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Datasheet for the decision of 30 June 2015

Case Number: T 0985/14 - 3.2.08

Application Number: 07794212.6

Publication Number: 2092089

IPC: C21D9/00, C21D5/00, C22C37/04, E02F3/36

Language of the proceedings: EN

Title of invention:
AUSTEMPERED DUCTILE IRON, METHOD FOR PRODUCIN THIS AND COMPONENT COMPRISING THIS IRON

Applicant:
Indexator Group AB

Headword:

Relevant legal provisions:
EPC Art. 54, 56

Keyword:
Novelty - (yes)
Inventive step - (yes)

Decisions cited:

Catchword:

Beschwerdekammern
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Case Number: T 0985/14 - 3.2.08

D E C I S I O N
of Technical Board of Appeal 3.2.08
of 30 June 2015

Appellant: (Applicant)	Indexator Group AB P.O. Box 520 922 21 Vindeln (SE)
Representative:	Valea AB Box 1098 405 23 Göteborg (SE)
Decision under appeal:	**Decision of the Examining Division of the European Patent Office posted on 7 January 2014 refusing European patent application No. 07794212.6 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman	T. Kriner
Members:	M. Alvazzi Delfrate
	D. T. Keeling

Summary of Facts and Submissions

I. By its decision posted on 7 January 2014 the examining division refused European patent application No. 07794212.6

The examining division was of the view that each of the requests then on file contravened the requirements of Article 84 EPC and related to subject-matter which lacked novelty in view of

D3: HUNG F-Y et al: "The microstructural effects on tensile properties and erosion wear resistance in upper bainitic ADI related to variation in silicon content" Mat. Trans., vol. 43, no. 7, (2002-07-01), pages 1748-57.

II. The appellant (applicant) lodged an appeal against that decision in the prescribed form and within the prescribed time limit.

III. The appellant requests that the decision under appeal be set aside and that a patent be granted on the basis of the request submitted with letter of 25 June 2015.

IV. Claim 1 reads as follows:

"Austempered ductile iron (ADI) for components requiring high strength and ductility, characterized in that it has a silicon content of 3.35 weight-% to 4.60 weight-%, and it has an ausferritic microstructure of acicular ferrite in a matrix of austenite without a remnant of non-austenitized ferrite"

V. The appellant's arguments can be summarised as follows:

The claim was amended to render it clear. Moreover, the combination of silicon content and microstructural features according to claim 1 is neither disclosed nor rendered obvious by the prior art.

Reasons for the Decision

1. Articles 84 and 123(2)EPC

1.1 In its decision the examining division found the independent product claim of the requests then on file to contravene the requirements of Article 84 EPC in view of a non-admissible product-by-process definition.

This definition has been deleted from present claim 1, so that the product-by-process objection raised in the appealed decision is overcome and the requirements of Article 84 EPC are satisfied.

1.2 The deleted product-by-process feature has been replaced by a microstructural feature, according to which the product has an ausferritic microstructure of acicular ferrite in a matrix of austenite without a remnant of non-austenitized ferrite, which more specifically defines the product feature resulting from the process steps. A basis for this added microstructural feature is to be found on page 9, last paragraph and page 11, last paragraph. Hence, the requirements of Article 123(2) EPC are also satisfied.

2. Novelty

D3 discloses austempered ductile iron (ADI) with various Si contents, in particular 4.16%. The material

is treated for various times (0.5h, 1h, 2h and 3h) at 930°C (page 1751, left-hand column, first full paragraph). From the micrographs of this material it cannot be clearly and unambiguously derived that the material has no remnant of non-austenitized ferrite (see Figure 2). On the contrary, as shown by the appellant in its letter 2 June 2015 (Figure on page 4), some areas seem to consist of a remnant of non-austenitized ferrite in the form of non-acicular ferrite. Indeed the experiments described in the application in suit (pages 10 and 11) indicate that a temperature of 930°C may be insufficient, depending on the Si content, for a complete austenitization. This is also in agreement with the successive experiments published in February 2008 by the authors of D3 (see the appellant's letter of 2 June 2015, page 5). Therefore, D3 does not disclose a microstructure without a remnant of non-austenitized ferrite as required by the claim. Accordingly, the subject-matter of claim 1 is novel.

3. Inventive step

Starting from D3 the object underlying the invention can be seen in the provision of an alternative material with high strength and ductility.

This object is credibly achieved by the claimed iron. Although the example disclosed in the application is slightly outside the claimed scope (it exhibits 5% remnant non-austenized ferrite) it is reasonable to assume that comparable favourable properties would be achieved when the remnant non-austenized ferrite is completely abolished.

The solution proposed by the claim is not suggested by the state of the art. In particular, it is not hinted at by D3, especially because the most advantageous materials according to this document, which deals with wear resistance, for the 4.16% Si sample are those treated for one hour at 930°C (see page 1753, left-hand column, first full paragraph), i.e. materials with a non-negligible amount of remnant non-austenitized ferrite.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the Examining Division with the order to grant a patent on the basis of

claims 1 to 8 submitted with letter of 25 June 2015;

description pages 1 to 12 submitted with letter of 25 June 2015; and

drawing sheet 1 as published.

The Registrar: The Chairman:

V. Commare T. Kriner

Decision electronically authenticated