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**Datasheet for the decision
of 26 February 2014**

Case Number: T 2306/10 - 3.2.08

Application Number: 05719757.6

Publication Number: 1723332

IPC: F02F1/20

Language of the proceedings: EN

Title of invention:

ENGINE COMPONENT PART AND METHOD FOR PRODUCING THE SAME

Patent Proprietor:

Yamaha Hatsudoki Kabushiki Kaisha

Opponent:

MAHLE International GmbH
Patent Department ZRIP

Headword:

Relevant legal provisions:

EPC Art. 54, 56
EPC R. 103(1)(a)

Keyword:

Novelty and inventive step (yes)
Reimbursement of the appeal fee- not equitable by reason of
the alleged substantial procedural violation

Decisions cited:

Catchword:



**Beschwerdekammern
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Chambres de recours**

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Case Number: T 2306/10 - 3.2.08

**D E C I S I O N
of Technical Board of Appeal 3.2.08
of 26 February 2014**

Appellant: Yamaha Hatsudoki Kabushiki Kaisha
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Decision under appeal: **Decision of the Opposition Division of the
European Patent Office posted on 26 October 2010
revoking European patent No. 1723332 pursuant to
Article 101(3) (b) EPC.**

Composition of the Board:

Chairman: T. Kriner
Members: M. Alvazzi Delfrate
C. Schmidt

Summary of Facts and Submissions

- I. By decision posted on 26 October 2010 the opposition division revoked European patent No. 1 723 332.

- II. The opposition division was of the view that the subject-matter of the independent product claim of the main request then on file lacked novelty in view of

D1: US -A- 5,494,540

and that the subject-matter of the independent method claim of each of auxiliary requests 1 to 4, all filed at the oral proceedings before the opposition division, did not involve an inventive step starting from D1 in view of

D2: US -A- 4,077,810 and
D3: CH -A- 665 223.

- III. The appellant (patent proprietor) lodged an appeal against this decision in the prescribed form and time limits.

- IV. The appellant requested that the decision under appeal be set aside, and that the patent be maintained in amended form according to the main request or one of auxiliary requests 1 to 3, all filed with letter of 4 March 2011. It also requested oral proceedings if the Board intended to reject the aforementioned requests.

- V. The respondent (opponent) did not file any submissions.

- VI. The independent claims of the main request read as follows:

"1. An engine component composed of an aluminum alloy containing silicon and made by high-pressure die-casting, said engine component being a cylinder block (100) and comprising a plurality of primary-crystal silicon grains (1011) located on a slide surface, the plurality of primary-crystal silicon grains (1011) having an average crystal grain size of no less than about 12 μm and no more than about 50 μm , a plurality of eutectic silicon grains (1012) disposed between the plurality of primary-crystal silicon grains (1011), wherein the plurality of eutectic silicon grains (1012) has an average crystal grain size of no more than about 7.5 μm , and the aluminum alloy containing no less than about 50 wtpm and no more than about 200 wtpm of phosphorus and no more than about 0.01wt% of calcium."

"9. A method for producing a cylinder block (100), comprising:

step (a) of preparing an aluminum alloy containing: no less than about 73.4wt% and no more than about 79.6wt% of aluminum, no less than about 18wt% and no more than about 22wt% of silicon, no less than about 2.0wt% and no more than about 3.0wt% of copper, no less than about 50 wtpm and no more than about 200 wtpm of phosphorus and no more than about 0.01wt% of calcium;

step (b) of cooling a melt of the aluminum alloy in a mold to form a molding, said step (b) being performed so that an area of a slide surface (101) is cooled at a cooling rate of no less than about 4°C/sec and no more than about 50°C/sec, said step (b) including:

step (b-1) of allowing a plurality of primary-crystal silicon grains (1011) to be formed in the area of the

slide surface (101) so as to have an average crystal grain size of no less than about 12 μm and no more than about 50 μm , and

step (b-2) of allowing a plurality of eutectic silicon grains (1012) to be formed between the plurality of primary-crystal silicon grains (1011) so as to have an average crystal grain size of no more than about 7.5 μm ;

step (c) of subjecting the molding to a heat treatment at a temperature of no less than about 450°C and no more than about 520°C for a period of no less than about three hours and no more than about five hours, and thereafter liquid-cooling the molding; and

step (d) of, after step (c), subjecting the molding to a heat treatment at a temperature of no less than about 180°C and no more than about 220°C for a period of no less than about three hours and no more than about five hours."

