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Datasheet for the decision of 29 October 2014

Case Number: T 1370/10 - 3.4.02

Application Number: 07002604.2

Publication Number: 1918703

IPC: G01N29/14, G01N29/24, C21C5/46, G01H3/00, H04R1/34

Language of the proceedings: EN

Title of invention:
Acoustic emission control of slag height in a steelmaking process

Applicant:
Tata Steel UK Limited

Headword:

Relevant legal provisions:
EPC Art. 56

Keyword:
Inventive step - (yes) - after amendment

Decisions cited:

Catchword:

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Case Number: T 1370/10 - 3.4.02

D E C I S I O N
of Technical Board of Appeal 3.4.02
of 29 October 2014

Appellant: (Applicant)	Tata Steel UK Limited 30 Millbank London SW19 4WY (GB)
Representative:	Bodin, Andre Tata Steel Group Intellectual Property Services P.O. Box 10000 1970 CA IJmuiden (NL)
Decision under appeal:	**Decision of the Examining Division of the European Patent Office posted on 1 February 2010 refusing European patent application No. 07002604.2 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman	A. Klein
Members:	A. Hornung
	B. Müller

Summary of Facts and Submissions

I. The applicant appealed against the decision of the examining division refusing European patent application number 07002604.2 on the basis of Articles 54(1) and (2), 56 and/or 123(2) EPC (main request and three auxiliary requests).

II. The applicant requested that the decision of the examining division be set aside and that a patent be granted on the basis of the main and sole request filed with its letter dated 22 October 2014.

III. The present decision refers to the following document:
D3: GB 1,079,572

IV. Independent claim 1 reads as follows:

"Acoustic probe (1) for recording process sounds in a steelmaking process comprising a housing (2) having a first opening (3) and a second opening (4) and an elongated channel connecting the first opening with the second opening, a separate tube (5) provided in the elongated channel, and a microphone (6), wherein the tube (5) comprises an internally tapered channel, wherein the tapering angle, α, is constant and has a value of between 4 and 20° to provide a linear frequency response, the tube (5) having its widest opening nearest the first opening (3) and having its narrowest opening nearest the second opening (4), and wherein the microphone is located nearest the second opening (4), wherein the first opening is closed with a dust protection membrane (10) and wherein the second opening (4) is closed by an end cap (9), and wherein the tube (5) is made from a polymer to dampen the environment noise."

Independent use claim 7 reads as follows:

"Use of the acoustic probe according to any one of claims 1 to 6 in a control system for controlling the slag height in a steelmaking process using sound measurements."

Reasons for the Decision

1. Amendments

The board is satisfied that the present amended set of claims 1-8 fulfills the requirements of Article 123(2) EPC.

In particular, present claim 1 is generally based on original claims 1, 2 and 5. Furthermore, the basis for a "*separate*" tube is to be found in figures 1 and 2 and in the description as originally filed, disclosing that the tube is not necessarily an integral part of the housing (page 3, lines 17-18). On page 6, lines 5-6 of the description as originally filed, it is disclosed that "*the second opening is closed by an end cap*" and on page 3, lines 22-25, it is disclosed that "*the tube is made from a polymer to dampen the environment noise conducted by the housing*".

It is to be noted that the objection under Article 123(2) EPC, raised by the examining division against claim 1 of the first auxiliary request then on file, no longer applies to the current set of claims. The examining division objected to the feature "the tapering angle is constant and has a value of at least 4°".

2. Inventive step

During the first-instance proceedings, the examining division considered that D3 represented the closest prior art. The board agrees with this finding.

During the appeal proceedings, the applicant amended claim 1, thereby limiting its scope. Due to this additional limitation, the claimed subject-matter now on file differs from the disclosure of the acoustic probe of D3, inter alia, in that the acoustic probe comprises a *separate* tube, wherein the tube is *made from a polymer to dampen the environment noise*.

First of all, D3, with reference to figure 1, merely discloses a schematic drawing of an integrally formed acoustic horn (7). There is no hint in D3 to provide an acoustic horn formed by *separate* items, i.e. a housing and a separate tube.

Claim 1 further specifies that the tube is made from polymer, which is surprising in the present field of detecting process sounds in a steelmaking process, where high temperatures prevail, as exemplified by the available prior art documents.

Still further, the board notes that the separate, noise dampening tube made from a polymer solves the problem of environment noise perturbating process sounds detection. Neither the problem, nor the claimed solution is described in the available prior art documents or otherwise rendered obvious.

In view of the above considerations, the board comes to the conclusion that the claimed acoustic probe and the use of it in a steelmaking process involve an inventive step over the available prior art.

3. It follows that the main request meets the requirement of the EPC and that a patent can be granted on the basis thereof.

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 grant a patent based on the following documents:

   - Claims 1 to 8 of the main request as filed with the letter of 22 October 2014,

   - Description pages 1 to 6 as filed with the letter of 22 October 2014,

   - Drawing sheets 1/4 to 4/4 as originally filed.

The Registrar: The Chairman:

N. Schneider A. Klein

Decision electronically authenticated