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**Datasheet for the decision
of 17 August 2021**

Case Number: T 0098/19 - 3.5.05

Application Number: 07818218.5

Publication Number: 2064106

IPC: B61L27/00

Language of the proceedings: EN

Title of invention:

DIAGNOSTIC SYSTEM AND METHOD FOR MONITORING A RAIL SYSTEM

Patent Proprietor:

Bombardier Transportation GmbH

Opponents:

KNORR-BREMSE Systeme für Schienenfahrzeuge GmbH
Siemens Aktiengesellschaft

Headword:

MONITORING A RAIL SYSTEM / Bombardier

Relevant legal provisions:

EPC Art. 100, 54, 56, 99(1), 114(2)

RPBA Art. 12(4)

Keyword:

Internal priority - double patenting - not a ground of
opposition

Late submitted material - document admitted by first instance
(no) - correct exercise of discretion (yes)

Late submitted material - document admitted (no)

Novelty - (yes)

Inventive step - non-obvious solution

Decisions cited:

G 0004/19, T 0410/96, T 0936/04, T 2563/11



Beschwerdekammern

Boards of Appeal

Chambres de recours

Boards of Appeal of the
European Patent Office
Richard-Reitzner-Allee 8
85540 Haar
GERMANY
Tel. +49 (0)89 2399-0
Fax +49 (0)89 2399-4465

Case Number: T 0098/19 - 3.5.05

D E C I S I O N
of Technical Board of Appeal 3.5.05
of 17 August 2021

Appellant 1: KNORR-BREMSE
(Opponent 1) Systeme für Schienenfahrzeuge GmbH
Moosacher Str. 80
80809 München (DE)

Representative: Prüfer & Partner mbB
Patentanwälte · Rechtsanwälte
Sohnckestraße 12
81479 München (DE)

Appellant 2: Siemens Aktiengesellschaft
(Opponent 2) Werner-von-Siemens-Straße 1
80333 München (DE)

Correspondence Address: Siemens AG
Postfach 22 16 34
80506 München (DE)

Respondent: Bombardier Transportation GmbH
(Patent Proprietor) Schöneberger Ufer 1
10785 Berlin (DE)

Representative: Alatis
3 rue Paul Escudier
75009 Paris (FR)

Decision under appeal: **Decision of the Opposition Division of the
European Patent Office posted on 14 November
2018 rejecting the oppositions filed against
European patent No. 2064106 pursuant to Article
101(2) EPC.**

Composition of the Board:

Chair A. Ritzka
Members: N. H. Uhlmann
 F. Blumer

Summary of Facts and Submissions

I. Appellant 1 (Knorr-Bremse) and appellant 2 (Siemens AG) appealed against the decision of the opposition division to reject the oppositions against European patent No. 2 064 106.

II. The opposition division decided that no ground of opposition prejudiced the maintenance of the patent. The late filed document E100 was not admitted into the proceedings. Furthermore, appellant 2 suggested that the opposition division should examine the issue of double patenting on its own motion. The division did not.

III. The decision under appeal made reference to, *inter alia*, following prior art documents:

E1 US 6 125 311
E10 WO 01/18682
E11 GB 2 378 248
E12 GB 2 392 983
E14 US 5 867 404
E24 DE 198 27 271
E100 US 6 985 803

IV. In its statement setting out the grounds of appeal appellant 1 requested that the decision be set aside and the patent be revoked. It submitted two prior-art documents:

E110 US 5 955 942
E111 Chunsheng Yang, Sylvain Létourneau, "Learning to Predict Train Wheel Failures", KDD'05, August 21-24, 2005, Chicago, Illinois, USA

Appellant 1 requested the board "to re-examine the issue of double patenting on its own motion" and that E100 be admitted into the proceedings.

