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**Datasheet for the decision  
of 24 February 2017**

**Case Number:** T 0530/15 - 3.3.05

**Application Number:** 09757867.8

**Publication Number:** 2294028

**IPC:** C04B7/47, F27D17/00

**Language of the proceedings:** EN

**Title of invention:**

ENHANCED ELECTRICITY COGENERATION IN CEMENT CLINKER PRODUCTION

**Patent Proprietor:**

Cemex Research Group AG

**Opponent:**

ThyssenKrupp Industrial Solutions AG

**Headword:**

Electricity cogeneration/CEMEX

**Relevant legal provisions:**

EPC Art. 54(1), 54(2), 123(2), 123(3), 56  
RPBA Art. 12(1), 13(1), 13(3)

**Keyword:**

Request not to admit a document filed with the grounds of  
appeal (rejected)

Amendments - allowable (yes)

Novelty - (yes)

Inventive step - (yes)

**Decisions cited:**

**Catchword:**



**Beschwerdekammern**  
**Boards of Appeal**  
**Chambres de recours**

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Case Number: T 0530/15 - 3.3.05

**D E C I S I O N**  
**of Technical Board of Appeal 3.3.05**  
**of 24 February 2017**

**Appellant:** ThyssenKrupp Industrial Solutions AG  
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**Representative:** Tetzner, Michael  
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**Respondent:** Cemex Research Group AG  
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**Representative:** Novagraaf Technologies  
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**Decision under appeal:** **Interlocutory decision of the Opposition**  
**Division of the European Patent Office posted on**  
**16 January 2015 concerning maintenance of the**  
**European Patent No. 2294028 in amended form.**

**Composition of the Board:**

**Chairman** E. Bendl  
**Members:** A. Haderlein  
R. Winkelhofer

## Summary of Facts and Submissions

- I. The present appeal of the opponent (appellant) lies from the opposition division's interlocutory decision finding that European patent No. 2 294 028 in amended form and the invention to which it relates meet the requirements of the EPC.
- II. The opposition was based on the grounds of lack of novelty and lack of inventive step (Article 100(a) EPC in conjunction with Articles 54(1), (2) and 56 EPC, respectively).
- III. The opposition division held *inter alia* that the sole independent claim 1 of auxiliary request 1 underlying the impugned decision complied with the requirements of novelty and inventive step.
- IV. With its statement setting out the grounds of appeal, the appellant objected *inter alia* to lack of novelty and inventive step on the basis of the following newly filed document:  
  
D6: DE 40 41 251 A1
- V. With a submission dated 19 January 2017, the respondent filed several auxiliary requests, including a third auxiliary request.
- VI. At the oral proceedings held on 24 February 2017, the respondent filed an amended third auxiliary request which it made its sole request.
- VII. The sole independent claim of the sole request reads as follows (amendments with respect to claim 1 of the patent as granted being underlined or struck through):

"1. A method to produce electricity in a cement clinker production unit utilizing a kiln (5) and/or a precalciner (3, 4) as combustion chambers to generate electricity, the method comprising:

- a) supplying fuel (30, 31) to the precalciner (3, 4) and/or the kiln (5) in a quantity corresponding to at least 110% of the optimized heat value requirement for the clinker production operation of the precalciner (3, 4), and/or the rotary kiln (5), respectively, per unit weight of clinker;
- b) bypassing a portion of hot flue gases (50, 51, 52) from ~~at least one of: (i) the kiln (5) and/or (ii) the precalciner (3, 4)~~ the ratio of hot flue gases (50, 51) bypassed from the rotary kiln to the hot flue gases (52) bypassed from the precalciner is less than 0,5;
- c) leading the said bypassed portion of hot flue gases to a heat recovery steam generator (7) producing steam;
- d) producing electricity with a power island comprising a steam turbine equipped with an electrical generator."

