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**Datasheet for the decision
of 9 May 2007**

Case Number: T 1413/05 - 3.2.04

Application Number: 96927899.3

Publication Number: 0869266

IPC: F02D 9/10

Language of the proceedings: EN

Title of invention:

Throttle valve control device for an internal combustion engine

Applicant:

Hitachi, Ltd.

Opponent:

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Headword:

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Relevant legal provisions:

EPC Art. 54(1), 84, 111(1), 123(2)

Keyword:

"Novelty (yes)"

"Remittal to the first instance"

Decisions cited:

-

Catchword:

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Case Number: T 1413/05 - 3.2.04

D E C I S I O N
of the Technical Board of Appeal 3.2.04
of 9 May 2007

Appellant: Hitachi, Ltd.
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Decision under appeal: Decision of the Examining Division of the
European Patent Office posted 3 June 2005
refusing European application No. 96927899.3
pursuant to Article 97(1) EPC.

Composition of the Board:

Chairman: M. Ceyte
Members: C. Scheibling
T. Bokor

Summary of Facts and Submissions

I. This appeal is against the decision of the Examining Division posted 3 June 2005 to refuse the patent application 96927899. The Examining Division considered that the subject-matter of claim 1 according to the main, first and second auxiliary requests was not novel over

D2: US-A-5 374 031.

The Appellant's notice of appeal was received on 5 August 2005 and the appeal fee was paid on the same day. The statement setting out the grounds of appeal was received on 12 October 2005.

II. As a response to a communication from the Board, the Appellant filed a new claim 1, with letter dated 30 March 2007 and requested that the decision under appeal be set aside and that the case be remitted to the first instance for further examination.

He mainly argued as follows:

Claim 1 has been amended to define in accordance with Article 84 EPC all the essential technical features that lead to the technical effect that a rate of change in the passage sectional area gradually increases. Furthermore, the way of shaping the third surface X3 as defined in claim 1 further delimits its subject-matter against D2 which does not show such a transitional surface between the spherical and the conical shaped surfaces.

IV. Claim 1 filed with letter dated 30 March 2007 reads as follows:

"1. A throttle valve control device for an internal combustion engine, comprising a throttle body forming a part of an intake air passage, and a throttle valve rotatably supported by a throttle valve shaft (12) mounted in a bore of said throttle body, said bore having a first surface (X2) with curved-surface profiles each spherical or closely analogous to a spherical form in an idle control region lying in the vicinity of a fully-closed angle of said throttle valve, said bore having bore wall surfaces following the curved-surface profiles, which include wall surface profiles each exhibiting a rate of change in passage sectional area, which is larger than a rate of change in passage sectional area in each of regions for said curved-surface profiles, said each wall surface profile being constructed so that a rate of change in passage sectional area thereof gradually increases, wherein said wall surface profiles comprise a second (X5) and third (X3) surface which are non-spherical, characterized in that

- the third surface (X3) extends in a direction of the axis of the intake passage and in a circumferential direction of said bore and is arranged between the first surface (X2) and the second surface (X5) in the direction of the axis of the intake passage,
- wherein a dimension of the third surface (X3) in the circumferential direction of said bore is maximum in a centre portion of said third surface (X3) and decreases upstream and downstream of said centre portion in the direction of the axis of the intake passage, and

- a dimension of the third surface (X3) in the direction of the intake passage is maximum in a portion of the third surface (X3) opposite to a centre portion of the throttle valve shaft (12) and decreases in circumferential direction towards the bearing of said throttle valve shaft (12) and
- said throttle valve is driven by a motor via a reduction mechanism, and idle air amount is controlled at said spherical or closely analogous to a spherical curved-surface profiles by adjusting an opening degree of said throttle valve by said motor."

