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**Datasheet for the decision
of 30 April 2020**

Case Number: T 0487/16 - 3.2.06

Application Number: 03736402.3

Publication Number: 1532353

IPC: F01M13/04, B04B5/08, B04B9/10,
B01D45/14

Language of the proceedings: EN

Title of invention:
A METHOD AND A DEVICE FOR CLEANING OF CRANKCASE GAS

Patent Proprietor:
Alfa Laval Corporate AB

Opponent:
MAHLE International GmbH

Headword:

Relevant legal provisions:
EPC Art. 54, 56
RPBA Art. 12(4)
RPBA 2020 Art. 12(2)

Keyword:

Novelty - main request (yes)

Inventive step - main request (yes)

Late filed inventive step objection - could have been filed before the opposition division (yes) - objection admitted (no)

Document admitted by the opposition division upon which the decision was based - not to be excluded from appeal proceedings

Decisions cited:

T 2603/18, T 0026/13, T 1568/12

Catchword:

See Reasons 3.1; document admitted by the opposition division upon which the decision was based - not to be excluded from appeal proceedings.



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Case Number: T 0487/16 - 3.2.06

D E C I S I O N
of Technical Board of Appeal 3.2.06
of 30 April 2020

Appellant: Alfa Laval Corporate AB
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Decision under appeal: **Decision of the Opposition Division of the
European Patent Office posted on 23 December
2015 revoking European patent No. 1532353
pursuant to Article 101(3)(b) EPC.**

Composition of the Board:

Chairman M. Harrison
Members: M. Hannam
W. Ungler

Summary of Facts and Submissions

- I. An appeal was filed by the appellant (patent proprietor) against the decision of the opposition division revoking European Patent No. 1 532 353. It requested that the decision under appeal be set aside and the patent be maintained as granted or, in the alternative, that it be maintained in an amended form based on one of auxiliary requests 1 to 8. It further requested oral proceedings.
- II. The respondent (opponent) requested that the appeal be dismissed. It also requested oral proceedings should the Board be minded to set aside the opposition division's decision.
- III. The following documents, referred to by the appellant in its grounds of appeal, are relevant to the present decision:
- | | |
|----|-----------------|
| D1 | DE-A-199 14 166 |
| D2 | WO-A-99/56883 |
| D3 | WO-A-01/36103 |
| D7 | DE-A-37 31 597 |
- IV. The Board issued a summons to oral proceedings and a subsequent communication containing its provisional opinion, in which it indicated *inter alia* that the subject-matter of claims 1 and 9 of the main request appeared to be novel over both D1 and D2. Additionally the Board indicated what it regarded as being the objective technical problem to be solved when considering inventive step starting from D3 as the closest prior art, and that it questioned how the claimed arrangement could be arrived at when

considering the teaching of D7 unless hindsight were used. The respondent's attack against inventive step made for the first time with its response to the grounds of appeal, starting from D3 and combining this with the general knowledge of a skilled person was also indicated as likely to be held inadmissible under Article 12(4) RPBA 2007.

V. With letter of 4 February 2020, and a further letter of 9 March 2020, the respondent indicated that it would not attend the scheduled oral proceedings, but made no substantive reply.

VI. In its letter of 10 February 2020, the appellant indicated its readiness to withdraw its request for oral proceedings should the Board be in a position to set aside the decision of the opposition division and maintain the patent as granted.

VII. With communication dated 30 March 2020, the Board cancelled the scheduled oral proceedings and indicated that the appeal procedure would continue in writing.

VIII. Claim 1 of the main request (claim 1 as granted) reads as follows (with feature annotation as used by the opposition division included):

"1.1 A method of cleaning crankcase gas generated during operation of an internal combustion engine (31; 41) in its crankcase, characterized by

1.2 - use of a centrifugal separator (34; 50) that includes a centrifugal rotor (8) arranged for rotation by means of a driving motor (9; 49) and arranged by its rotation to suck crankcase gas from the crankcase to the centrifugal separator (34; 50),

1.3 - sensing of a parameter, the magnitude of which

is related to the amount of crankcase gas generated per unit of time in the crankcase, and

1.4 - changing of the rotational speed of the centrifugal rotor (8) in response to a sensed change of said parameter in a way such that the gas pressure in the crankcase is maintained at a predetermined value, or within a predetermined pressure interval, during the operation of the combustion engine (31; 41)."