VIII. The appellant's arguments may be summarised as follows:

Claim 1 of the sole request was compliant with the requirements of Article 123(2) and (3) EPC, and its subject-matter was novel because of the feature relating to the ratio of hot flue gases. However, it lacked an inventive step in view of D6 alone. The problem to be solved was to maximise the electricity production and to observe thermal constraints imposed by the steam generator, as stated in paragraph [0060] of the patent in suit. In view of this problem the skilled person would have considered reducing the amount of hot flue gases bypassed from the rotary kiln and increasing the amount of hot flue gases bypassed from the precalciner, thus arriving at the claimed

ratio of less than 0.5. This was part of the common general knowledge, and therefore it was obvious to arrive at the proposed solution.

IX. The respondent's arguments may be summarised as follows:

D6 should not be admitted into the proceedings because it was late-filed and was not *prima facie* relevant. But even if D6 were admitted into the proceedings, the claims related to patentable subject-matter. Starting from D6, the problem to be solved was to maximise the electricity production and to observe thermal constraints imposed by the steam generator, as stated in paragraph [0060] of the patent in suit. There was no indication in D6 to work in the claimed range. In particular, D6 suggested operating at ratios of hot flue gases from the kiln to hot flue gases from the precalciner which were substantially higher than 0.5, since it taught that it was particularly interesting to lead all flue gases via the bypass 7 to the steam generator.

X. Requests

The appellant requested that the decision under appeal be set aside and that the patent be revoked in its entirety.

The respondent requested that the patent be maintained on the basis of the sole request as filed during the oral proceedings on 24 February 2017.

## **Reasons for the Decision**

1. Request not to admit D6 into the proceedings
- 1.1 Document D6 was filed by the appellant with its grounds of appeal. With its reply to the grounds of appeal, the respondent raised no objection as to the admissibility of D6. It was only with its submissions dated 19 January 2017, i.e. after oral proceedings had been arranged, that the respondent requested the board not to admit D6 into the proceedings.
- 1.2 The respondent's request was filed not only after its reply to the grounds of appeal (Article 13(1) RPBA) but also after oral proceedings had been scheduled (Article 13(3) RPBA). It amounted to an amendment to the respondent's case, and its admission was at the board's discretion.
- 1.3 The appeal proceedings are to be based *inter alia* on the notice of appeal and the statement of grounds of appeal (Article 12(1)(a) RPBA). D6 was filed with the grounds of appeal and thus, in principle, the appeal proceedings were to be based on it. Moreover, the respondent, too, based its reply to the grounds of appeal on this document, in that it commented in substance and in detail on the content of D6, arguing why, in its view, the then pending main request was allowable in view of D6 (see points 20 to 23 of the reply).  
In its communication pursuant to Article 15(1) RPBA, the board set out its preliminary opinion in view of D6.

- 1.4 In this communication, the board stated in particular that the subject-matter of claim 1 of the then pending main request appeared to lack novelty over D6.
- 1.5 The board also considered D6 to be *prima facie* highly relevant at least for the reason that, as discussed at the oral proceedings, the feature "bypassing a portion of hot flue gases from the kiln and the precalciner" in claim 1 of the sole request could also be understood as referring to bypassing hot flue gases from the cement kiln only, such bypassing being uncontestedly disclosed in D6.
- 1.6 In that light, and taking the considerations in 1.3 *supra* into account, the respondent's request to hold D6 inadmissible is rejected.

## 2. Amendments

- 2.1 It is not contested that the sole request complies with the requirements of Article 123(2) and (3) EPC.
- 2.2 Claim 1 corresponds to a combination of claims 1 and 6 as originally filed (claims 1 and 5 as granted).

The ground for opposition under Article 100(c) EPC was neither raised by the opponent (appellant) nor introduced *ex officio* by the opposition division during the proceedings leading to the impugned decision. The requirement of Article 123(2) EPC is therefore met. This also applies to the dependent claims which correspond to dependent claims as granted. As the sole independent claim 1 encompasses all features of granted claim 1, the requirement of Article 123(3) EPC is likewise met.