- V. In its statement setting out the grounds of appeal appellant 2 requested that the decision be set aside and the patent be revoked. Additionally, appellant 2 requested a stay of the appeal proceedings in view of the pending referral case G 4/19.
- VI. The respondent filed a reply to the appeals. It requested that:
- the appeal of appellant 2 be rejected as inadmissible;
 - the request to stay the proceedings be rejected;
 - the late filed documents E100, E110 and E111 be disregarded;
 - the appeals be dismissed or the patent be maintained in amended form, based on one of the attached auxiliary requests 1 to 3.
- VII. In a letter dated 23 August 2019 appellant 2 addressed the aspect of admissibility of its appeal.
- VIII. With letter dated 3 December 2019 appellant 1 submitted further arguments.
- IX. The board summoned the parties to oral proceedings.
- In a communication pursuant to Article 15(1) RPBA 2020, the board set out its provisional view of the case.
- X. With a letter dated 27 July 2021, appellant 1 submitted comments on the provisional view of the board.
- XI. In a letter dated 3 August 2021, appellant 2 submitted comments on the provisional view of the board.

XII. In the course of the oral proceedings the respondent withdrew the request that the appeal of appellant 2 be held inadmissible.

XIII. Final requests

Appellant 1 and appellant 2 requested that the decision under appeal be set aside and that the European patent No. 2 064 106 be revoked.

The respondent requested that the appeals be dismissed or, subsidiarily, that the patent be maintained on the basis of any one of auxiliary requests 1 to 3 as filed with the reply to the statements setting out the grounds of appeal.

XIV. Claim 1 of the patent as granted reads as follows:

"A diagnostic system for monitoring a rail system comprising a rail infrastructure and at least one fleet of rail vehicles circulating on the rail infrastructure, the diagnostic system comprising:

- on-board data acquisition means comprising sensors (22) and pre-processing means (26) responsive to the sensors for generating rail vehicle-related sensor data representative of the operation of monitored rail vehicle components and/or of the rail vehicle environment of each rail vehicle of the fleet,
- rail vehicle positioning means (23) for generating position data representative of the position of each rail vehicle of the fleet;
- rail infrastructure data acquisition means comprising sensors (18) fixed relative to the rail infrastructure and pre-processing means (24) responsive to the sensors for generating rail infrastructure-related sensor data representative of rail infrastructure components and/or of the rail infrastructure environment;

- a database (20) of the rail infrastructure comprising location data representative of the location of each of the sensors fixed relative to the rail infrastructure;
- data processing means (28) for merging the rail infrastructure-related sensor data, the rail vehicle-related sensor data from at least a subset of several rail vehicles of the fleet, the location data and the position data and for responsively generating series of categorized event data representative of the occurrence of categorized events at a given location on the rail infrastructure over time and/or on a given rail vehicle of the fleet over time; and
- a data comparing means (32) for comparing the series of categorized events data representative of at least one category of events over any predetermined period of time and for identifying any location of the rail infrastructure and/or any rail vehicle which exhibits a series of events data that is significantly different from the other locations of the rail infrastructure and/or rail vehicles of the fleet over said predetermined period of time."

XV. The wording of the claims of the auxiliary requests is of no relevance for this decision.

Reasons for the Decision

1. The patent in suit pertains to a system and method for monitoring a rail system. Sensors fixed to vehicles and to the rail infrastructure collect data. Additionally, position data of the vehicles is collected and location data representative of the sensors fixed to the infrastructure is stored in a database. Using the sensor data, the position and the location data, series of event data are generated. These series represent the occurrence over time of events at locations of the infrastructure or at a vehicle.

The series of events data are compared over a period of time to identify locations or vehicles exhibiting series of event data that is significantly different from the series of other vehicles or locations.

2. Double patenting

2.1 The appellants requested the board to examine the issue of double patenting on its own motion.

2.2 The board does not accede to the appellants' request relating to examination of the issue of double patenting.

2.3 The board holds that double patenting is not a ground of opposition (Article 100 EPC includes an exhaustive list), in agreement with the decision T 0936/04, point 2.3. In the case at hand, the patent in suit was not amended in the course of the opposition proceedings.

