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**Datasheet for the decision
of 20 January 2026**

Case Number: T 0731/24 - 3.3.05

Application Number: 16750845.6

Publication Number: 3334690

IPC: C01F11/02, C04B2/04, C04B2/06

Language of the proceedings: EN

Title of invention:
PROCESS FOR MANUFACTURING HIGHLY POROUS SLAKED LIME

Patent Proprietor:
S.A. Lhoist Recherche et Développement

Opponents:
Carmeuse Research and Technology
CALERA DE ALZO, S.L.
Fels-Werke GmbH

Headword:
Slaked lime/LHOIST

Relevant legal provisions:
EPC Art. 56, 83, 115
RPBA 2020 Art. 12(4)

Keyword:

Amendment to case - admissibly raised and maintained (yes)

Sufficiency of disclosure - (yes)

Inventive step - main request (yes)

Decisions cited:

T 2255/15

Catchword:



Beschwerdekammern

Boards of Appeal

Chambres de recours

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Case Number: T 0731/24 - 3.3.05

D E C I S I O N
of Technical Board of Appeal 3.3.05
of 20 January 2026

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Decision under appeal: **Decision of the Opposition Division of the
European Patent Office posted on 3 April 2024
rejecting the opposition filed against European
patent No. 3334690 pursuant to Article 101(2)
EPC.**

Composition of the Board:

Chair R. Winkelhofer
Members: T. Burkhardt
 S. Besselmann
 G. Glod
 O. Loizou

Summary of Facts and Submissions

- I. The appeal by opponent 3 (appellant) lies from the decision to reject the oppositions against European patent No. 3 334 690 B, taken by a four-member opposition division.
- II. Opponent 1 (party as of right) had also filed an appeal but later withdrew it.
- III. Opponent 2 (a further party as of right) did not file any submissions at the appeal stage.
- IV. Several third-party observations had already been submitted in the course of the opposition proceedings; such observations were also filed in the appeal proceedings.
- V. Of the documents discussed at the opposition stage, the following are relevant to the present decision:

D6	US 1,350,534
D12	Data sheet Sorbacal SP, Vápenka Čertovy schody a.s., 21 January 2008
D15	Experimental report, Carmeuse, 25 January 2022
D18	DE 696 03 874 T2
D20	US 5,492,685 A
D21	B.E. Schiele, L.W. Berens, "Kalk. Herstellung, Eigenschaften, Verwendung", Verlag Stahleisen M.B.H., 1972, pages 195-211; 548-550
D22	CN 101830645 A
D22a	English translation of D22

D23 US 1,650,292 A
D25 US 840,076 A
D27 IT 1235872 B
D27a English translation of D27
D28 IT 1245745 B
D28a English translation of D28
D29 "Sorbacal SP", brochure, Lhoist, 2008
D31 "Kompetenz in Kalk", Gebr. Pfeiffer AG
D53 BE 1009692 A3

VI. For simplicity, this decision will refer to "the opponents" save where opponent 3 has to be singled out, in which case opponent 3 will be referred to as the "appellant".

VII. Independent claim 1 of the main request (submitted as auxiliary request 9 with the reply to the appeal) reads as follows:

"1. Process for manufacturing highly porous slaked lime having a high BET specific surface area being comprised between 30 m²/g and 50 m²/g and a high BJH pore volume, composed by the pores with a diameter less than 1000 Angstroms, higher than or equal to 0.15 cm³/g, said process comprising

- a feeding step of quicklime, a feeding step of water in a feeding zone of a single stage hydrator;
- a slaking step of said quicklime in a slaking zone of said hydrator, and
- a maturation step in a maturation zone of said hydrator to form slaked lime;
- a transportation of lime by means of transportation means along the slaking direction into the hydrator, from the quicklime feeding until

a slaked lime withdrawal, said slaked lime withdrawal being downstream the slaking direction, characterized in that

- said hydrator is equipped with an extraction hood;
- said feeding step of quicklime and said feeding step of water are performed so as to obtain a water/quicklime ratio comprised between 0.9 and 1.2 by weight;
- said process further comprises a step of removing vapor generated during said slaking step, said step of removing vapor being performed over at least 90 % of the length of said slaking zone by means of the extraction hood which extends on a portion of the hydrator length which starts from at least 30% of the length of said hydrator, upstream the slaking direction, until at least 65% of the length of the hydrator,
- said process comprises a step of forming a raw highly porous slaked lime being a high BET specific surface area being comprised between 30 m²/g and 50 m²/g and high BJH pore volume slaked lime composed by the pores with a diameter less than 1000 Angstroms, higher than or equal to 0.15 cm³/g."