The auxiliary requests are not relevant for the present decision.

VII. The arguments of the appellant can be summarised as follows:

Novelty

The prior art, in particular D1, did not disclose a microstructure on the slide surface of a cylinder block according to claim 1. Moreover, the method disclosed in D1, contrary to the die-casting of claim 1, was not suitable for the production of a cylinder block.

Accordingly, the subject-matter of claims 1 and 9 was novel.

Inventive step

None of the prior-art documents suggested a cylinder block made by high-pressure die-casting or a method of manufacturing the same, which provided primary-crystal Si grains of 12 to 50 micron on a slide surface. Additionally, the composition recited in claim 9 was clearly different from that disclosed in D1. Also considering D1 in combination with D3 could not render it obvious to work with this composition. Therefore, the subject-matter of claims 1 and 9 of the main request involved an inventive step.

Suggestion for refund of the appeal fee

At the oral proceedings before the opposition division the discussion on the auxiliary requests was mainly about product claim 1. Hence, the fact that the opposition division finally denied the inventiveness of the subject-matter of the independent method claim came as a surprise, as this objection was raised for the first time during the oral proceedings. Before issuing the final decision, the opposition division indicated its opinion to the patentee and invited the patentee to comment. The patentee immediately requested the deletion of the method claims from all auxiliary requests on file without making any other amendments in the claims. The opposition division briefly deliberated on the patentee's request, but the chairman announced that it could not be granted. Hence, the patentee had no opportunity to react to the opposition division's surprising finding. The opposition division acted in disregard of procedural economy, obliging the patentee

to initiate appeal proceedings in order to maintain the opposed patent in an amended form which even the opposition division might have considered patentable. A right to be heard was not granted to the patentee since, even though the patentee was invited to comment on the opposition division's finding prior to the final decision, it was given no opportunity to react. Therefore, it was suggested that the appeal fee be refunded.

Reasons for the Decision

1. The appeal is admissible.
2. Main request - Novelty
 - 2.1 D1 discloses a method of preparing an abrasion-resistant aluminum alloy by casting an aluminum alloy consisting of 13.0 to 16.0 percent by weight of Si, 4.0 to 5.0 percent by weight of Cu, at least 0.8 and less than 1.4 percent by weight of Mg, at least 0.2 and not more than 0.8 percent by weight of Fe, not more than 0.1 percent by weight of either P or at least one of Na, Sb and Sr, and a remainder of Al and unavoidable impurities and carrying out hot plastic working on said aluminum alloy at a working rate of at least 30% for homogeneously dispersing coarse Si particles of 15 to 40 μm mean particle diameter and fine Si particles of not more than 5 μm mean particle diameter throughout a microstructure of said alloy (see claim 1). Although D1 refers to automobile and machine parts (see column 1, lines 16 to 18), it does not disclose a cylinder block, let alone a cylinder block made by high-pressure die-casting. Therefore, the subject-matter of claim 1 of

the main request, which is directed to a cylinder block made by high-pressure die-casting, is novel over the teaching of D1.

2.2 Claim 9 of the main request is directed to a method for producing a cylinder block. Moreover, this method uses an alloy containing more Si (18-22 wt%) and less Cu (2-3 wt%) than the alloy used in the method of D1. Hence, the subject-matter of claim 9 is also novel over the teaching of D1.

3. Main request - Inventive step

3.1 The patent in suit aims at the provision of an engine component which has excellent abrasion resistance and strength, as well as a method for producing said component (see paragraph [0007]).