2.4 Question 1 referred to the Enlarged Board in case G 4/19 pertains to a patent application and the Enlarged board considered (point 4) that the referred question is restricted to (the applicability of the prohibition during) substantive examination proceedings under Article 94 EPC before the Examining Division. Headnote 1 of decision G 4/19 refers explicitly to refusing of a patent application and to Article 97(2) EPC.

2.5 G 4/19 in point 32 only states that the EPC chapter titled "Common provisions governing procedure" refers (also) to the opposition procedure. However, there is no indication that the G 4/19 outcome applies in the opposition procedure.

2.6 Appellant 1 referred to decision T 2563/11 and argued that while this decision related to patent applications it was also transferable to two granted patents.

The board is not persuaded. T 2563/11 pertains exclusively to a refusal of a patent application due to double patenting.

Appellant 1 pointed additionally to a number of chapters in the Case Law Book. However, none of these chapters relates to the situation in the present case, in which the patent in suit was not amended in the course of the opposition proceedings.

- 2.7 Appellant 2 argued that an examination with regard to the prohibition of double patenting would not inadequately delay the opposition procedure.

The board disagrees. How long an examination of this issue would take is not relevant, because the grounds of opposition in Article 100 EPC are clear and exhaustive.

- 2.8 The request to stay the proceedings in view of referral G 4/19 became moot after the decision issued on 22 June 2021.

3. Claim interpretation

- 3.1 The last two integers of claim 1 are formulated in the "means plus function" form. They refer to "data processing means for merging ... and generating" and to "data comparing means for comparing ... and identifying". Data processing means and data comparing means are components of a computer of known type which is set up to operate according to the claimed functions. Thus, the board considers that these claim integers of the "means plus function" type must be interpreted as requiring means adapted to carry out the given function as opposed to means suitable for carrying it out, following T 410/96, points 4 to 6.

3.2 The feature "predetermined period of time" in claim 1

The board holds that this period of time by necessity encompasses past time intervals. It is evident that the period of time is, in general, longer than a single instant. Additionally, the period of time cannot include time intervals in the future, for which no sensor data is yet available.

Hence, the board does not agree with the finding in the decision under appeal, section 2.3 on page 10, that "historic data measured in the past and saved at that time cannot be considered to fall under claim 1".

The wording "over said predetermined period of time" in the last line of claim 1 refers to the antecedent wording "over any predetermined period of time".

3.3 The last integer in claim 1, worded

"a data comparing means (32) for comparing the series of categorized events data representative of at least one category of events over any predetermined period of time and for identifying any location of the rail infrastructure and/or any rail vehicle which exhibits a series of events data that is significantly different from the other locations of the rail infrastructure and/or rail vehicles of the fleet over said predetermined period of time"

specifies that a plurality of series of categorized events data are compared. Each of the series comprises event data which is, according to the definition of the data processing means, "representative of the occurrence of categorized events" at a given location and/or on a given rail vehicle. Furthermore, the series of events data stem from different locations or different rail vehicles, because otherwise the identifying of e.g. a location which exhibits a series

of events data that is significantly different from the series of events data from other locations will not be possible.

- 3.4 Appellant 1 argued that the series of categorized event data may stem from different points of time and not from different locations or different rail vehicles.

The board does not agree. Claim 1 clearly states "any location ... other locations" and "any rail vehicle ... other rail vehicles". Thus, different points of time do not meet the claim's language.

- 3.5 The wording "and/or" in the last two lines of the "data comparing means" is not fully precise. However, the skilled person would read it so that a location's event data is compared with event data from other locations and/or the rail vehicle's event data is compared with event data from other rail vehicles.

- 3.6 Appellant 2 argued that a plurality of series of event data could only be compared by using statistical methods. The comparing as claimed could be implemented by first calculating an average series of event data and then comparing this average with the individual series.

The board agrees and the respondent did not counter-argue.