Dependent claims 2 to 17 relate to preferred embodiments.

VIII. The arguments put forward by the opponents during the appeal proceedings, where relevant to the present decision, can be summarised as follows.

The new main request was to be disregarded.

It did not meet the requirements of Article 83 EPC.

It did not meet the requirements of Article 56 EPC over D53 in combination with D6, D12, D20, D21, D22/D22a, D23, D25, D27/D27a, D28/D28a, D29 and D31, or over D18 as the alternative closest prior art.

- IX. The respondent's arguments at the appeal stage are reflected in the reasons below.
- X. The appellant requests that the decision under appeal be set aside and amended such that the patent be revoked.

The respondent requests that the patent be maintained in amended form on the basis of the request submitted as auxiliary request 9 with the reply to the appeal (the new main request) or, in the alternative, on the basis of one of the requests submitted as auxiliary requests 10 to 16 with the reply to the appeal.

Reasons for the Decision

Main request

1. Admission and consideration

The opponents object to the admission of the main request.

However, this objection has not been substantiated. Moreover, since this request was already filed with the patent proprietor's reply to the oppositions as an obvious reaction to an objection under Article 83 EPC,

there is no discernible reason why it should be disregarded.

Hence, this request is to be taken into consideration (Article 12(2) and (4) RPBA).

2. Article 83 EPC

In the opponents' view, the patent in its version as granted did not meet the requirements of Article 83 EPC for several reasons, as follows.

(i) Carrying out the invention entailed an undue burden since the patent did not contain any information on the steam extraction rate.

(ii) It was not possible to determine the dimensions of the slaking zone, in particular for a single-stage device. One particular problem was that the dimensions depended on the operating parameters (temperature, etc.).

(iii) There was no teaching regarding the width of the extraction hood.

(iv) The invention could only be carried out with single-stage hydrators, not with multi-stage hydrators.

Irrespective of whether this objection also applies to the main request, it is not convincing.

In their tests **D15**, the opponents were able to reproduce Example 4 of the patent. While this apparently required an additive such as diethylene glycol to be added, this is an option foreseen in the patent (claim 17 of the main request).

Given the exothermic nature of the slaking reaction, it is possible to determine the dimensions of the slaking

zone, e.g. by means of thermocouples, even if this is not always easy. This is also explained in paragraph [0088] of the patent.

The patent indicates that short/vertical flow paths of the steam are important to avoid undesirable hydration (see paragraphs [0104] to [0108]). The width of a hydrator is small compared with its length. Therefore, the fact that claim 1 does not contain any requirements as to the width of the extraction hood does not jeopardise sufficiency of disclosure.

Regarding (iv), claim 1 of the main request has been restricted to a single-stage hydrator.

The question of whether the dimensions of the slaking zone or of the hood can be determined precisely relates to the edges of the scope claimed, and thus to the requirements of Article 84 EPC rather than those of Article 83 EPC.

3. Article 100(a) EPC in combination with Article 56 EPC

In the opponents' view, the subject-matter of claim 1 was rendered obvious when starting from **D53** or **D18**, D53 being the priority document of D18.

However, this is not convincing, for the following reasons.

3.1 The invention relates to a process for manufacturing slaked lime.

3.2 There is agreement among the parties that **D53** is a suitable starting point for assessing inventive step.

This is because D53 also discloses a process for manufacturing slaked lime having the properties required by claim 1 (e.g. the figures and page 3, lines 3 to 13, page 4, lines 19 to 22, and page 5, lines 19 to 25).

