of 60 kg/m^3 are obtained by chopping the waste to some unknown density and then dividing the chopped waste on the basis of tuft density. Alternative feature (i) of claim 1 however requires that the waste is chopped to a density in the range 35 to 75 Kg/m^3. No target density value, to which the waste in E1 is chopped, is mentioned in E1.

The appellant argued that in E1 fibres are chopped and at the end fibres with a density of in the range 35 to 75 kg/m^3 are obtained and that any steps in between are irrelevant and not excluded by the wording of claim 1. The Board cannot agree with this argumentation. As explained above the Board considers that the expression chopped to a particular density range requires that the chopping is effected to a target value in the range but no further. This wording therefore excludes chopping to some value outside the range and subsequently treating the fibres, e.g. by dividing into differing density streams, in order to obtain a density value within the desired range.

1.3.2 Not only is the alternative feature (i) not disclosed in E1, but it also would not be obvious to the skilled person. As already explained, the concept behind E1 is that the desired densities are achieved by appropriate division of the waste fibre stream. This is crucial to E1 since it is necessary to have at least two silos containing fibres of differing densities to allow subsequent mixing of the fibres from these silos in order to obtain waste material having a particular density which varies according to the product being made. In accordance with alternative feature (i) of claim 1 this concept is abandoned in that the waste is

chopped to a particular target density range. There is nothing in E1 to incite the skilled person to modify the device to work in accordance with alternative feature (i) of claim 1.

1.3.3 As already explained above the alternatives (ii) and (iii) are intended to be alternative overlapping definitions of alternative feature (i), though using different terminology. Since alternative feature (i) is not considered to be obvious there is no reason to consider whether either of these other alternative features would be obvious to the skilled person.

1.4 Therefore, the subject-matter of claim 1 of the patent as granted is novel in the sense of Article 54 EPC and involves an inventive step in the sense of Article 56 EPC.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

G. Nachtigall C. Holtz