4. Novelty and inventive step in view of E11

- 4.1 The appellants argued that document E11 disclosed all features of the subject-matter of claim 1.

- 4.2 The board is not persuaded, for the following reasons.

- 4.3 E11 discloses that data from sensors associated with components from plurality of vehicles is collected over time. Based on this data, a vehicle or a component of vehicle is identified. It is predicted if a fault is

likely to occur in the vehicle or the component (see E11's claim 1).

4.4 E11 does not disclose that data from a sensor which is collected over a period of time is compared to data from another sensor which is collected over the same period of time. Thus, E11 does not disclose the data comparing means as claimed in claim 1 of the contested patent.

4.5 In particular, E11 (page 8, lines 18 to 20, page 9, lines 10 to 13 and claim 1) teaches that a model of a normal vehicle is derived, based on the data received from the sensors from the plurality of vehicles. This model includes acceptable ranges of data for the components. Then, **successive** monitored data is compared with the acceptable ranges of the model. In other words, the most recent data is compared to a model made up based on previous data.

Furthermore, E11 does not disclose that deriving of the model of a normal vehicle involves any kind of comparing values from sensors. Page 11, lines 8 to 18 of E11 does not teach how the model of a normal vehicle is calculated.

Appellant 2 argued that the simplest method for deriving a normal model would involve the calculation of average values and standard deviation. Thus, E11 disclosed implicitly comparing of series of sensor data.

The board disagrees. While E11 does not disclose in detail how the normal model is derived, it teaches that the normal model takes the form of a state matrix (page 8, line 14 to page 9, line 5). E11 refers as well to a "curved fitting algorithm" which is used to check new

data. This teaching in document E11 contradicts appellant 2's argument regarding implicit disclosure.

Consequently, E11 does not anticipate the implementation of claim 1 of the patent in suit suggested by appellant 2 (see section 3.6 above).

- 4.6 Thus, the subject-matter of claim 1 is distinguished from the disclosure of E11 in that the series of categorized events data representative of at least one category of events over any predetermined period of time are compared.
- 4.7 The distinguishing features lead to the technical effect of quicker identifying of a location or rail vehicle which exhibits a series of events data that is significantly different from the other locations of the rail infrastructure and/or rail vehicles of the fleet over the predetermined period of time. The identifying is quicker because it takes place without previously making or updating a model.
- 4.8 The objective technical problem is to adapt E11's method as to enable quicker identifying of a location or rail vehicle which exhibits a series of events data that is significantly different from the other locations of the rail infrastructure and/or rail vehicles of the fleet over the predetermined period of time.
- 4.9 Facing this problem the skilled person would not come up with the claimed solution. E11 does not suggest the comparing as claimed and it does not belong to the general knowledge of the skilled person.
- 4.10 With regard to inventive step of the subject matter of claim 1 in view of the disclosure of document E11 alone appellant 2 argued that comparing of a plurality of data series amounted to a conventional and thus obvious

alternative for the skilled person. It did not explain why such an alternative was conventional or obvious.

The board holds that it is not apparent why the skilled person would come up with an alternative, even less with the comparing feature as claimed.

4.11 Consequently, the subject-matter of claim 1 involves an inventive step having regard to the disclosure of document E11 alone.

5. Novelty and inventive step in view of E10

5.1 The board holds that document E10 does not disclose the data comparing means in claim 1 of the patent in suit.

5.2 Appellant 1 argued that E10's disclosure is not limited to pre-existing model data, pointing to page 9, lines 16 to 21.

The board agrees that E10 does not use only model data. However, the non-standard data mentioned in the above passage of E10 is not compared to other data.

Appellant 1 submitted also that according to page 9, line 22 and the following, the non-standard dataset was reviewable at high level to determine the total delay as well as individual components of the delay. A review inherently had to mean a comparison, as otherwise, a review of the non-standard data would make no sense.

