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**D E C I S I O N**  
of 23 January 1995

**Case Number:** T 0096/93 - 3.2.4

**Application Number:** 89101470.6

**Publication Number:** 0326167

**IPC:** F02B 37/12

**Language of the proceedings:** EN

**Title of invention:**

Air supply control systems for internal combustion engines

**Applicant:**

Mazda Motor Corporation

**Opponent:**

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**Headword:**

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**Relevant legal provisions:**

EPC Art. 111(1)

**Keyword:**

"Remittal (yes)"

**Decisions cited:**

T 0063/86, T 0341/86, T 0083/90

**Catchword:**

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Case Number: T 0096/93 - 3.2.4

**D E C I S I O N**  
of the Technical Board of Appeal 3.2.4  
of 23 January 1995

**Appellant:**

Mazda Motor Corporation  
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**Representative:**

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**Decision under appeal:**

Decision of the Examining Division of the European  
Patent Office dispatched on 25 September 1992  
refusing European patent application  
No. 89 101 470.6 pursuant to Article 97(1) EPC.

**Composition of the Board:**

**Chairman:** C. A. J. Andries  
**Members:** H. A. Berger  
J. P. B. Seitz

## Summary of Facts and Submissions

I. The Appellant (Applicant) lodged an appeal, received on 25 November 1992, against the decision of the Examining Division, dispatched on 25 September 1992, on the refusal of the application No. 89 101 470.6. The fee for appeal was paid on 25 November 1992 and the Statement setting out the Grounds of Appeal was received on 25 January 1993.

The decision of the Examining Division was based on the originally filed Claims 1 to 15. The Examining Division held that the application did not meet the requirements of Article 52(1) EPC since the control system of Claim 1 lacked novelty having regard to document

(D1) DE-C-3 623 540.

The Examining Division stated that the dependent Claims 2 to 15 and the description did not contain any additional features which, in combination with the features of any claim to which they referred, involved an inventive step since they contained mere details which would be within the capabilities of the person skilled in the art. Moreover the features of Claim 3 were shown in Figure 10 of document D1 which has the axes defined by engine speed and throttle angle (equivalent to engine load). The addition of the feature whereby the boundary could be varied according to parameters other than engine speed or load was not taught by document D1, however a claim with this feature would lack the inventive activity required by Articles 52(1) and 56 EPC, since this feature would also be known from the prior art. The Examining Division drew attention to the following further document

(D3) Patent Abstracts of Japan, vol. 9, no. 319  
(M-39)[2042], 14th December 1985; JP-A-60/153 426

and came to the conclusion that it would be obvious for the skilled person to control the supercharger arrangement of document D1 in response to selected transmission gear in accordance with the teachings of document D3.

- II. In the Statement setting out the Grounds of Appeal the Appellant requests that the patent should be granted on the basis of new application documents including new Claims 1 to 14, wherein the new Claims 1 to 5 are independent claims. The new Claim 1 thereof comprises the original Claims 1 and 8, the new Claim 2 comprises the original Claims 1 and 9, the new Claim 3 comprises the original Claims 1 and 12, the new Claim 4 comprises the original Claims 1 and 5 and the new Claim 5 comprises the original Claims 1 and 10. The new Claims 6 to 14 are based on the originally filed Claims 2 to 4, 6, 7, 11 and 13 to 15. The Statement of Grounds of Appeal contains various submissions calling into question the reasoning of the decision under appeal.
- III. Claims 1 to 5 differ from one another only by their last paragraph (starting with the word "wherein").

The wording of Claim 1 is as follows:

