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D E C I S I O N
of 19 December 2002

Case Number: T 0493/02 - 3.2.7

Application Number: 96109421.6

Publication Number: 0748772

IPC: C03B 5/04

Language of the proceedings: EN

Title of invention:

Glassmelting method with reduced volatilization of alkali species

Applicant:

PRAXAIR TECHNOLOGY, INC.

Opponent:

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Headword:

-

Relevant legal provisions:

EPC Art. 54, 84, 111(1), R. 67

Keyword:

"Novelty (yes)"
"Support in the description (yes)"
"Refund of appeal fee (no)"
"Remittal to first instance"

Decisions cited:

T 0190/99

Catchword:

-



Case Number: T 0493/02 - 3.2.7

D E C I S I O N
of the Technical Board of Appeal 3.2.7
of 19 December 2002

Appellant: PRAXAIR TECHNOLOGY, INC.
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Representative: Schwan, Gerhard, Dipl.-Ing.
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Decision under appeal: Decision of the Examining Division of the
European Patent Office posted 19 December 2001
refusing European patent application
No. 96 109 421.6 pursuant to Article 97(1) EPC.

Composition of the Board:

Chairman: A. Burkhart
Members: P. A. O'Reilly
U. J. Tronser

Summary of Facts and Submissions

- I. The appellant (applicant) filed an appeal against the decision of the Examining Division to refuse the European patent application No. 96 109 421.6.
- II. The Examining Division held that the subject-matter of claims 1 to 4 of the only request lacked novelty and that claim 5 was not supported by the description. The Examining Division cited the following prior art document:
- D1: WO-A-90 04571
- III. The appellant requested that the decision of the Examining Division be set aside and that a patent be granted on the basis of the form of the application on which the Examining Division took their decision. The appellant further requests that the appeal fee be refunded. After a communication from the Board the appellant agreed to remittal of the case to the first instance if the Board intends to set the decision aside.
- IV. The request contains the following independent method claim:
- "1. A glassmelting method comprising:
- A) providing glassmaking materials into a glassmelting furnace (1);
- B) providing fuel (3) and oxidant (4) into the furnace, combusting them therein to generate heat and combustion reaction products including water

vapor in a combustion zone (5) within the furnace (1), and radiating heat from the combustion reaction products to the glassmaking materials to form molten glass (2);

characterized by

- C) providing shield oxygen (6) into the furnace at a velocity not exceeding 15.24 m/s (50 feet per second) at a point between the combustion zone (5) and the molten glass (2), and forming a shield oxygen layer (7) between the combustion zone (5) and the molten glass (2) to shield the molten glass (2) from the water vapor of the combustion reaction products; and
- D) reacting some shield oxygen (6, 7) with molten glass (2) to make the molten glass (2) more oxidizing;

said glassmaking materials including alkali species and said method enabling reduced volatilization of alkali species."

Claim 5 reads as follows:

"5. The method of claim 1 wherein the fuel (3) and oxidant (4) are provided into the furnace (1) at a mass average velocity less than 15.24 m/s (50 feet per second)."

The subject-matter of a further independent method claim was considered by the Examining Division to be novel and involve an inventive step.

V. In their decision the Examining Division essentially argued as follows:

- (i) Document D1 explicitly discloses the features of claim 1 except that the oxygen feed velocity does not exceed 15.24 m/s (50 feet per second). The method disclosed in document D1 is suitable for enabling reduced volatilization of alkali species.

Claim 1 only specifies a gas velocity at "a point between the combustion zone (5) and the molten glass (2)". The claim does not specify a feed velocity from feed openings and any arguments comparing low feed velocities with high feed velocities in the prior art are irrelevant to the claims.

An analysis of document D1 shows that gas velocities between 0.1 and 0.4 m/s may be estimated which are within the scope of claim 1.

- (ii) Claim 5 is not supported by the description because fuel and oxygen will be supplied through narrow discharge openings and with a velocity well in excess of the specified 15.24 m/s.

VI. The appellant essentially argued in his written submission as follows:

- (i) The alleged lack of novelty of claim 1 over document D1 is based on a misunderstanding of the claim. The claim requires that the velocity of the oxygen into the furnace does not exceed 15.24 m/s. The expression "at a point between the combustion zone and the molten glass" can only relate to the

location where the oxygen is provided into the furnace, i.e. the injection velocity. It would not make any sense to define the velocity anywhere else in the furnace. This view is supported by the description at page 5, lines 10 to 12, page 7, line 30 to page 8, line 3, and page 5, lines 3 to 6 in combination with the single figure. Technically it makes no sense to define the injection velocity by a velocity elsewhere in the furnace. Also claim 2, which specifies that the shield oxygen is provided into the furnace at a velocity not exceeding 3.05 m/s, supports the view that the wording "at a point between the combustion zone and the molten glass" refers to the injection point for the shield oxygen.

Document D1 teaches providing oxygen into the furnace at a velocity exceeding about 70 m/s. A calculation based on the oxygen flow rates given on page 10 of the document together with the sizes of the discharge openings leads to an injection velocity of 314 m/s. Such high injection rates serve to draw down the flames towards the surface of the molten glass rather than shielding the molten glass from the water vapor in the combustion reaction product.

Furthermore, document D1 does not disclose that the glassmaking materials include alkali species.

- (ii) Claim 5 is supported by the description page 9, lines 11 to 15 which refer to injection velocities for the fuel and oxidant of 1.5 and 3 ft/s.
- (iii) Refund of the appeal fee is justified because the

Examining Division in their last communication never explained their interpretation of claim 1 with regards to where the specified velocity is defined. The appellant had no opportunity to comment on this unexpected interpretation of claim 1.