Reasons for the Decision

1. The appeal is admissible.
2. *Amendments - main request:*
 - 2.1 Claim 1 according to the main request differs from independent claim 13 as originally filed by the addition of the following features:
 - a) the region with curved-surface profiles constitute a first surface,
 - b) the wall surface profiles comprise a second and a third surface which are non-spherical,
 - c) the third surface extends in a direction of the axis of the intake passage and in a circumferential direction of said bore and is arranged between the first surface and the second surface in the direction of the axis of the intake passage,
 - d) a dimension of the third surface in the circumferential direction of said bore is maximum in a centre portion of said third surface and decreases

upstream and downstream of said centre portion in the direction of the axis of the intake passage, and
e) a dimension of the third surface in the direction of the intake passage in maximum in a portion of the third surface opposite to a centre portion of the throttle valve shaft and decreases in circumferential direction towards the bearing of said throttle valve shaft and
f) the throttle valve is driven by a motor via a reduction mechanism, and idle air amount is controlled at said spherical or closely analogous to a spherical curved-surface profiles by adjusting an opening degree of said throttle valve by said motor.

- 2.2 With reference to description, claims and the Figures as originally filed:
- feature a) is disclosed on page 18, lines 18 to 21;
 - features b) and c) are disclosed in Figures 3 and 4 and page 22, lines 7 to 12;
 - features d) and e) are disclosed in Figure 4;
 - features f) are disclosed in Figure 1 and on page 14, lines 4 to 11 and in claim 10.
- 2.3 Moreover, the feature "so that the center of rotation of said throttle valve is placed on a central line of said bore" has been deleted. This feature is implicit and thus, does not need to be specifically mentioned.
- 2.4 Thus, the requirements of Article 123(2) EPC are met.
- 2.5 The objections raised by the Board in its communication regarding the issue of clarity are overcome by the wording of claim 1 now on file.

3. *Novelty:*

3.1 The European patent application was rejected on the ground of lack of novelty having regard to D2.

3.2 This citation (Figures 2 to 5) discloses a throttle valve control device for an internal combustion engine, comprising a throttle body forming a part of an intake air passage, and a throttle valve rotatably supported by a throttle valve shaft (14) mounted in a bore of said throttle body, said bore having a first surface (between levels Z0 and Zm, Figure 2) with curved-surface profiles closely analogous to a spherical form (composite shape constituted by various cross-sections along the axis of the intake passage in form of arcs of circles with decreasing radii from level Z0 to level Zm; column 4, lines 34 to 39) in an idle control region lying in the vicinity of a fully-closed angle of said throttle valve, said bore having bore wall surfaces following the curved-surface profiles, which include wall surface profiles each exhibiting a rate of change in passage sectional area, which is larger than a rate of change in passage sectional area in each of regions for said curved-surface profiles, said each wall surface profile being constructed so that a rate of change in passage sectional area thereof gradually increases, wherein said wall surface profiles comprise a second (18) and third surface which are non-spherical, wherein the third surface (lateral portions in form of arcs of ellipses; column 4, lines 39, 40; Figure 4a) extends in a direction of the axis of the intake passage and in a circumferential direction of said bore and is arranged between the first surface and the second surface in the direction of the axis of the

intake passage, wherein a dimension of the third surface (in form of arcs of ellipses) in the direction of the intake passage is maximum in a portion of the third surface opposite to a centre portion of the throttle valve shaft (14) and decreases in circumferential direction towards the bearing of said throttle valve shaft (14) and said throttle valve is driven by a motor, and idle air amount is controlled at said analogous to a spherical curved-surface profiles by adjusting an opening degree of said throttle valve by said motor.

3.3 Thus, the throttle valve control device of claim 1 differs from that of D2 in that:

- a dimension of the third surface in the circumferential direction of said bore is maximum in a centre portion of said third surface and decreases upstream and downstream of said centre portion in the direction of the axis of the intake passage, and
- said throttle valve is driven by a motor via a reduction mechanism.

3.4 Therefore, novelty of the subject-matter of claim 1 with respect to D2 is given.

4. *Further processing:*

4.1 Since proceedings before the Boards of Appeal are primarily concerned with the examination of the contested decision, remittal of the case to the first instance in accordance with Article 111(1) EPC is normally considered by the Boards in cases where the first instance issues a decision solely upon a particular issue (novelty) and leaves the substantive

issue regarding inventive step (Article 56 EPC)
undecided.

- 4.2 The Board therefore considers it appropriate to make use of its discretionary power under Article 111(1) EPC and remits the case to the first instance for consideration of the undecided issues.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the first instance for further prosecution.

The Registrar:

The Chairman:

G. Magouliotis

M. Ceyte