"An air supply control system for an internal combustion engine comprising:

at least first and second turbosuperchargers  
(22;23 : 209;210) each composed of a turbine disposed in one of exhaust passages of the engine (1 : 201) and a blower connected through a shaft with the turbine and disposed in one of intake passages of the engine,

an exhaust cutoff valve (35A,35B : 211) operative selectively to be open and closed respectively for opening and closing the exhaust passage in which the turbine of said second turbosupercharger (23 : 210) is disposed,

an intake air cutoff valve (26 : 221) operative selectively to be open and closed respectively for opening and closing the intake passages in which the blower of said second turbosupercharger (23 : 210) is disposed,

cutoff valve control means in a control unit (71 : 235) operative to cause both said exhaust cutoff valve (35A,35B : 211) and said intake air cutoff valve (26 : 221) to be closed when intake air mass flow fed to the engine (1 : 201) is to be relatively small and to cause both said exhaust cutoff valve (35A,35B : 211) and said intake air cutoff valve (26 : 221) to be open when intake air mass flow fed to the engine (1 : 201) is to be relatively large, so that said first turbosupercharger (22 : 209) works for supercharging the engine (1 : 201) when the intake air mass flow fed to the engine (1 : 201) is to be relatively small and both of said first and second turbosuperchargers (22 : 209, 23 : 210) work simultaneously for supercharging the engine when the intake air mass flow fed to the engine (1 : 201) is to be relatively large,

engine operation detecting means in the control unit (71 : 235) for detecting operating conditions of the engine (1 : 201), and

operation control means in the control unit (71 : 235) operative to vary, in response to the operating condition detected by said engine operation detecting means, a boundary between first and second operating

areas provided on an operating characteristic chart of the engine (1 : 201) respectively for a first supercharging operation in which said first turbosupercharger (22 : 209) works but said second turbosupercharger (23 : 210) does not work and a second supercharging operation in which both of said first and second turbosuperchargers (22 : 209, 23 : 210) work simultaneously,

wherein said engine operation detecting means is arranged to detect speed ranges taken selectively in a transmission connected with the engine (1 : 201) for detecting an engine operating condition in which the engine (1 : 201) operates with a high speed range taken in the transmission and said operation controlling means operates to vary the boundary between said first and second operating areas so as to extend said second operating area when said engine operating condition in which the engine operates with a high speed range is detected by said engine operation detecting means."

The wording of the last paragraph of Claim 2 is as follows:

"wherein said engine operation detecting means is arranged to detect speed ranges taken selectively in a transmission connected with the engine (1 : 201) for detecting engine operating conditions in which the engine (1 : 201) operates with high and low speed ranges taken in the transmission, respectively, and said operation controlling means operates to vary the boundary between said first and second operating areas in such a manner that said second operating area under the engine operating condition in which the engine (1 : 201) operates with the high speed range is extended

compared with that under the engine operating condition in which the engine (1 : 201) operates with the low speed range."

The wording of the last paragraph of Claim 3 is as follows:

"wherein said engine operation detecting means is arranged to detect an accelerating condition in which the engine (1 : 201) is accelerated and said operation controlling means operates to vary the boundary between said first and second operating areas so as to extend said second operating area when said accelerating condition is detected by said engine operation detecting means."

The wording of the last paragraph of Claim 4 is as follows:

"wherein said engine operation detecting means is arranged to detect a cold engine operating condition in which the engine operates with a relatively low temperature before having been warmed up sufficiently and said operation controlling means operates to vary the boundary between said first and second operation areas so as to narrow said second operating area when said cold engine operating condition is detected by said engine operation detecting means."

The wording of the last paragraph of Claim 5 is as follows:

"wherein said engine operation detecting means is arranged to detect octane numbers of fuel supplied to the engine (1 : 201) for detecting an engine operating condition in which the engine (1 : 201) operates with fuel having a relatively low octane number and said

operation controlling means operates to vary the boundary between the first and second operating areas so as to extend said second operating area when said engine operating condition in which the engine (1 : 201) operates with fuel having a relatively low octane number is detected by said engine operation detecting means."

IV. Requests

The Appellant requests that the decision under appeal be set aside and a patent be granted on the basis of the following documents:

Claims: Claims 1 to 5 (independent claims) and Claims 6 to 14, filed with the letter of 25 January 1993;

Description: Pages 1, 3 to 7 and 14 to 62 as originally filed, pages 2, 2a, 2b and 8 to 13, filed with the letter of 25 January 1993;

Drawings: Sheets 1/17 to 17/17 as originally filed.