Reasons for the Decision

Interpretation of claim 1

1. Claim 1, as it is written, contains a grammatical ambiguity. The prepositional clause "a point between the combustion zone (5) and the molten glass (2)" can either be adverbial and qualify the verb "provided" or adjectival and qualify the noun "velocity". If a claim contains a grammatical ambiguity then it must be considered which interpretation is the correct one. In interpreting a claim it must be construed by a mind willing to understand, not a mind desirous of misunderstanding, cf. T 190/99.

In the present case the first interpretation, i.e. the clause qualifies the verb "provided" is an interpretation which the skilled person would expect. It is clear that a lance used for injecting gases into a furnace has a known cross-section. The rate at which gas is injected, i.e. cubic metres per second, may also be known easily. This allows a furnace operator to easily calculate the injection velocity. In the description of the invention on page 5, lines 3 to 6 it is stated that "Shield oxygen 6 is provided into the furnace 1 at a point between combustion zone 5 and molten glass 2 to form oxygen layer 7 between

combustion zone 5 and molten glass 7." Then, in lines 10 to 12 of the same page, it is stated that "Shield oxygen 6 is provided into the furnace 1 at a velocity not exceeding 50 fps and preferably not exceeding 10 fps." From these passages it is abundantly clear that the prepositional clause "a point between the combustion zone (5) and the molten glass (2)" can have no other meaning than to qualify the verb "provided". It should be noted here that the description in the above passages repeats more or less identically the wording of claim 1 though without the grammatical ambiguity. The first interpretation of claim 1 is thus in itself consistent with what the skilled person would consider technically possible and consistent with the description.

The second possible interpretation, i.e. the clause qualifies the noun "velocity", leads to specifying a velocity somewhere inside the combustion chamber between the combustion zone and the molten glass. This however is not a parameter which a furnace operator could readily control. The velocities inside the chamber will depend upon many factors, e.g. number and orientation of oxygen injectors, size of furnace, so that it would be impractical to calculate or control the velocities. Moreover, this interpretation would not be consistent with the description. As already explained above with respect to the first interpretation the description on page 5, lines 10 to 12 refers to the velocity at which the shield oxygen "is provided into the furnace". Nowhere in the description is there a mention of any other position for determining a shield oxygen velocity.

In the opinion of the Board therefore the only possible

interpretation of claim 1 which makes any technical sense is the first interpretation, namely that the injection of shield oxygen into the furnace is at a point between the combustion zone and the molten glass and that the velocity of the shield oxygen at this injection point does not exceed 15.24 m/s.

Novelty of claim 1 over document D1

2. Based on the above interpretation of claim 1 the Board is of the opinion that document D1 at least does not disclose the feature of claim 1 of: "providing shield oxygen (6) into the furnace at a velocity not exceeding 15.24 m/s (50 feet per second) at a point between the combustion zone (5) and the molten glass (2)". In document D1 the disclosed injection velocity for oxygen is "exceeding about 70 metres per second", see page 10, lines 12 and 13.

The Board is also of the opinion that document D1 does not disclose the feature of claim 1 that "said glassmaking materials including alkali species and said method enabling reduced volatization of alkali species". The Examining Division in their decision did not address the issue of whether document D1 disclosed glassmaking materials including alkali species. The Examining Division only addressed the suitability of the method for reducing volatization of alkali species. Where a method specifies the use of a particular material the novelty of the method cannot be taken away by a method which, whilst suitable for use with the particular material, does not actually disclose the particular material. This is different to the situation which may arise with apparatus claims. In the present case the prior art method does not disclose glassmaking

materials including alkali species. The Board therefore comes to the conclusion that also for this reason the subject-matter of claim 1 is novel.

Therefore, the subject-matter of claim 1 is novel in the sense of Article 54 EPC.

Support for claim 5

3. The description on page 4, lines 25 to 30 states that the fuel and oxidant are provided "at a low mass average velocity, preferably less than 50 feet per second (fps), preferably less than 10 fps". An example is described on page 9, lines 11 to 15 where the velocity of the natural gas and oxygen is stated to be about 1.5 to 3 fps. Thus, the wording of claim 5 finds an exact counterpart in the description and examples within the scope of the claim are given. The arguments of the Examining Division that the fuel and oxygen will be supplied through narrow discharge openings with a velocity in excess of 15.24 m/s (50 feet per second) are only allegations not supported by any proof. In the opinion of the Board therefore the subject-matter of claim 5 is supported by the description in the sense of Article 84 EPC.

Request for refund of the appeal fee

4. The essential question in this respect was whether the appellant's right to be heard under Article 113(1) EPC was infringed. The only point of dispute surrounds the interpretation of claim 1. The Examining Division in their communication apparently interpreted claim 1 in one way without particularly discussing this view, possibly because they did not see any other

interpretation. The Examining Division then first addressed the question of claim interpretation in their decision, presumably to deal with the arguments of the appellant in his response of 9 February 2001. Thus, the Examining Division in their decision were merely dealing with the most recent arguments of the appellant. This is normal in a decision. The argument of the appellant that the interpretation was surprising is a matter of opinion. The Examining Division may well have considered the interpretation of the appellant to be the surprising interpretation. There is thus no indication that the decision contained any new grounds in the sense of Article 113(1) EPC. In the opinion of the Board therefore no procedural violation in the sense of Rule 67 EPC has been committed by the Examining Division.

Remittal to the Examining Division

5. The Examining Division have not yet examined Claim 1 with regards to inventive step. In accordance with Article 111(1) EPC, the Board therefore considers it appropriate to remit the case to the first instance for further examination so as to give the appellant the possibility to argue his case before two instances.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The request for reimbursement of the appeal fee is refused.
3. The case is remitted to the first instance for further prosecution.

The Registrar:

The Chairman:

D. Spigarelli

A. Burkhart