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Datasheet for the decision of 1 December 2009

Case Number: T 1017/07 - 3.2.07

Application Number: 95915065.7

Publication Number: 0751830

IPC: B02C 23/10

Language of the proceedings: EN

Title of invention:
Attrition Mill

Patentees:
XSTRATA Queensland Ltd., et al

Opponent:
Draiswerke GmbH

Headword:
-

Relevant legal provisions:
EPC Art. 84, 123(2)

Relevant legal provisions (EPC 1973):
-

Keyword:
"Added subject-matter (yes - main and second auxiliary request)"
"Clarity - (no - first and second auxiliary requests)"

Decisions cited:
-

Catchword:
-

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Case Number: T 1017/07 - 3.2.07

D E C I S I O N
of the Technical Board of Appeal 3.2.07
of 1 December 2009

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Decision under appeal: **Interlocutory decision of the Opposition Division of the European Patent Office posted 20 April 2007 concerning maintenance of European patent No. 0751830 in amended form.**

Composition of the Board:

Chairman: H. Meinders
Members: P. O'Reilly
I. Beckedorf
K. Poalas
E. Dufrasne

Summary of Facts and Submissions

I. Opposition was filed against European patent No. 0 751 830 as a whole based on Article 100(a) EPC (lack of novelty and lack of inventive step) and Article 100(b) EPC (insufficiency).

The opposition division decided to maintain the patent in amended form in accordance with the third auxiliary request.

II. The proprietors (hereinafter appellant/proprietors) and the opponent (hereinafter appellant/opponent) each filed an appeal against that decision.

III. The appellant/proprietors requested that the decision under appeal be set aside and that the patent be maintained in amended form on the basis of the set of claims filed as main request during the oral proceedings before the Board held on 1 December 2009 and that the appeal of the appellant/opponent be dismissed, or the appeal of the appellant/opponent be dismissed, or, alternatively, in setting aside the decision under appeal the patent be maintained in amended form on the basis of the set of claims filed as auxiliary request 2 during the oral proceedings.

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

IV. Claim 1 of the **main request** reads as follows (amendments when compared to claim 1 of the **patent as granted** are depicted in bold):

"An attrition mill comprising: a grinding chamber (1); an axial impeller (10); a chamber inlet (3) for admitting coarse particles; and a separator comprising **a separator rotor** and a chamber outlet (6) through which fine particles exit from the chamber, said mill being characterised in that a classification as between coarse and fine particles is performed in the mill upstream of the separator**, and in that it includes at least two grinding elements spaced apart by a distance "g" along the axial impeller and a classification element upstream from the separator spaced apart along the impeller by a distance "c" from the separator, wherein "c" is less than "g"**."

Claim 1 of the **first auxiliary request** (i.e. the request to dismiss the appeal of the opponent, which corresponds to the patent as maintained in accordance with the decision of the opposition division) reads as follows (amendments when compared to claim 1 of the **patent as granted** are depicted in bold):

"An attrition mill comprising: a grinding chamber (1) **at least partially filled with a slurry including grinding media which passes generally axially through the chamber**; an axial impeller (10) **including grinding elements**; a chamber inlet (3) for admitting coarse particles; and a separator comprising **a separator rotor (30) and** a chamber outlet (6) through which fine particles exit from the chamber**; said separator mainly directing the grinding media radially outwardly from the impeller**, said mill being characterised in that a classification as between coarse and fine particles is performed in the mill upstream of the separator **wherein the separator rotor has one or more axial holes (32)**

therethrough upstream of, and adjacent to, the chamber outlet wherein the separator surrounds the chamber outlet such that at least some of the slurry flowing towards the chamber outlet and passes through the axial holes in the separator rotor."

Claim 1 of the **second auxiliary request** reads as follows (amendments when compared to claim 1 of the **first auxiliary request** are depicted in bold or struck through):

"An attrition mill comprising: a grinding chamber (1) ~~at least partially filled with a slurry including grinding media which passes generally axially through the chamber;~~ an axial impeller (10) ~~including grinding elements~~; a chamber inlet (3) for admitting coarse particles; and a separator comprising a separator rotor (30) and a chamber outlet (6) through which fine particles exit from the chamber; ~~said separator mainly directing the grinding media radially outwardly from the impeller,~~ said mill being characterised in that a classification as between coarse and fine particles is performed in the mill upstream of the separator, wherein the separator rotor has one or more axial holes (32) therethrough upstream of, and adjacent to, the chamber outlet wherein the separator surrounds the chamber outlet such that at least some of the slurry flowing towards the chamber outlet and passes through the axial holes in the separator rotor, **and in that it includes at least two grinding elements spaced apart by a distance "g" along the axial impeller and a classification element upstream from the separator spaced apart along the impeller by a distance "c" from the separator, wherein "c" is less than "g"**."