While D53 (see, for example, pages 5 to 7 and the figures) discloses hydration, implying the use of a hydrator (reference numeral 1 in the figures; see also page 6, lines 24 to 28), this document is entirely silent:

- on the nature and operation mode of the hydrator (for instance, D53 does not mention whether the hydrator is operated in batch or continuous mode with a transportation means, or whether it is a single-stage or multi-stage hydrator)
- on the removal of water vapour (and of entrained dust; see paragraph [0063] of the patent), let alone
- on a removal by means of an extraction hood, and even less
- on the position of an extraction hood relative to the slaking zone of the hydrator

3.3 According to the patent in suit, the problem to be solved is to provide a process for manufacturing highly porous slaked lime in a reproducible and time-stable manner (paragraphs [0038], [0045] to [0047]).

The opponents argued that the problem to be solved was merely providing a process that avoids clogging. However, even if this formulation of the technical problem were accepted for the sake of argument, an inventive step would still be acknowledged, for the reasons set out below.

- 3.4 Claim 1 of the main request proposes solving this problem by means of the process of claim 1, which is characterised by:
- a single-stage hydrator with an extraction hood for removing vapour generated during slaking
 - said vapour removal being performed over at least 90% of the length of the slaking zone by means of the extraction hood
 - the extraction hood extending on a portion of the hydrator length which starts from at least 30% of the length of the hydrator, upstream the slaking direction, until at least 65% of the length of the hydrator

- 3.5 The examples of the patent show that the problem has been successfully solved.

In this context, the opponents contested the relevance of inventive Examples 2 and 3 of the patent, since the extraction hood only covered a central portion of the slaking zone.

However, this is not convincing.

While Comparative Example 1 of the patent, with an extraction hood shifted to the end of the single-stage hydrator, resulted in blockages and clogging (not conducive to a reproducible and time-stable manufacturing process) which could not be avoided even by increasing the extraction rate, the same trial with steam extraction along the slaking zone went well and produced slaked lime with the desired properties. Inventive Examples 2 and 3 of the patent, with an extraction hood located over a central portion of the slaking zone of the hydrator, also produced lime with favourable properties in a time-stable manner. This improvement appeared to be due to shorter and more

vertical flow paths for the steam, as explained in the patent (see paragraphs [0104] to [0108] as well as Figures 1 to 3), and this positive effect appeared even to be enhanced if the hood extended over the claimed substantial portions of both the slaking zone and the hydrator. By contrast, the opponents have provided no evidence of their own to show the contrary.

3.6 In the opponents' view, the combination of D53 with D6, D12, D20, D21, D22/D22a, D23, D25, D27/D27a, D28/D28a, D29 and D31 led in an obvious manner to the subject-matter of claim 1.

This view is not shared.

It is undisputed that hydrators with an extraction hood were known in the prior art.

However, even if it were acknowledged that the generated steam had to be removed from the hydrator and that this was commonly done by an extraction hood, there is no incentive in the prior art to use:

- a single-stage hydrator
- which has transportation means for transporting lime "along the slaking direction" through the different zones of the hydrator and
- which is provided with an extraction hood extending over the claimed substantial portions of both the slaking zone and the hydrator

to solve the problem of producing slaked lime with a reduced risk of clogging, thereby achieving a reproducible and time-stable manufacturing method.

Furthermore, in the opponents' view, **D29** and **D12** proved that the product having the properties of claim 1 had

to have been produced in a reproducible and time-stable manner.

This is not persuasive either.

It has not been disputed that the respondent's product brochures D29 and D12 show that it was possible to produce slaked lime with the desired properties on an industrial scale. However, while D29 (bottom of page 3) refers to members of the patent family of D53, neither D29 nor D12 can prove that the slaked lime of these brochures had been produced in a reliable, time-stable manner and without clogging. For instance, it could have been necessary to regularly remove fouling products in the manufacturing processes leading to the products of D29 and D12. In any case, it cannot be concluded from the sale of these products on the market that the apparatus used for producing them was prior art.