3. Novelty

It is common ground that D6 does not disclose the ratio of hot flue gases bypassed from the rotary kiln to the hot flue gases bypassed from the precalciner to be less than 0.5.

The subject-matter of claim 1 is therefore new (Article 54(1), (2) EPC).

4. Inventive step

4.1 The invention relates to a method of producing electricity in a cement clinker production unit.

4.2 The parties agree that D6 represents the closest prior art.

4.2.1 D6 discloses a method of producing electricity in a cement clinker production unit utilising a kiln (Figure 1, numeral 2) and a precalciner (16) as combustion chambers to generate electricity (4). The method comprises supplying fuel to the precalciner (at 16a) and to the kiln (at 17). A portion of hot flue gases from the kiln is bypassed (via bypass 7) and led to a heat recovery steam generator (4a) producing steam which is used for producing electricity with a power island comprising a steam turbine equipped with an electrical generator (4b).

4.2.2 D6 also discloses, as argued by the appellant, that a portion of the hot flue gases from the precalciner is bypassed to the heat recovery steam generator. In this respect, reference is made to Figure 3, where hot gas (21) for the precalciner is bypassed (via line 5) to

the heat recovery steam generator. The expression "bypassing" used in claim 1 does not specify which unit operation is bypassed by the portion of hot gases. But even if this expression were construed as meaning that the preheater is bypassed by the portion of hot gases, this is also the case in D6, where the preheater (3b") is bypassed via line 5 (see Figure 3). Moreover, D6 discloses that the bypasses (7) and (5) can be used at the same time (see claim 3 of D6), i.e. a portion of the hot flue gases from the kiln and a portion of the hot flue gases from the precalciner are bypassed to the heat recovery steam generator.

- 4.3 Uncontestedly, the problem to be solved is to maximise the electricity production and to observe thermal constraints imposed by the steam generator (see paragraph [0060] of the patent in suit).
- 4.4 The patent according to claim 1 of the sole request proposes to solve this problem by a method of producing electricity in a cement clinker production unit characterised in that the ratio of hot flue gases bypassed from the rotary kiln to the hot flue gases bypassed from the precalciner is less than 0.5.
- 4.5 As to the success of the solution, the parties agree that the proposed solution effectively solves the problem set out in 4.3 *supra*. Thus there is no reason to doubt that the problem is credibly solved.
- 4.6 As to obviousness, the appellant has not referred to any document other than D6 in the context of the discussion of obviousness regarding the subject-matter of the set of claims at issue.

While D6 teaches that both bypasses (5) and (7) can be

used at the same time (cf. claim 3 of D6), it also teaches that it would be "particularly interesting" to lead the entirety of the flue gases from the kiln via the bypass (7) to the heat recovery steam generator (see column 4, lines 5 et seq.). In other words, in D6's preferred embodiment, the flue gas ratio in question is quite high, i.e. significantly higher than 1.0. This means that the skilled person, faced with the problem to be solved and aware of thermal constraints in the heat recovery steam generator, may possibly reduce the ratio from a quite high value to slightly below that value because the flue gases coming from the kiln are hotter than those coming from the precalciner, in order not to negatively affect the heat recovery steam generator. But there is no indication in D6 that the skilled person would, in order to maximise electricity production and being aware of common general knowledge, have reduced this ratio to such an extent that it would be below 0.5. In view of these considerations, it was not obvious to arrive at the subject-matter of claim 1.

4.7 The inventive step requirement set forth in Article 56 EPC is therefore met.

## Order

### For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the department of first instance with the order to maintain the patent in suit on the basis of the sole request as filed during the oral proceedings on 24 February 2017, with the description to be amended as necessary.

The Registrar:

The Chairman:



C. Vodz

E. Bendl

Decision electronically authenticated