Claim 9 of the main request (claim 9 as granted), again with the feature annotation of the opposition division, reads:

"9.1 A device for cleaning of crankcase gas generated during operation of an internal combustion engine (31; 41) in its crankcase,

9.2 said device including a centrifugal separator (34; 50) having a centrifugal rotor (8) that is arranged for rotation by means of a driving motor (9; 49) and arranged by its rotation to suck crankcase gas from the crankcase to the centrifugal separator, characterized in

9.3 - that the driving motor (9; 49) is arranged for rotation of the centrifugal rotor (8) at different speeds,

9.4 - that sensing means (45) is arranged to sense a parameter, the magnitude of which is related to the amount of crankcase gas generated per unit of time in the crankcase,

9.5 - that said sensing means (45) is operatively connected with the driving motor (9; 49) and

9.6 - that the driving motor (9; 49) is arranged to change the rotational speed of the centrifugal rotor (8) in response to a sensed change of said parameter in a way such that the gas pressure in the crankcase is maintained at a predetermined value, or within a

predetermined pressure interval, during the operation of the combustion engine (31; 41)."

IX. The appellant's arguments may be summarised as follows:

The subject-matter of claims 1 and 9 was novel over D1 and D2. D1 failed to disclose at least feature 1.3 of claim 1 and the equivalent feature 9.4 of claim 9 since the disclosed centrifugal separator lacked the claimed sensing of any parameter related to the amount of crankcase gas generated. Lacking disclosure of any control of the separator in D1, the alleged sensing of engine rotational speed, and thus amount of crankcase gas generated, was not even implicitly known from D1. D2 also failed to disclose *inter alia* features 1.3 and 9.4, the respondent not having presented any specific reasons why these features were known from D2.

D7 was late filed before the opposition division which then erred in admitting the document despite its content relating to a remote technical field and not being of *prima facie* relevance to the claimed subject-matter. D7 should thus not have been admitted into the proceedings.

The subject-matter of claims 1 and 9 involved an inventive step. When starting from D3, this failed to disclose features 1.3 and 1.4 and features 9.4 to 9.6 of claims 1 and 9 respectively. The objective technical problem to be solved was to be seen as 'how to improve control of crankcase pressure in a cost-efficient manner in a combustion engine provided with a crankcase gas cleaning device, while still accomplishing satisfactory cleaning of crankcase gas'. D7 was directed to a lubrication and cooling oil supply system for an internal combustion engine lacking a centrifugal

separator. It thus could not be obvious for the pressure sensor known from D7 to provide the hint for a skilled person as to how to modify the control of a drive motor for a centrifugal separator in order to maintain crankcase gas pressure at a predetermined value or within a predetermined pressure interval without the benefit of hindsight of the present invention.

X. The respondent's arguments may be summarised as follows:

The subject-matter of claims 1 and 9 lacked novelty over D1. Regarding feature 1.3, when carrying out the teaching of D1, the skilled person would inevitably implement a method whereby the motor speed was the sensed parameter, this clearly being related to the amount of crankcase gas produced.

For similar reasons, the subject-matter of claims 1 and 9 also lacked novelty over D2.

The subject-matter of claims 1 and 9 lacked an inventive step. When starting from D3, this failed to disclose features 1.3 and 1.4 of claim 1 and features 9.4 to 9.6 of claim 9. The objective technical problem to be solved was therefore 'to improve the method of cleaning crankcase gas and to avoid any kind of leakages from/to the crankcase due to an over- or underpressure in the crankcase'.

