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# Datasheet for the decision of 13 April 2011

**Case Number:** T 1140/08 - 3.2.01

**Application Number:** 01305163.6

**Publication Number:** 1167147

**IPC:** B60T 8/00

**Language of the proceedings:** EN

**Title of invention:**
Vehicle braking system using stored verhicle parameters for electronic control of braking

**Patentee:**
KNORR-BREMSE Systeme für Nutzfahrzeuge GmbH

**Opponent:**
WABCO GmbH
HALDEX BRAKE PRODUCTS LIMITED

**Headword:**
-

**Relevant legal provisions:**
EPC Art. 123(2)

**Relevant legal provisions (EPC 1973):**
EPC Art. 84, 56

**Keyword:**
"Amendments - Added matter (no)"
"Clarity (yes)"
"Inventive step (yes)"

**Decisions cited:**
-

**Catchword:**
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**Case Number:** T 1140/08 - 3.2.01

# D E C I S I O N
**of the Technical Board of Appeal 3.2.01**
**of 13 April 2011**

**Appellants**: (Patent Proprietors)
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**Decision under appeal:**
**Decision of the Opposition Division of the European Patent Office posted 9 April 2008 revoking European patent No. 1167147 pursuant to Article 101(2) EPC.**

**Composition of the Board:**

**Chairman:** G. Pricolo
**Members:** Y. Lemblé
S. Hoffmann

## Summary of Facts and Submissions

I. The appeal of the Patent Proprietors is directed against the decision of the Opposition Division posted 9 April 2008 to revoke the European patent No. 1 167 147.

II. In its decision the Opposition Division held that the subject-matter of granted claim 1 extended beyond the content of the application as originally filed (Article 100 c) EPC 1973) and that the subject-matter of claim 1 of the first auxiliary request lacked an inventive step (Article 100 a) EPC 1973). The following prior art was considered by the Opposition Division:

D1: DE-A-197 07 207,
D2: DE-C-43 15 494,
D11: US-A-5 255 962.

III. In the oral proceedings, held 13 April 2011, the Appellants requested that the decision under appeal be set aside and the patent be maintained in amended form on the basis of claims 1 to 4 of the main request filed during oral proceedings.

Respondents I and Respondents II requested that the appeal be dismissed.

IV. The wording of claim 1 of the main request is the following:

"A trailer vehicle braking system including means (1b, 2b, 3b) operable to provide a signal indicative of vehicle loading, load responsive means responsive

thereto and to a braking signal indicative of intended vehicle deceleration for controlling braking force produced by brake actuators (23, 24, 25) of the vehicle, said load responsive means comprising a parameterisable electronic braking control unit (26) with a main configuration memory (41) for storing parameters particular to the vehicle for control of vehicle brake force according to vehicle loading
characterised in that
said system includes a further electronic control unit (27) having a storage memory (52) wherein said parameters particular to the vehicle are permanently retainable, a data communication link (33) permitting communication between the electronic control units (26,27), such that in the event of either one of said electronic control units (26,27) detecting that the other electronic control unit is an unparameterised electronic control unit, the parameterized electronic control unit can initiate a function for newly parameterising the unparameterised electronic control unit, wherein in the event that an unparameterised trailer electronic braking control unit (26) is detected by the further electronic control unit (27), the further electronic control unit (27) initiates copying of the contents of storage memory (52) to the main configuration memory (41) of the electronic brake control unit (26) to thereby reparameterise the trailer electronic braking control unit (26)."

V. The submissions of the Appellants can be summarized as follows:

Claim 1 of the main request introduced the limitation that the vehicle braking system of claim 1 as granted

was now "a trailer vehicle braking system" and made clear, contrary to the opinion of the Opposition Division, that the claim encompassed bidirectional detection and reparameterisation of the control units. As regards the clarity objection expressed by the Respondents in respect of the term "either one" in the characterising part of the claim, this term could, in the absence of the counterpart "or", only have one meaning in English, which was that both electronic control units had the ability to detect that the other electronic control unit was unparameterised, i.e. that detection was bidirectional. Claim 1 required that the system had two electronic control units and that each of the electronic control units had the capacity to update the other when detecting that the other was unparameterised. It did not cover the situation where only one of the electronic control units could detect whether the other was an unparameterised control unit, and in the affirmative, parameterise it.

