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# Datasheet for the decision of 17 June 2010

**Case Number:** T 0875/08 - 3.2.03

**Application Number:** 99200062.0

**Publication Number:** 0931981

**IPC:** F23J 1/00, F23B 5/00

**Language of the proceedings:** EN

**Title of invention:**
Apparatus and method for postcombustion of heavy ash with high contents of unburnt matter

**Patentee:**
Magaldi Ricerche e Brevetti S.r.l.

**Opponent:**
Clyde Bergemann GmbH

**Headword:**
-

**Relevant legal provisions:**
EPC Art. 100b, 100a

**Relevant legal provisions (EPC 1973):**
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**Keyword:**
"Sufficiency of disclosure: yes"
"Novelty, inventive step: yes"

**Decisions cited:**
-

**Catchword:**
-

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**Case Number:** T 0875/08 - 3.2.03

# D E C I S I O N
**of the Technical Board of Appeal 3.2.03**
**of 17 June 2010**

**Appellant**: (Opponent)
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**Decision under appeal:** **Decision of the Opposition Division of the European Patent Office posted 29 February 2008 rejecting the opposition filed against European patent No. 0931981 pursuant to Article 102(2) EPC.**

**Composition of the Board:**

**Chairman:** U. Krause
**Members:** Y. Jest
I. Beckedorf

## Summary of Facts and Submissions

I. By its decision dated 29 February 2008 the Opposition Division rejected the opposition and maintained European Patent No. 0 931 981 as granted with the following independent claims 1 and 12:

1. "A combustion chamber (14) with an apparatus (10) for postcombustion of ash (34) from combustion of solid fuels comprising a combustion chamber (14) under vacuum and an extractor (16) arranged for receiving from said combustion chamber (14) the fall of ash, whose unburnt matter must be burnt, said extractor (16) comprising in turn an ash carrying metal conveyor belt (18),
**characterized in that**
said conveyor belt (18) is provided with ports or slots (42) for the passage of postcombustion air (52), said postcombustion air passing through the ash (34) during at least a part of the advancement stretch of the belt (18)."

12. "A method of postcombustion of heavy ash with high contents of unburnt matter, arising from a combustion chamber (14), comprising the steps of:
- depositing said ash on the conveyor belt (18) of an extractor (16);
- providing along the forward run of said belt an ash postcombustion zone (A) and an ash cooling zone (B); and
- taking at least a part of the air used for ash cooling,
**characterized by the steps of**
- causing at least a part of the air taken from the cooling zone (B) to pass through said ash in the

postcombustion zone (A), by means of ports or openings (42) in said belt (18), and drawing the postcombustion air (52) into the combustion chamber (14)."

II. The Opposition Division found that the grounds of opposition, namely insufficient disclosure (Article 100b) EPC), lack of novelty and inventive step (Article 100a) EPC), and the facts submitted in these respects, did not prejudice the maintenance of the patent as granted.
The Opposition Division further decided not to admit document WO-A- 96/29546 (E11) under the provision of Article 114(2) EPC.

III. An appeal was lodged against this decision by the Opponent on 23 April 2008; the appeal fee was paid on the same date.
The statement of grounds of appeal was received on 30 June 2008.

IV. Requests

The Appellant requested therein that the impugned decision be set aside and the patent be revoked because the claimed invention was not sufficiently described (Article 100b) EPC), lacked novelty and did not involve an inventive step (Articles 100a), 54(1) and 56 EPC).

The Proprietor (Respondent) requested that the appeal be dismissed.

Both parties also requested oral proceedings on an auxiliary basis.

V. Relevant prior art considered in the appeal proceedings:

E1: JP-A- 63 006319
E2: WO-A- 87 /04231
E3: WO-A- 91 /13293
E4: US-A- 3 735 858
E5: DE-A- 24 54 835
E8: US-A- 4 723 494

VI. Oral proceedings were appointed, as requested by both parties on an auxiliary basis.
In a communication pursuant to Article 15(1) of the Rules of Procedure of the Boards of Appeal (RPBA), annexed to the summons to attend oral proceedings, the Board gave a preliminary assessment of the case.

In reply to the summons to attend oral proceedings, the Appellant - without submitting any substantive argument in reply to the observations noted by the Board - indicated by fax dated 26 May 2010 that it would not attend the scheduled oral proceedings.
In a communication dated 31 May 2010 the Board subsequently informed the parties that the oral proceedings appointed for 8 June 2010 were cancelled.