The solution to this problem would be obvious to the skilled person based on their common general knowledge alone. Changing the speed of the electric motor driving the separator would correspondingly change the pressure in the crankcase. In the knowledge of feedback loops

associated with sensors, it would be obvious to use a pressure sensor in the crankcase to control the electric motor driving the separator in order to maintain the pressure within certain boundaries, thus solving the technical problem and reaching the claimed subject-matter.

D7 was correctly admitted since it was aimed at preventing an overpressure in the crankcase and addressed the problem of avoiding leakage from/to the crankcase.

D7 also provided the claimed solution to the posed technical problem without exercise of an inventive step. As found by the opposition division, the pressure sensor 23 of D7 was used to control the operation of the vacuum pump. When transferring this teaching to D3, the sensor signal would be used to control the speed of the drive motor 9 of the centrifugal separator (see Fig. 1), thus maintaining the desired pressure in the crankcase. The subject-matter of both claims 1 and 9 thus lacked an inventive step starting from D3 and combining this with the technical teaching of D7.

Reasons for the Decision

1. Request for oral proceedings - Article 116 EPC

Oral proceedings were appointed by the Board at the request of both the appellant and the respondent. In view of the respondent's subsequent statement that it would not attend the oral proceedings, the Board's preliminary opinion regarding the appeal, the appellant's indication that its request for oral

proceedings was conditional on the Board being minded to reach a decision other than maintenance of the patent as granted and the Board being in a position to decide on the appeal in accordance with this request, the Board cancelled the oral proceedings.

Main request

2. *Novelty*

2.1 The subject-matter of claims 1 and 9 is novel (Article 54 EPC) over the cited prior art.

2.2 At least feature 1.3 of claim 1 and feature 9.4 of claim 9 are not disclosed by D1, this failing to disclose "a parameter, the magnitude of which is related to the amount of crankcase gas generated per unit of time...".

2.2.1 The respondent's argument that, when carrying out the teaching of D1, the skilled person would inevitably implement a method whereby the motor speed was the sensed parameter, is not accepted. There is no disclosure of motor speed being sensed in D1, nor in fact of any other parameter related to the amount of crankcase gas produced.

2.2.2 The Board can accept the respondent's argument that oil circuit pressure will increase with engine speed and that this will drive the oil centrifuge and thus the oil separator more quickly, but no parameter needs to be measured or sensed in order for this to occur; it occurs directly as a result of engine speed variation. The respondent's corollary that engine speed is therefore the parameter which is sensed is not

disclosed, not even implicitly, in D1.

- 2.2.3 It thus follows that D1 fails to disclose at least features 1.3 and 9.4 of claims 1 and 9 respectively.
- 2.3 D2 also fails to disclose at least features 1.3 and 9.4 of claims 1 and 9. The respondent, in its letter of response to the grounds of appeal, presented no substantiation as to how D2 deprived the subject-matter of claims 1 and 9 of novelty, reference simply being made to 'similar reasons' to those presented with respect to D1. The Board can also see no disclosure in D2 of the sensing of a parameter related to the amount of crankcase gas generated by the centrifugal separator.
- 2.4 To the Board's preliminary opinion indicating the subject-matter of claims 1 and 9 to be novel over both D1 and D2, the respondent submitted no arguments to the contrary. The Board thus herewith confirms its preliminary opinion.
- 2.5 The subject-matter of both claim 1 and claim 9 is thus novel (Article 54 EPC).
- 3. *Appellant's request to exclude D7*
 - 3.1 D7 was filed after the expiry of the opposition period. Despite the opposition division having discretion under Article 114(2) EPC to "disregard" facts or evidence not submitted in due time, it nevertheless decided not to disregard it. On the contrary, D7 was admitted into the proceedings (cf. point 3.2 of the Minutes of the oral proceedings) and the opposition division based its decision regarding lack of inventive step on it. Since D7 was part of the opposition proceedings and the