On a fair interpretation of the originally filed documents, it was obvious that claim 1 of the main request did not extend beyond the content of the application as filed.

The subject-matter of claim 1 of the main request involved an inventive step when the prior art disclosed in D1, D2 or D11 was taken into consideration. There was nothing in D2 to suggest that reparameterisation could be bi-directional. In fact, D2 disclosed a simple master-slave arrangement. D11 simply disclosed two redundant control modules which allowed easy localisation and replacement of the defected parts.

There was nothing about reparameterisation in this document.

VI. For the Respondents, the amendments made in claim 1 of the main request gave rise to a clarity objection as well as to an objection of lack of support in the originally filed documents for the additions made in the claim (Article 123 (2) EPC).
More particularly, Respondents I contended that the expression "either one" was not clear within the meaning of Article 84 EPC 1973. This expression was ambiguous in that it could mean that either the first or the second or even both ECUs might carry out the detection and reparameterisation function.
For Respondents II the expression "either one" excluded the possibility that both ECUs could carry out said function. This expression, however, left out which one of the ECUs could carry out the detection and re-parameterisation function. Thus, contrary to the Appellants assertion, claim 1 would not be read by a skilled reader as being restricted to "bidirectional" detection and reparameterising.

Concerning the allowability of the amendments under Article 100 c) and 123 (2) EPC, Respondents I objected that the limitation introduced in claim 1 to "a trailer vehicle braking system", which found its basis in originally filed dependent claim 5, was made without including the feature "compressed air operable" of that claim. This feature was, however, intrinsically inseparable from the "trailer vehicle braking system". Leaving out this feature from claim 1 resulted therefore in an extension of subject-matter over the disclosure of the application as filed.

In the same way, Respondents I objected that paragraph [0017] of EP-A-1 1 67 147 (D0), which was cited as a basis for the introduction of the last expression of claim 1 ("wherein in the event that … braking control unit (26)"), referred to a particular case where the presence of the new ECU was indicated by a "new ECU flag signal". The feature "new ECU flag signal" should have been incorporated in claim 1 because it was inextricably linked to the detection of the unparameterised ECU. Leaving out this feature from claim 1 represented an extension of subject-matter which contravened Article 123 (2) EPC (intermediate generalisation).

Noting that claim 1 of the sole main request was the same as claim 1 of the first auxiliary request considered by the Opposition Division, both Respondents agreed with the finding of the Opposition Division that the subject-matter of the claim lacked inventive merit.

For Respondents I the nearest prior art was document D1, which showed the features of the preamble of claim 1. This document taught how to reparameterise an ECU in a trailer vehicle braking system and was not restricted to the use of a bar code (column 3, lines 49 ff.). As explained in the decision under appeal, if the skilled person looked for an easier way of reparameterising a new not yet parameterised ECU without the need of a dedicated peripheral electronic equipment, he had only to apply the teaching of D2, i.e. to use another ECU 10 having a storage memory 11 where the parameters were permanently retainable and to copy the contents of the storage memory 11 to the configuration memory of the new unparameterised ECU 20' via the bidirectional BUS

line 12. Even if the arrangement in D2 was a master and slave arrangement, there was no practical obstacle to making the exchange of parameters bidirectional, and to do so would have been entirely obvious to a skilled person when combining the teaching of D1 and D2. This point of view was confirmed by document D11 which similarly disclosed a vehicle braking system with two ECUs 5,6 which could exchange information via a bus line 9 and mutually monitor each other (column 6, lines 59-62; column 7, lines 38-45). When for any reason one ECU unit had to be exchanged (see D1: column 5, lines 55-60), it was obvious to perform the reparameterisation such that the other ECU unit could reparameterise the new one and vice-versa.

For Respondents II, even if it was accepted that claim 1 referred to bidirectional detection and reparameterisation, the subject-matter of this claim was obvious having regard to the teaching of documents D11 and D2. Document D11 was of particular relevance since it disclosed the idea of including a plurality of modular electrical control units 5,6 in a vehicle braking system and providing a data communication link 9 between the modules, thus permitting communication between the modules such that they could mutually exchange information and mutually monitor one another (D11: column 6, lines 59-62). Although not explicitly mentioned in D11, such an "electronic brake system for road vehicles" could obviously be mounted on a trailer. The teachings of D2, for example, were equally applicable as they were to D1, and given the symmetry of the control system disclosed in D11, and in particular the mutual monitoring and information exchange between the two control units, it would make

no sense to a skilled person to implement the reparameterisation idea disclosed in D2 in a unidirectional manner in the system disclosed in D11. The obvious way to carry out this implementation would be to ensure that both electronic control units could reparameterise the other.