3.2 D1 relates to automobile parts and machine parts, and seeks to achieve improved abrasion resistance, cuttability and workability (see column 1, lines 16 to 25 and column 2, lines 56 to 67). Hence, the person skilled in the art would have considered its teaching for the production of a cylinder block where high abrasion resistance is required. However, D1 teaches a process comprising fusion casting and hot plastic working, which are presented as necessary for the obtention of the microstructure advocated by this document (see column 3, lines 1 to 16). Hence, the teaching of D1 is contrary to the solution proposed by present claim 1, which is directed to a cylinder block made by high-pressure die-casting. Accordingly, D1, alone or in combination with other documents, cannot render the subject-matter of claim 1 of the main request obvious.

D2 and D3 are not more relevant, since they teach processes which involve casting, preferably continuous casting and plastic working (see D2, column 6, lines 41 to 51 and column 1, lines 47 to 55) or extrusion (see D3, abstract) and none of them relates to the production of cylinder blocks.

Accordingly, on the basis of the evidence considered in the decision under appeal, the subject-matter of claim 1 of the main request involves an inventive step.

- 3.3 As already discussed above, the method of D1 uses an alloy with different Si and Cu content from that foreseen in claim 9 of the main request. Moreover, D1 presents this composition as essential for achieving the desired properties (see column 3, lines 17 to 38). Hence, it does not hint at a process in accordance with claim 9 of the main request.

Nor is such a hint to be found in D2 or D3. D2 teaches a process where an essential feature is the use of an alloy with Si content of no more than 15 wt% (see claim 1 and paragraph bridging columns 4 and 5), whereas present claim 9 requires no less than about 18 wt% of Si. As to D3, although it teaches a broad composition overlapping with the composition of present claim 9 (see D3, abstract), this document does not disclose a single alloy with a composition as defined in claim 9, the preferred Cu content being higher than that defined in this claim (see last paragraph on page 3).

Accordingly, the subject-matter of claim 9 of the main request also involves an inventive step.

4. In view of the above, the main request can be allowed.

5. Suggestion to refund the appeal fee

5.1 Although not formally requesting it, the appellant suggested that the appeal fee be refunded.

According to Rule 103(1)(a) EPC, the appeal fee is to be reimbursed if

(a) the Board of Appeal deems an appeal to be allowable,

(b) a substantial procedural violation occurred,

(c) the reimbursement of the appeal fee is equitable by reason of said substantial procedural violation.

5.2 In the present case, condition (a) is clearly satisfied, since the appellant's main request can be granted.

5.3 As to condition (b), the appellant submitted that it was given no opportunity to react, by deleting the method claims from all auxiliary requests on file without making any other amendments in the claims (see also minutes of the oral proceedings before the opposition division, page 4), to the surprising finding that the subject-matter of the independent method claim lacked an inventive step. The denial of this possibility to react amounted, in the appellant's view, to a violation of its right to be heard.

5.4 Be that as it may, the Board notes that the requests filed with the statement of grounds of appeal, inter alia the main request which is now granted, comprise not only product claims but also method claims. Hence, even if the opposition division had decided to admit

into the proceedings further auxiliary requests limited to product claims, it would still have been necessary to lodge an appeal in order to have the present requests considered. Accordingly, there is no causal link between the alleged substantial procedural violation and the present appeal. Therefore, even accepting that a substantial procedural violation has indeed occurred, it would not be equitable within the meaning of condition (c) above to refund the appeal fee.

5.5 Hence, the conditions for a reimbursement of the appeal fee are not satisfied.

6. Adaptation of the description

Since the main request is allowable but does not comprise an adapted description, the Board deems it appropriate to remit the case to the opposition division for adaptation of the description.

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:
 - claims 1 to 9 according to the main request filed with letter of 4 March 2011; and
 - a description and drawings to be adapted.

The Registrar:

The Chairman:



V. Commare

T. Kriner

Decision electronically authenticated