decision is based on D7 (i.e. it was substantively evaluated by the opposition division in order to reach its reasoned conclusion on lack of inventive step), D7 is thus part of the appeal proceedings (see also Article 12(2) RPBA 2020). Furthermore, considering the aim of the appeal proceedings being to review the decision under appeal in a judicial manner (cf. Article 12(2) RPBA 2020) and in view of the appellant's main request to maintain the patent as granted, which requires a review of the decision with regard to the conclusion drawn *inter alia* on the basis of D7, the Board sees no legal basis on which it can be excluded from the appeal proceedings. Thus, in this regard, the Board confirms the case law developed under RPBA 2007 (cf. T26/13, Reasons 2; T1568/12, Reasons 2.4; T2603/18, Reasons 1.1 to 1.2). For the sake of completeness it is added that Article 12(4) RPBA 2007 would also not provide a basis for excluding D7 from the appeal proceedings since the document was admitted into the proceedings by the opposition division.

- 3.2 Furthermore, the Board had addressed this issue in its provisional opinion (see point 2.1 thereof) and had additionally explained that, had the case arisen, the opposition division could even have introduced D7 of its own motion under Article 114(1) EPC.
- 3.3 It is also noted here that the appellant did not argue that its right to be heard under Article 113(1) EPC had been infringed due to the admittance of D7 during the opposition proceedings, nor did the appellant submit any counter-argument in response to the Board's preliminary opinion.
- 3.4 D7 is thus not excluded from the appeal proceedings.

4. *Inventive step*

4.1 *D3 and common general knowledge*

4.1.1 According to Article 12(4) RPBA 2007, the Board has the power to hold inadmissible facts, evidence or requests which could have been presented or were not admitted in the first instance proceedings. In the present case, the inventive step objections to the subject-matter of claims 1 and 9 starting from D3 and combining this with common general knowledge was not raised before the opposition division, yet, with the present main request corresponding to the patent as granted, the objection evidently could, and should, have been presented in those first instance proceedings.

4.1.2 The respondent presented no reason why this objection was filed for the first time on appeal. Also, to the Board's preliminary opinion indicating that the new objection could be held inadmissible for this reason, no argument in favour of its non-exclusion was filed by the respondent.

4.1.3 The inventive step objection starting from D3 and combining this with common general knowledge is thus held inadmissible by the Board under Article 12(4) RPBA 2007.

4.2 *D3 and technical teaching of D7*

4.2.1 D3 discloses the following features of claim 9:

- a device for cleaning of crankcase gas including a centrifugal separator (see Fig. 1; page 9, lines 6 to page 10; line 28);
- the separator having a centrifugal rotor (8), driven

by a variable speed (implicit for an electric motor) driving motor (9); and

- the rotation of the rotor being arranged to suck crankcase gas from the crankcase to the centrifugal separator (see page 5, lines 18 to 23).

- 4.2.2 As found by the opposition division and accepted by both parties in their submissions in the present proceedings, D3 indeed fails to disclose features 9.4 to 9.6 of claim 9 relating to the sensing means and the operative connection of these means to the driving motor.
- 4.2.3 The technical problem formulated by the opposition division based on these differentiating features read 'how to improve cleaning of blow-by gases and to avoid any kind of leakages from/to the crankcase' (see page 6 of its decision). This problem is not objective not least since neither the patent, nor D3, discloses that these differentiating features have any influence on leakages from or to the crankcase. It has also not been argued that these features have any significant impact on such leakage, nor does the Board see these features as technically influencing the degree of crankcase leakage.
- 4.2.4 Regarding the technical problem posed by the appellant ('how to improve control of crankcase pressure in a cost-efficient manner in a combustion engine provided with a crankcase gas cleaning device, while still accomplishing satisfactory cleaning of crankcase gas'), this is also found not to be objective, not least due to inclusion of a cost efficiency element to which no differentiating feature is directed. The further inclusion in the problem of 'improving control of crankcase pressure' also points to the claimed solution

in feature 9.6 of claim 9 ('the gas pressure in the crankcase is maintained at a predetermined value ...') such that this element of the problem also is not seen as objective.