## Reasons for the Decision

1. The appeal is admissible.

2. Main request; admissibility of the amendments

The set of claims according to the main request is identical to the set of claims according to the first auxiliary request underlying the decision under appeal but for a minor amendment of dependent claim 4 ("a trailer vehicle braking system" instead of "a vehicle braking system").

2.1 Clarity (Article 84 EPC 1973)

As to the expression "in the event of either one of said electronic control units (26,27) detecting that the other electronic control unit is an unparameterised electronic control unit, the parameterized electronic control unit can initiate a function for newly parameterising the unparameterised electronic control unit", which was objected to by the Respondents as being unclear, the Board is of the opinion that the expression is clear for a skilled reader. It means that the electronic control unit mentioned in the preamble of claim 1 can parameterise the further electronic

control unit mentioned in the characterised portion of claim 1, if it detects that the latter is unparameterised, and that the further electronic control unit can parameterise the first electronic control unit if it detects that the latter is unparameterised, i.e. detection and parameterising occur in a "bidirectional" way. This interpretation is clearly supported by the description of the patent specification. As a matter of fact, according to column 5, lines 3 to 11 in connection with Fig. 6, the contents of redundant memory 52 of ECU 27 is copied into the configuration data memory 41 of ECU 26 for reparameterising and according to column 4, lines 38 to 45 in connection with Fig. 4 the contents of configuration data memory 41 of ECU 26 is copied into the memory 52 of ECU 27 for reparameterising.

2.2 Allowability under Article 123 (2) EPC

Regarding the limitation to a "trailer vehicle braking system" introduced in claim 1, the Board does not share the view of Respondents I who considered that the introduction of this limitation without the expression "compressed air operable" resulted in an extension of the claimed subject-matter over the content of the application as filed. Several passages of the originally filed application documents D0 (see for example the introductory passages of the paragraphs [0006]: "the invention provides a trailer vehicle braking system including means…", paragraph [0007]: "According to another aspect of the invention there is provided a trailer vehicle braking system including means …" and paragraph [0013]: "In a preferred embodiment of a trailer braking system according to the

invention…") refer to a trailer vehicle braking system in general, no mention being made of the system being "compressed air operable". Hence these passages support the view that the trailer vehicle braking system of the invention is not intimately connected to the fact that it is operable by compressed air. Therefore the absence of the "compressed air operable" feature in claim 1 does not result in an unallowable extension of the claimed subject-matter in the sense of Article 123(2) EPC.

The Board also does not follow the argumentation of Respondents I, according to which the feature "new ECU flag signal" should have been incorporated in the last expression of claim 1 "wherein… control unit (26)". The passage of the original disclosure D0 which relates to the new ECU flag signal is paragraph [0017] of D0. It results from the technical content of this paragraph that the flag signal is merely a signal indicative of the status of the ECU, namely indicative of whether the ECU is a new one, i.e. an unparameterised one. This paragraph does not contain any further technical information specific to the flag signal, especially as to how that flag signal is generated. The information concerning the occurrence of a signal in the presence of an unparameterised ECU is, however, already implicitly contained in claim 1, since the detection of an unparameterised ECU by another ECU, as required by claim 1, can only occur on the basis of a corresponding signal. Leaving out the feature "new ECU flag signal" from claim 1 does not therefore contravene Article 123 (2) EPC.

3. Novelty

The subject-matter of claim 1 of the main request is novel since none of the documents cited by the Respondents discloses in combination all the features of this claim. As novelty was not contested any more by the Respondents, it is not necessary to substantiate this in any detail.

4. Inventive Step

4.1 Taking into account the limitation introduced in claim 1 to a braking system of a trailer, the Board judges that the nearest prior art is represented by document D1. D1 discloses a trailer vehicle braking system having the features of the preamble of claim 1 and especially an ECU comprising a main non-volatile configuration memory 19 which is parameterisable by the trailer manufacturer for enabling the function of the ECU to be matched to the particular trailer. This is done through an interface of the ECU which can communicate with a suitable peripheral electric equipment 11-14 (claim 10 and column 6, lines 27-46). The distinguishing features of claim 1 achieve the effect of simplifying the replacement of a damaged ECU with minimal delay or complication. Therefore the objective technical problem is to simplify the replacement of a damaged ECU. It is noted in this respect that the technical problem formulated by the Opposition Division ("…without the need of a dedicated peripheral electronic equipment") includes pointers to the solution, thereby involving inadmissible hindsight of the solution.