VII. The arguments filed by the Appellant in its grounds of appeal of 30 June 2008 can be summarised as follows:

The invention was not sufficiently described (Article 100b) EPC) because the claims lacked a number of essential details attaining to the temperature of post-combustion air, to the location/dimension of the slots or ports and to the air flow so as to allow

reduction of unburnt material while cooling the ash down to a suitable delivery temperature.

The claimed combustion chamber further lacked novelty when compared to any one of documents E1, E2, E3 and E8. These prior art constructions comprised a conventional conveyor belt made of links, whereby the connection area between two adjacent links actually could never be wholly sealed and thus defined an air leakage area in the belt. Therefore these known belt conveyors for hot combustion ash also comprised slots through which leaking air could flow into the conveyed ash, thereby enhancing the post-combustion of unburnt material contained in the ash.

The claimed invention did not involve an inventive step either.
Starting from any one of documents E1, E2 and E8 the skilled person would have applied the general knowledge relating to ash post-combustion processes and so provided suitable slots/ports in the respective conveyor belt.
The skilled person, when starting from E3, would also have arrived at the invention by applying the teaching of one of documents E4, E5 and E11 (WO-A- 96/029546) so as to achieve an optimised compromise between post-combustion and delivery requirements with regards to controlled air temperature in the combustion chamber.

VIII. The arguments and comments filed by the Respondent in its fax dated 19 January 2009 can be summarised as follows:

In order to improve post-combustion of heavy ashes in a combustion chamber, dedicated slots/ports were to be provided according to the patent in the conveyor belt itself. The skilled person would be able to implement this invention on the basis of the teaching of the patent and of routine calculations and basic experiments (Article 100b) EPC).

E11 which had been disregarded by the Opposition Division was not technically relevant and should therefore remain staying out of the proceedings.

The claims were not directed to a conveyor belt for a combustion chamber having unsealed and leakage areas where an air flow might occur like in documents E1, E2, E3 and E8 but to a belt having dedicated slots/ports for providing an air flow with a post-combustion capability and to a corresponding method.
Further the step of providing such slots/ports in the conveyor belt to promote post-combustion was not obviously derivable, neither from the general knowledge in the field nor from E4, E5 or E11.

## Reasons for the Decision

1. The appeal is admissible.

2. Document E11 - Article 114(2) EPC

The board considers that the opposition division has applied correctly its power of discretion when deciding on the late submission of document E11. Especially, the opposition division was right when considering that the

mere citation of E11 in the opposition letter as a document having been cited in the examination proceedings did not introduce as such this document in the opposition proceedings. The opposition division further examined the relevance prima facie of E11; it found that it was not particularly pertinent and did thus not justify its introduction during the oral proceedings at a late stage. In the view of the Board, the Opposition Division correctly exercised its discretion in this regard.

The board therefore confirms the decision of the opposition division to disregard document E11 in accordance with article 114(2) EPC.

3. Article 100b) EPC

To the issue of sufficiency of disclosure the board confirms the decision and grounds of the impugned decision.
The patent describes that the amount of post-combustion air, i.e. the airflow passing the slots provided in the belt for the combustion of unburnt material of the ash deposited thereon, should be in large excess of the stoïchiometric quantity but however in limited amount so as to avoid an excessive cooling of ash in the post-combustion area, see for instance column 4, lines 1 to 16. This indication is sufficient for enabling the person skilled in the art of combustion processes to implement the invention without having to be inventive him/herself. The Board shares the Respondent's views that the person skilled in the art on the basis of routine calculations and basic experiments could determine the size, the number and the location of the

slots/ports to be provided in the conveyor belt so as to determine an optimised air flow and operating temperature enabling a compromise between post-combustion and ash cooling.

The scope of the device of claim 1 may to some extent be broader than for method-claim 12 since claim 1 remains silent on constructional means for guiding air from the cooling area of the belt through the slots/ports of the belt into the post-combustion area. This would, if at all, concern only a clarity issue under Article 84 EPC towards a claim as granted, which does not constitute an objection under the opposition grounds laid down in Article 100 EPC, neither in the opposition proceedings nor in the subsequent appeal proceedings.

4. Novelty

The invention requires the provision of ports or slots in the conveyor belt for the passage of post-combustion air into the combustion chamber, wherein said air enables combustion of unburnt ash particles when impinging on the conveyed ash during at least a part of the advancement stretch of the belt.