V. The arguments of the appellant/proprietors may be summarised as follows:

(i) The amendment to claim 1 of the main request does not contravene Article 123(2) EPC. This claim is based on a combination of claims 1 and 9 as granted whereby a feature originating from claim 9 has been amended to bring it into conformity with the description. Part of claim 9 as granted is incorrect and this has now been corrected. This amendment is supported by the embodiment of figure 6 of the description wherein it is stated that "c" is less than "g" and "c" is the distance between the classifier disc and the separator rotor and "g" is the distance between grinding discs (see column 8, lines 5 to 11). It is also visible in the figure 6 that "c" is less than "g". There is no indication for the embodiments of the other figures that "c" should be some minimum amount less than "g".

(ii) Claim 1 of the first auxiliary request is clear.

(iii) Claim 1 of the second auxiliary request, which includes in combination the amendments made to claim 1 of each of the main and the first auxiliary requests, is clear and the amendments made to the claim do not contravene Article 123(2) EPC for the same reasons as already explained with respect to those requests.

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

(i) The amendment made to claim 1 of the main request does not comply with Article 123(2) EPC. The claim is a combination of claims 1 and 9 as granted whereby the features of claim 9 have been amended such as to add subject-matter. The embodiment of figure 6 cannot provide a basis for this amendment since the description of this embodiment refers back to the embodiment of figure 5 wherein it is indicated that the distance "c" is less than the distance "g" by 0.75. This is also a technical requirement since the mere fact of "c" being less than "g" would not lead to any classifying effect. For such an effect to be achieved a certain difference is required as is explained in the description of the effect. Also the other embodiments must be understood as achieving the desired effect and hence having a distance "c" less than the distance "g" by 0.75.

(ii) Claim 1 of the first auxiliary request is not clear. Although the claim includes a combination of the features of claims 1, 4 and 15 as granted, claim 15 was not dependent upon claim 4 so that the clarity of the combination must be taken into consideration. The claim specifies that the separator both comprises the chamber outlet and surrounds the chamber outlet which is a contradiction which makes the claim unclear. Also the classification is stated to be upstream of the separator. But according to the claim the separator now comprises a rotor which according to the description may be part of the classifier so that the relationship of the separator rotor to the classifier is not clear.

(iii) Claim 1 of the second auxiliary request does not fulfil the requirements of the Convention for the same reasons as already explained with respect to the main and first auxiliary requests.

Reasons for the Decision

Main request

1. *Allowability of the amendments - Article 123(2) EPC*

1.1 According to the appellant/proprietors the wording of this claim is based on a combination of claims 1 and 9 as granted whereby the wording of claim 9 has been modified to replace "a classification element … spaced along the impeller by a distance "c" from an **adjacent grinding element**" (emphasis added by the Board) by "a classification element … spaced **apart** along the impeller by a distance "c" from the **separator**"(emphasis added by the Board).

The appellant/proprietors considered that it was apparent that the wording of claim 9 as granted was not correct and that it would be understood that the distance "c" was the distance between the classification element and the separator. They considered that the skilled person would understand this on the basis of the embodiment of figure 6.

1.2 The Board cannot agree with the appellant/proprietors that the wording of claim 9 as granted was necessarily not correct. Claim 9 in its combination with claim 1 specifies a separator without giving any indication as

to the shape or functioning of the separator. It is clear from the description in column 2, lines 21 to 26, 41 to 45 and 51 to 57 that the separator may be just a screen covering the outlet from the grinding chamber and the distance between such a screen and the classifying element may not be of importance. The classifying effect upstream of this separator screen could, however, be achieved in accordance with the patent by arranging the distance between an adjacent grinding element and the classification element to be less than the distance between the other adjacent grinding elements. Such an arrangement would be consistent with claim 1 as granted which requires merely that the classification be upstream of the separator.

1.3 The Board also does not agree that the description of the embodiment of figure 6 would provide a basis for the amendment. The description of the invention as originally filed starts with the embodiment of figure 5 since the preceding figures relate to the prior art. In figure 5 at the end of the series of grinding discs 14 there is a classification disc 16. This disc is stated to be of dimensions similar to those of the grinding discs and to have similar apertures (see page 15, line 25 to page 16, line 1) and in figure 5 it is depicted in a manner identical to that of the grinding discs. It is then explained in the description that the distance "c" between the surfaces of the classification disc and the separator rotor 30 is less than 0.75 of the distance "g" between grinding discs, preferably less than 0.6 (see page 16, lines 1 to 13). It is then indicated that this reduced distance results in a separation angle between the rotor 30 and the adjacent disc 14 of "usually greater than 60°".

The purpose of this requirement is made clear in the explanation of the desired effect given on page 17, line 25 to page 19, line 11). In that explanation it is stated that "Because first and second surfaces 17, 18 of the classifying stage are more closely spaced in the axial direction than are a pair of grinding discs, the minimum angular velocity of a laminar layer of liquid rotated in passage 19 between the first and second surfaces is considerably greater than the minimum angular velocity imparted to a laminar layer of fluid midway between the more widely spaced apart neighbouring grinding discs 14." It is clear that for something to be "considerably greater" this must result from a clear difference, i.e. the previously mentioned difference of **less than 0.75**. If the distance "c" was merely **less than** "g" then this would not necessarily result in the production of a "considerably greater" effect, as the difference in the distance could be minimal. The description of the effect makes it evident that there should be a significant difference in the distances "c" and "g" in order that the desired effect is achieved.