4.2 Starting from the braking system of D1 and under consideration of the technical problem as mentioned above, the Board takes the view that the claimed solution is not rendered obvious by the contents of the documents D2 and/or D11.

4.2.1 Document D2 refers to an arrangement including a central ECU 10 and several peripheral ECUs 13-20, these ECUs being interconnected through a data communication link (BUS 12). This "master-slave" architecture is specially adapted for a motor vehicle where a plurality of functions of devices of the vehicle (motor management, air-conditioning, park assistant, airbags, …) are respectively controlled by the plurality of peripheral ECUs (column 3, lines 4-19). It is noted in this respect, that D2 does not mention "braking" among those functions. Although D2 disloses that the central ECU 10 can parameterise a new peripheral ECU (see column 3, lines 51-59), there is nothing in D2 to suggest that parameterising of the ECUs can be bidirectional in the sense that the central ECU could be parameterised by any of the peripheral ECUs. On the contrary, when the central ECU 10 has to be (re)parameterised, this occurs by exchange/replacement of the main configuration memory 11 (column 4, lines 2-8) or in the conventional way similar to that already disclosed in D1, namely by the use of an interface able to communicate with a suitable external electronic equipment (column 4, lines 9-22). Thus, D2 does not lead to the claimed solution.

4.2.2 Document D11 describes a brake system having a special architecture with centrally disposed modules 5,6 and decentrally disposed wheel modules 1-4. Each central

module 5,6 has at least one microprocessor with a supervising function and is associated with a plurality of hierarchically subordinated and decentralised wheel modules 1-4 including their respective own intelligence with at least one microprocessor (see claim 1 of D11).

4.2.3 Even if the skilled person would have considered documents D2 and D11 for solving the problem of simplifying the replacement of a damaged parameterisable ECU in a trailer braking system, none of them specifically discloses the solution of providing such a braking system with a further electronic unit having a storage memory specially dedicated to reparameterising the main ECU by transferring data to the main configuration memory of the main ECU. The passages of D11 cited by the Respondents (column 5, lines 55-60: "simple exchangeability of components based on the modular structure") generally refers to the constructional advantage of having interchangeable modular components but does not specifically deal with the problem of (re)parameterisation of an ECU. In the same way, the statements contained in D11 and cited by the Respondents (column 6, lines 59-62 and column 7, lines 38-45) are only general considerations relating to mutually monitoring and mutual safety. There is no specific mention about (re)parameterisation here. Owing to the general principle of case law that a generic feature cannot anticipate a particular one, it cannot be seen how these documents could lead to the claimed solution.

4.3 Respondents II started from the brake system of document D11 to deny claim 1 any inventive merit. Such

a brake system which, in principle, is not intended for a trailer (see in particular column 7, lines 9-11, according to which the central modules are disposed in the central cabin) and which makes multiple use of microcomputers, is not comparable with the trailer vehicle braking system as defined in the preamble of claim 1 which comprises a conventional centrally constructed main ECU 26 (column 2, line 1 and column 2, line 21 of the patent) having only electric lines receiving signals from the various sensors and -necessarily- an electrical plug coupler to the tractor (see Fig. 1 of the patent). In the opinion of the Board, it is not realistic to start from document D11 as the nearest prior art and it is only with hindsight that Respondents I and II considered document D11 as being of particular relevance.

4.4 The Board concludes from the above that the subject-matter of claim 1 according to the main request is novel and involves an inventive step.

4.5 Dependent claims 2 to 4 contain all of the features of claim 1 and relate to further developments of the inventive concept disclosed in claim 1. They equally meet the requirements of the EPC. The description has been brought into conformity with the amendments made in the claims.

## 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 with the order to maintain the patent in amended form on the basis of
- claims 1 to 4 of the main request filed during oral proceedings,
- columns 1 and 2 of the description filed during oral proceedings,
- columns 3-5 of the description and figures 1 to 6, as granted.

The Registrar The Chairman

A. Vottner G. Pricolo