The Board cannot share the Appellant's views that said slots or ports were anticipated by the small and uncontrolled constructional gaps provided at the mechanical junction area of two adjacent links of a conventional conveying belt as known in E1, E2, E3 or E8. The gap or play at opposite end portions of two links of a conveyor belt is without further indication or requirement determined by purely mechanical and

constructional criteria. Therefore the gas leaking through the junction areas of these known belts constitutes a wholly additional but not-prerequisite effect of the constructional arrangement of the belt. In this respect no indication or intention whatsoever can be found in documents E1, E2, E3 and E8 to consider or adjust or even to control the amount and distribution of an air flow at the junction areas.

Document E1 refers to ports 7 in the conveyor hood 6 for supplying fresh air directed onto the ash conveyed for cooling it down (see abstract and Figure); the issue of post-combustion is not addressed. Post-combustion of unburnt ash material is mentioned in E2 (page 3) and E3 (page 5, lines 9 to 15) but performed by passing an airflow over the ash layer countercurrent to the conveying direction of the belt. This construction is thus different from the solution proposed in the patent, namely passing the post-combustion air through dedicated openings in the conveyor belt and therefrom through the ash layer. Document E8 (column 3, line 42 to column 4, line 46) relates to a method of post-combustion of unburnt material contained in ash products using a separate post-combustion chamber 32. According to the method described in E8, the flow of air supplied to said post-combustion chamber 32 has been previously heated in contact of ash conveyed by the belt 82 in the ash cooling zone. The method of claim 12 thus differs from E8 by the fact that the post-combustion is performed in a continuous manner in the combustion chamber itself, i.e. in an area of the conveyor belt and not "sequentially" in a separate chamber, which is filled by ash containing unburnt matter in time intervals.

The provision of slots or ports in the conveyor belt device of claim 1 and similarly for method-claim 12 is thus not known in the state of the art disclosed in E1, E2, E3 and E8.
Claims 1 and 12 therefore meet the requirement of novelty (Article 54 EPC).

5. Inventive step

5.1 The claimed invention, both the device of claim 1 and the method of claim 1, differs from the state of the art as defined in E1, E2 or E3 by the provision of slots or ports in the conveyor belt for the passage of post-combustion air.
In accordance with the definition given in paragraph [0008] of the patent, the objective problem relates to allow significant reduction of unburnt matter carried in the ash before cooling down the ash to be discharge to an acceptable temperature.

In this respect the Board confirms the findings of the opposition division that the skilled person would have had no reason to provide slots or ports in the conveying belt of any one of documents E1, E2 or E3 for enhancing the post-combustion of unburnt ash material. In particular, the skilled person would have found no respective hint in documents E4 and E5 for the following reasons.
Document E4 does not relate to post-combustion but provides an arrangement for carrying mineral load, especially pelletized, material through drying and preheating zones (column 1, lines 5 to 19). The gas passage slots or apertures provided in a two-piece

chain link according to E4 are determined to permit better heat treatment of the conveyed material (column 3, lines 16 to 22; column 4, lines 27 to 33). There is no indication relative to a post-combustion area of the belt.
Similarly E5 teaches the provision of slots in a grate chain 1 for transporting material to be treated in a chamber, the treatment provided could be heating, firing or cooling. Compared to E1, E2 or E3 the "firing" treatment mentioned in E5 would refer to a combustion process. No suggestion could be found therein of a post-combustion process for firing unburnt matter contained in ash material conveyed within and away from a combustion chamber.

5.2 As mentioned in the Board's communication accompanying the summons to oral proceedings, the method disclosed in E8 could serve as closest prior art when addressing the issue of inventive step especially for claim 12.

As mentioned previously document E8 relates to a method of post-combustion of unburnt material contained in ash products using a separate post-combustion chamber 32. Starting from E8 the objective problem would relate to an alternative post-combustion process for the unburnt ash matter; this problem would thus differ from the one addressed to by the parties and considered in the impugned decision. No evidence or teaching can be found in the available state of the art which would have motivated the person skilled in the art to transfer the post-combustion phase from a separate post-combustion chamber 32 as described in E8 to the first area of the ash conveying belt and thus into the combustion chamber itself.

5.3 The product and the method claimed in the patent as granted thus involve an inventive step in the meaning of Article 56 EPC.

## Order

## For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

A. Counillon U. Krause