Regarding **D22**, the skilled person starting from D53 would have to recognise that the smooth removal of steam and dust according to D22 (page 1, line 19, and page 2, lines 52 to 54) also allowed for time-stable production of slaked lime. Even if, for the sake of argument, they did recognise this, they would then arrive at a *multi-stage* hydrator, this being an essential feature of D22 (figures and claim 2 of D22). This argument applies all the more to **D27/D27a**, which merely depicts a *multi-stage* hydrator (Figure 1) without any further explanation regarding the extraction hood.

D6 (Figure 2, page 1, lines 46 to 51) recommends using an extraction hood so that dust and steam do not accumulate. However, when starting from D53, the

skilled person would have to recognise that the removal of steam and dust according to D6 allowed for reliable and time-stable production of slaked lime. Moreover, D6 does not disclose the claimed transportation means for transporting lime along the slaking direction through different zones of the hydrator. Paddle blades 25 in the figures of D6 are in fact aimed at stirring and agitating the lime (page 1, lines 96 to 100). Similarly, the passage on page 2, lines 92 to 103, which mentions that the lime is emptied from the receptacle of D6 by opening and closing a door, undermines the assumption that such transportation means are present. Hence, even if the skilled person combined D53 and D6, they would not arrive at the claimed subject-matter.

Similar reasoning applies to **D28/D28a**, which mentions the risk of clogging due to entrained lime (page 1, lines 14 to 25 of D28a). However, the opponents have failed to show that - and at which point - D28/D28a disclosed the claimed transportation means for transporting lime along the slaking direction through the different zones of the hydrator. The board cannot discern this feature either (see hydrator 1 in the figure of D28). This reasoning also applies to **D23** (see the figure).

Regarding **D21** (see page 208), the extraction hood in schematic Figure 150 (reference numeral 9) only covers a small portion of the hydrator. Page 210, as drawn upon by the opponents, is consistently silent on the extension of the hood. Figure 149 discloses a multi-stage hydrator.

Regarding **D20**, **D25** and **D31**, the opponents have merely indicated that single-stage hydrators were known. They

have not given any reasons why the skilled person starting from D53 and faced with the technical problem posed would arrive at the subject-matter of claim 1 in an obvious manner. The board cannot discern any reasons either.

The opponents' reasoning therefore amounts to hindsight considerations.

- 3.7 Lastly, the opponents also argued that the BET specific surface area and pore volume of claim 1 corresponded to a problem invention.

This is not convincing either.

As explained above, the claimed properties of the slake are not distinguishing features. Moreover, the patent explains that both the claimed water/lime ratio and the short vertical flow paths of the steam are key to achieving these properties in a reproducible manner (see, for example, paragraphs [0041] et seq.).

- 3.8 **D18** (see, for example, pages 4 to 7 and the figures) does not disclose any details of the hydrator (1) either, and so if D18 is used as the starting point for assessing inventive step, similar reasoning as used for its priority document D53 also applies (the admission of these objections notwithstanding).

- 3.9 Inventive-step objections raised by third party

In the appeal proceedings, further inventive-step objections were raised in third-party observations. However, they were (all) filed only after further submissions were exchanged between the parties subsequent to the reply to the appeal.

In line with the established case law, the restrictive criteria for the admittance of late-filed submissions by parties during appeal proceedings also apply to third-party observations under Article 115 EPC (Case Law of the Boards of Appeal, 11th edn, 2025, III.N. 4.4.1; see also T 2255/15, reasons 1.5).

The third-party observations do not provide any reasons why the inventive-step objections were only raised at such a late stage of the appeal proceedings. Moreover, the objections are unspecific and do not follow the problem-solution approach. For example, it is not indicated which document is considered the closest prior art, and so the reasoning is not conclusive.

Consequently, irrespective of the admittance of the objections in the third-party observations, they are not prejudicial to inventive step.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the opposition division with the order to maintain the patent in amended form on the basis of the main request, submitted as auxiliary request 9 with the reply to the appeal, and the description to be adapted.

The Registrar:

The Chair:



A. Wille

R. Winkelhofer

Decision electronically authenticated