- 4.2.5 The Board finds the objective technical problem based on the differentiating features identified in point 4.2.2 above to be 'how to match the centrifugal separator cleaning capacity to the amount of crankcase gas generated while taking account of crankcase conditions'. The Board also stated this in its provisional opinion and neither party has disputed this.
- 4.2.6 In the light of this objective technical problem to be solved, D7 does not provide the required hint to the skilled person as to how the centrifugal separator of D3 should be modified in order to reach the claimed subject-matter.
- 4.2.7 D7 discloses a lubricating and/or cooling oil supply for an internal combustion engine (see particularly Fig. 1 and col. 2, line 55 to col. 3, line 54). The purpose of the system of D7 is to maintain lubrication of a crankshaft bearing 16 from an oil reservoir 12, a pressure sensor 23 in the crankcase controlling a vacuum pump 19 which maintains a lower pressure in the oil reservoir 12 than in the crankcase 8. This ensures that oil is permanently fed via the riser 17 to the oil reservoir so that the crankshaft bearing 16 remains under lubrication. D7 is thus completely unrelated to centrifugal separators and the cleaning of crankcase gases, let alone any problems associated with these, such that its teaching does not provide the skilled person with an indication of how D3 should be modified in order to reach the claimed subject-matter, let alone

in an obvious manner.

4.2.8 As regards the pressure sensor 23 of D7 itself, this simply measures the pressure in the crankcase 8 and provides a signal to control operation of the vacuum pump 19 to alter the pressure in the oil reservoir. Whilst the sensor 23 could therefore be considered to anticipate the claimed 'sensing means' per se of feature 9.4, the sensor is not connected with a driving motor of a centrifugal rotor, as required in features 9.5 and 9.6 of claim 9 nor indeed in any other way with a rotor for this purpose. Consequently, it is not without the benefit of hindsight of the claimed invention that the teaching of D7 would suggest maintaining the pressure in the crankcase at a predetermined value, or within a pressure interval, in relation to a device employing a centrifugal separator.

4.2.9 The respondent's reference to the opposition division's decision to justify the lack of inventive step when starting from D3 and combining this with the technical teaching of D7 is not persuasive. Even though the pressure sensor 23 is used to control the operation of the vacuum pump 19 in D7, this does not provide a teaching to obviously use a sensor to control the drive motor of the centrifugal rotor of D3, let alone in such a manner so as to maintain the crankcase gas pressure at a predetermined value or within a predetermined pressure interval. The fundamentally different structures and functions of the D3 and D7 disclosures makes such a transfer of technical teaching from D7 to D3 in order to reach the claimed subject-matter far from obvious and only possible with the benefit of hindsight of the invention.

- 4.2.10 With further regard to the respondent's reference to the opposition division's decision, it is noted that this made reference to D1 and D2 in relation to the rotational speed of the centrifugal separator being linked to engine speed (see decision, page 6). This is not refuted by the Board, yet, in the light of the objective technical problem to be solved, this relationship between centrifugal separator and engine speed fails to guide the skilled person to provide crankcase gas sensing means which control the speed of a driving motor for driving the centrifugal separator's rotor. The respondent notably also did not argue this to be the case.
- 4.2.11 The subject-matter of claim 9 thus involves an inventive step when starting from D3 and combining this with the technical teaching of D7.
- 4.2.12 No further objections have been presented against the presence of an inventive step in the subject-matter of claim 9.
- 4.2.13 As regards the presence of an inventive step in the subject-matter of claim 1, no further document combinations or arguments have been presented by the respondent going beyond those already presented with respect to the presence of an inventive step in the subject-matter of claim 9. The Board thus finds, for the same reasons as apply to claim 9, that the subject-matter of claim 1 involves an inventive step over the document combinations and arguments presented by the respondent.
- 4.2.14 In summary therefore, the subject-matter of claims 1 and 9 involves an inventive step (Article 56 EPC). The main request is thus allowable.

4.2.15 As a consequence, the decision under appeal must be set aside and the patent be maintained according to the appellant's main request.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The patent is maintained as granted.

The Registrar:

The Chairman:



M. H. A. Patin

M. Harrison

Decision electronically authenticated