1.4 The description of the embodiment of figure 6 upon which the appellant/proprietors rely comes after the explanation of the effect. On page 20, lines 3 to 6 there is a passage upon which the appellant/proprietors particularly rely which reads as follows: "Surfaces 17 and 18 are more closely spaced than are grinding rotors 14 and define a cylindrical passage of width "c" ("c" less than "g") therebetween." It is this indication of "c" less than "g" which, according to the appellant/proprietors, is the basis for applying this

expression to the modified definition of "c" in the claim.

In reaching this conclusion the appellant/proprietors ignore, however, that the relevant paragraph starts on page 19, line 23 with the statement that "The separator stage employs the method used in the embodiment of Figure 5." and that the preceding explanation of the desired effect makes it clear that the difference in the distances must be sufficient to achieve this effect. Furthermore, the last sentence in the same paragraph states that: "The separation angle is greater than 60°." As already indicated above, according to the description of figure 5 such an angle results from the distance "c" being less than 0.75 of the distance "g". Thus it is clear that the wording "("c" less than "g")" as used in the description of figure 6 can only mean: "c" at least 0.75 less than "g" as nothing else would make technical sense and also result in the separation angle of "greater than 60".

The Board concludes therefore that the description of the embodiment of figure 6 does not provide a basis for the wording of amended claim 1.

1.5 The appellant/proprietors further argued that none of the other embodiments restricted the distance "c" to at least 0.75 less than "g". It is correct that there is no such explicit statement in the description of the other embodiments. However, the description of the other embodiments must also be read in the light of the technical effect to be achieved, i.e. classification, and the explanation of how this is achieved, i.e. when "c" at least 0,75 less than "g" as explained above. The

skilled person would thus understand that this requirement must also apply to the other embodiments. Accordingly these other embodiments cannot provide a basis for the amendment.

1.6 Finally, also figure 6 on its own cannot provide the required basis for the amendment, as the distance "c" is shown as being considerably shorter than the distance "g". In view of the relation between the claimed classification and this distance the skilled reader will need to refer to the description, i.e. the passage mentioned above, with the result mentioned above.

1.7 Therefore, claim 1 of this request as amended contravenes Article 123(2) EPC so that the request is not allowable.

First auxiliary request

2. *Allowability of the amendments - Article 84 EPC*

2.1 The claims of this request correspond to those maintained in accordance with the decision under appeal.

2.2 Claim 1 comprises a combination of claims 1, 4 and 15 as granted. However, claim 15 as granted was only directly dependent upon claim 1 and was not dependent upon claim 4. Therefore, in this respect claim 1 according to this request includes a combination of features which was not contained in the claims as granted. This combination of features must therefore be considered in accordance with Article 101(3) EPC for compliance with the Convention.

2.3 In the view of the appellant/opponent claim 1 does not comply with Article 84 EPC.

The Board notes that the claim specifies that there is a separator. It further specifies that the separator comprises a separator rotor. This latter feature is derived from claim 4 as granted. It is also specified that the separator comprises a chamber outlet. The claim further specifies that there is a classification "upstream from the separator" and that the separator rotor has one or more axial holes.

According to claim 15 as granted it was the separator which contained the axial holes.

Claim 1 as amended further specifies that "the separator surrounds the chamber outlet such that some of the slurry flowing towards the chamber outlet and passes through the holes in the separator rotor."

The claim thus contains features which are defined with respect to the separator *per se* and features which are defined with respect to the separator rotor, whereby the relationship of the separator rotor with respect to the rest of the separator has not been defined, it being merely specified that the separator "comprises a separator rotor". The relationship of the separator rotor to the remainder of the features of the separator therefore is unclear. In this respect it may be noted that the classification is stated to be upstream of the separator which comprises the separator rotor. According to the description, see column 6, lines 13 to 39 or column 14, lines 1 to 4, however, the separator rotor may form part of the classifier. Therefore, when help is

sought from the description to understand the claim the latter in fact becomes even less clear.

Furthermore the separator is simultaneously specified to comprise the chamber outlet and to surround the latter. The separator is thus specified as surrounding a part of itself. In accordance with the description the separator can take on many forms, see for instance column 14, lines 1 to 4 of the patent in suit, so that it is not possible to understand the claim with the help of the description. Indeed, the description serves to increase the lack of clarity of the claim.

2.4 The Board concludes therefore that claim 1 as amended of this request is not clear contrary to Article 84 EPC, so that the request is not allowable.

Second auxiliary request

3. *Allowability of the amendments - Articles 84 and 123(2) EPC*

3.1 Claim 1 of this request contains the extra features of claim 1 of each of the main and first auxiliary requests (when compared to claim 1 as granted).

3.2 Therefore, the claim does not comply with the requirements of the Convention and the request is not allowable for the same reasons as explained above with respect to the main and the first auxiliary requests.

Order

For these reasons it is decided that:

1. The appeal of the patent proprietors is dismissed.

2. The decision under appeal is set aside.

3. The patent is revoked.

The Registrar: The Chairman:

C. Eickhoff H. Meinders