**Reasons for the Decision**

1. The appeal is admissible.
2. The Appellant has replaced in the Statement of Grounds of Appeal the set of claims refused by the Examining Division by a new set of claims comprising five independent claims defining control systems which are restricted not only vis-à-vis the control system of the



refused Claim 1, but also vis-à-vis the control system as defined in the second paragraph of section three of the "Reasons for the Decision" of the appealed decision.

3. The five new independent claims are based on the refused Claim 1 and on dependent claims.

3.1 It should be first emphasized that due to the amendments to the refused independent claim the reason given for the lack of novelty of the subject-matter of said independent claim is no longer relevant.

3.2 Although the Examining Division drew attention in its decision to document D3 with regard to the selected transmission gear and the boundary between a low air flow condition and a high air flow condition, the decision took into account neither the specific feature of the originally filed Claim 8 which is part of the new independent Claim 1, according to which the boundary between the first and second operating areas is varied so as to extend the second operating area when the engine operating condition in which the engine operates with a high speed range is detected by the engine operation detecting means, nor the specific feature of the originally filed Claim 9 which is part of the new independent Claim 2, according to which the boundary between the first and second operating areas is varied in such a manner that the second operating area under the engine operating condition in which the engine operates with the high speed range is extended compared with that under the engine operating condition in which the engine operates with the low speed range.

The present Claims 1 and 2 therefore are restricted by the feature defining a specific shifting of the boundary, with regard to the hypothetical combination of features as defined in the second and the following

paragraphs of section three of the "Reasons for the Decision" of the appealed decision.

This specific feature which is now essential in the new independent Claims 1 and 2 has not been considered by the first instance.

3.3 Also the general statement, that the dependent claims do not involve an inventive step, without any substantiation as to the specific parameters and as to the specific shifting of the boundary, cannot be considered by the Board as sufficient reasoning for alleging lack of inventive step of the control systems of the refused Claims 12, 5 and 10 which are now part of the new independent Claims 3, 4 and 5.

3.4 Therefore the reasons brought forward by the first instance to reject the application can no longer be taken into account for the modified claims. The first instance should therefore have rectified its decision (Art. 109(1) EPC).

4.1 In the present case, where substantial amendments to the refused independent claim have been submitted together with the Statement of the Grounds of Appeal, which amendments require substantial further examination in relation to both the formal and substantive requirements of the EPC, such further examination should be carried out by the Examining Division as the first instance, so that the Applicant's right to appeal to a second instance is maintained (see T 63/86, OJ EPO 1988, 224).

4.2 The introduction of a number of independent claims raises the questions of unity of invention (Art. 82 EPC) and of clarity of the claims and the amended description (Art. 84 EPC) (see for instance Claims 1, 2 and 14). It seems to be necessary to consider, besides the documents

cited in the refusal, further prior art documents (for instance dealing with turbocharger operation control and the influence of a particular third parameter on an operating characteristic chart with two parameters, i.e. engine acceleration, engine temperature and fuel octane number i.e. engine knocking, as the third parameter).

- 4.3 The Board furthermore wants to emphasize that, in the practice of the EPO, the novelty examination is based on a narrow concept of novelty, for example, the teaching of a prior art document should not be interpreted as embracing well-known equivalents which are not disclosed in the document; this is a matter of obviousness (cf. Guidelines for Examination in the EPO; Part C, Chapter IV, section 7.2). In the present case, it cannot be upheld that the non-return valve 31 of document D1, the opening of which depends on the pressure difference in the intake passage and on the control of both the bleed valve 33 and the control valve 19, is an intake air cutoff valve operative selectively to be open and closed caused by a cutoff valve control means (see the refused Claim 1).

Although it can be acknowledged that the selection of the normal boundary and of the hysteresis boundary in the control system of document D1 depends on the operation condition of the engine, this is not comparable with the shifting of the boundary in response to the now claimed parameters.

5. In the circumstances of this case, the Board has therefore decided, in accordance with the decisions T 63/86, T 341/86 and T 83/90, to exercise its power under Article 111(1) EPO to remit this case to the Examining Division, in order that the latter should examine the newly filed claims taking into account the above sections 4.1 to 4.3.

**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 on the basis of the documents as defined in above section IV.

The Registrar:



N. Maslin

The Chairman:



C. Andries

*By S/S*