This argument is not convincing. According to E10, page 9, line 21 and lines 23 to 28, a manager/user is examining the non-standard data. Thus, even if there were any (implicit) comparing, it is not done by comparing means.

Furthermore, E10 does not disclose that a location or a rail vehicle is identified which exhibits different event data.

5.3 Appellant 2 submitted that E10 (page 8, lines 6 to 13) disclosed comparison of failure rates at different locations.

The board holds that comparing of two failure rates does not anticipate the claimed comparing of series of categorized events data.

It submitted additionally that E10 disclosed that "The data collected from the sub-systems are compared to a standard data set" (page 2, lines 7 and 8).

However, E10 does not disclose how the standard data set is calculated.

5.4 With regard to inventive step, Appellant 1 submitted that the subject-matter of claim 1 did not involve an inventive step having regard to the disclosure of document E10 in combination with the general knowledge of the skilled person.

This submission was not supported by any specific argument. The board is not aware of any pertinent general knowledge and it is not apparent how a skilled person would modify E10's teaching to arrive at the subject-matter of claim 1.

5.5 For these reasons, the subject-matter of claim 1 involves an inventive step having regard to the disclosure of document E10 alone.

6. Novelty and inventive step in view of E12

6.1 The board holds that document E12 does not disclose the data comparing means in claim 1 of the patent in suit.

6.2 Appellant 1 submitted that E12, page 15, lines 9 to 17, disclosed that "series of events from sensors 53 and 54 are compared with data from sensors 51 and 52", claim 29 of E12 anticipated the "aspect of a predetermined

time" and E12 disclosed data collected by infrastructure sensors.

6.3 The board notes that, as argued by the respondent, all four sensors 51 to 54 are mounted on the same railway vehicle. E12's claim 29 refers to a system comprising a motor, in which data relating to this motor is compared with data corresponding to predetermined conditions of the system.

6.4 Appellant 1 argued that according to E12 there was a possibility to compare different data (of the train and of the infrastructure) and a comparison of data from different locations (or even of the same location) was inherently performed.

The board is not persuaded. A "possibility to compare" does not anticipate the claimed data comparing means. Furthermore, E12 does not disclose the identifying of a location or rail vehicle.

6.5 Thus, E12 does not anticipate the claimed comparing of series of categorized events data as to identify a rail vehicle which exhibits events data which is significantly different from the other rail vehicles.

6.6 With regard to inventive step, Appellant 1 submitted that the subject-matter of claim 1 did not involve an inventive step having regard to the disclosure of document E12 in combination with the general knowledge of the skilled person.

This submission was not supported by any specific argument and is thus not convincing.

6.7 For these reasons, the subject-matter of claim 1 involves an inventive step having regard to the disclosure of document E12.

7. Admissibility of E100

7.1 Document E100 was submitted by appellant 1 outside the opposition period of nine months. The opposition division did not admit this document into the proceedings.

7.2 The opposition division has a discretion not to admit prior art documents submitted late. It is not for the board of appeal to review all the facts and circumstances of the case as if it were in place of the division and decide whether it would have exercised the discretion in the same way unless the division has not exercised its discretion in accordance with the right principles or has done so but in an unreasonable way (see G 7/93, point 2.6 of the Reasons).

7.3 In the case at hand, the opposition division took into account the right principles in a reasonable way.

7.4 Appellant 1 pointed to column 6, line 40 and the following lines and column 7, lines 13 to 16 of E100.

However, these passages do not disclose comparing the series of categorized events data representative of at least one category of events over any predetermined period of time and identifying a location or rail vehicle which exhibits different event data. In fact, in E100 collected data is compared to historical data, i.e. the comparing does not take place over any predetermined period of time.

7.5 In view of the explanations in section 3. above, *prima facie* document E100 is not more pertinent than the documents which were submitted within the opposition period of nine months.

7.6 For these reasons, the board confirms the discretionary decision of the opposition division to not admit

document E100 and does not admit E100 into the appeal proceedings.

8. Inventive step in view of E12 combined with E14

8.1 Appellant 1 submitted that document E14 disclosed that historical status data is compared with present status data in order to detect anomalies in a moving railcar vehicle (column 2, lines 24 to 31, column 13, lines 3 to 13 and Figure 8) and that "such historical status data are undoubtedly status data of any predetermined time interval".

8.2 The board holds that E14 does not disclose comparing of series of data as to identify a rail vehicle or a location in the infrastructure which exhibits data which is significantly different from the other rail vehicles or locations. Instead, present status data of a rail vehicle is compared with historical status data. E14 does not teach that series of categorized events data representative of events over any predetermined period of time are compared.

8.3 This, even if the skilled person were to combine the disclosure of documents E12 and E14, they would not arrive at the subject-matter of claim 1. Consequently, the subject-matter of claim 1 involves an inventive step having regard to the disclosure of document E12 in combination with document E14.

9. Inventive step in view of E10 combined with E11

9.1 Appellant 2 argued that the skilled person would adapt the disclosure of E10 by calculating E10's standard data set according to the teaching of E11 regarding the normal model. In this way they would arrive at the subject-matter claimed.

- 9.2 The board disagrees. As mentioned above (section 4.5), E11 does not explain how the normal model is generated and does not disclose the comparing as claimed. Furthermore, E11's normal model includes acceptable ranges, which do not fit to E10's standard data set.
- 9.3 Appellant 2 did not explain why and how the skilled person would combine the disclosures of E10 and E11.
- 9.4 For these reasons, even if the skilled person were to combine the disclosure of documents E10 and E11, they would not arrive at the subject-matter of claim 1.
10. Inventive step in view of E110 combined with E111 and admissibility of E110 and E111
- 10.1 The documents E110 and E111 were submitted by appellant 1 together with its statement setting out the grounds of appeal. Hence, they were submitted a number of years after the expiry of the nine months opposition period. At the same time, the patent was not amended in the course of the opposition procedure.
- 10.2 The board notes that according to the communication of the opposition division issued on 22 February 2018 the subject-matter of the independent claims appeared to be novel and to involve an inventive step. Thus, appellant 1 could and indeed should have submitted documents E110 and E111 for consideration by the opposition division, as a direct response to this communication at the latest. In this regard, the board would like to emphasize that the appeal proceedings do not form a continuation of the opposition proceedings.
- 10.3 For the above reasons, the board does not admit documents E110 and E111 into the proceedings, pursuant to Articles 114(2) and 99(1) EPC and Article 12(4) RPBA 2007.

11. Inventive step in view of E10 (or E12 or E1) combined with E24

11.1 Appellant 2 argued that document E24 disclosed that the software in a central computer calculated a statistical run of a track and outlier values and that automatic notifications regarding improvement of the track could be generated (column 14, lines 58 to 62). To determine outlier values the series of event data must be compared with each other.

The board observes that E24 does not disclose explicitly any specific meaning of the outlier values. In view of the teaching regarding improvement of the track the skilled person would deduce that the outlier relates to a track segment. However, even when one accepts that the determination of outlier values implicitly involves comparing values, E24 does not disclose that series of categorized events data representative of events over any predetermined period of time are compared.

11.2 The correlation analysis disclosed in column 13, lines 24 to 26 is performed by a "TKR", which is a computer located in the locomotive. This analysis can evidently consider data from only one rail vehicle.

11.3 For these reasons, document E24 does not disclose the data comparing means of claim 1. Furthermore, none of the documents E1, E10 and E12 discloses the data comparing means. Consequently, the combined teaching of these documents does not lead to the subject-matter of claim 1.

12. Conclusion

The grounds of opposition submitted by the appellants do not prejudice the maintenance of the patent in suit.

Order

For these reasons it is decided that:

The appeals are dismissed.

The Registrar:

The Chair:



K. Götz-Wein

A. Ritzka

Decision electronically authenticated