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**Datasheet for the decision
of 16 July 2025**

Case Number: T 0692/23 - 3.5.04

Application Number: 17153513.1

Publication Number: 3355293

IPC: G08G1/16, B60R1/00, B60T7/22,
B60T8/17, B60T8/171, B60T8/88,
B60W50/00

Language of the proceedings: EN

Title of invention:
A SENSOR ARRANGEMENT AND A METHOD FOR DETECTING AN OBJECT
AROUND A TRAILER OF A VEHICLE

Applicant:
KNORR-BREMSE Systeme für Nutzfahrzeuge GmbH

Headword:

Relevant legal provisions:
EPC Art. 52(1), 54(2), 56, 111(1)
EPC R. 103
RPBA 2020 Art. 11, 12(4), 12(6), 13(2)

Keyword:

Novelty - (no)

Inventive step - (no)

Amendment to case - admitted (no)

Remittal - special reasons for remittal (no)

Reimbursement of appeal fee - (no)

Decisions cited:

T 0291/93

Catchword:



Beschwerdekammern
Boards of Appeal
Chambres de recours

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Case Number: T 0692/23 - 3.5.04

D E C I S I O N
of Technical Board of Appeal 3.5.04
of 16 July 2025

Appellant: KNORR-BREMSE Systeme für Nutzfahrzeuge GmbH
(Applicant) Moosacher Strasse 80
80809 München (DE)

Representative: LifeTech IP
Spies & Behrndt Patentanwälte PartG mbB
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Decision under appeal: **Decision of the Examining Division of the
European Patent Office posted on 11 November
2022 refusing European patent application
No. 17153513.1 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chair B. Willems
Members: M. Paci
B. Burm-Herregodts

Summary of Facts and Submissions

I. The appeal is against the examining division's decision refusing European patent application No. 17 153 513.1, published as European patent application No. 3 355 293 A1.

II. In the decision under appeal, the examining division cited, *inter alia*, the following document.

D6: DE 10 2005 022421 A1

1. The decision under appeal was based on the following grounds.

- The independent claims of the **main request and auxiliary requests AR1 to AR13 and AR15 to AR18 then on file** lacked clarity (Article 84 EPC).
- The subject-matter of the independent claims of **auxiliary request AR14 then on file** lacked novelty over prior-art document D6 (Articles 52(1) and 54 EPC).
- **Auxiliary request AR19 then on file** was not admitted into the proceedings under Rule 137(3) EPC.

III. The applicant (appellant) filed notice of appeal. With its statement of grounds of appeal, the appellant maintained the main request and auxiliary requests AR1 to AR19 and filed amended claims according to **auxiliary requests AR20 to AR25**.

IV. The appellant was summoned to oral proceedings. In a communication under Article 15(1) RPBA, the board introduced document D8 (DE 10 2016 001189 A1) into the

proceedings pursuant to Article 114(1) EPC and gave the following preliminary opinion.

- The subject-matter of claims 1, 2 to 5, 7, 8, 11, 12 and 13 of the main request lacked novelty over the disclosure of document D8 (Article 54 EPC).
- The subject-matter of claims 6, 9 and 10 of the main request lacked inventive step starting from the disclosure of document D8 (Article 54 EPC).
- The subject-matter of all the claims of auxiliary requests AR1 to AR18 lacked either novelty over the disclosure of document D8 or inventive step starting from the disclosure of document D8.
- The board was inclined not to admit auxiliary request AR19 into the appeal proceedings (Article 12(6) RPBA). In any case, the additional features of claim 1 of auxiliary request AR19 could not render the subject-matter of claims 1 and 11 inventive.
- The board was inclined not to admit auxiliary requests AR20 to AR25 into the proceedings (Article 12(4) RPBA) because they had *prima facie* no prospect of meeting the requirements of Article 56 EPC.
- It was questionable whether claims 1 and 12 of the main request defined all the essential features for detecting an object behind the trailer (Article 84 EPC).
- The board doubted that the skilled person would have arrived at the examining division's interpretation of document D6. Hence, the examining division had erred in its finding that document D6 disclosed all the features of claim 1 of auxiliary request AR14.

V. With its reply dated 16 June 2025, the appellant filed amended claims of auxiliary AR26, AR27 and AR28. In this letter, the appellant requested that the decision under appeal be set aside and that a patent be granted on the basis of the claims of the main request underlying the decision under appeal or, alternatively, one of auxiliary requests AR1 to AR19 underlying the decision under appeal; or one of auxiliary requests AR20 to AR25 filed with the statement of grounds of appeal; or to remit the case back to the department of the first instance; or to reimburse at least part of the appeal fee; or to decide on allowability with respect to the auxiliary requests AR26 to AR28 as filed with the letter dated 16 June 2025.

VI. The board held oral proceedings on 16 July 2025.

The appellant's final requests were those stated under point V. above.

At the end of the oral proceedings, the Chair announced the board's decision.

VII. Claim 1 of the appellant's requests reads as follows:

Main request

"A sensor arrangement for detecting an object (60) in a surrounding of a trailer (40) when towed by a vehicle (10),

characterized by:

- at least one sensor (110) mountable at a rear side of the vehicle (10) with a field of view (115) underneath

the trailer (40) and configured to capture a detection signal from the object (60); and

- a control unit (120) configured to receive a sensor signal from the at least one sensor (110), wherein the sensor signal is indicative of the object (60) and the control unit (120) is configured to confirm a presence of the object (60) behind the trailer (40)."

Auxiliary request AR1

"A sensor arrangement for detecting an object (60) in a surrounding of a trailer (40) towed by a vehicle (10) and when sensor arrangement will be mounted on the vehicle (10),

characterized by:

- at least one sensor (110) mountable at a rear side of the vehicle (10) with a field of view (115) underneath the trailer (40) and configured to capture a detection signal from the object (60) when it will be mounted on the vehicle (10); and

- a control unit (120) configured to receive a sensor signal from the at least one sensor (110), wherein the sensor signal is indicative of the object (60) and the control unit (120) is configured to confirm a presence of the object (60) behind the trailer (40) when it will be mounted on the vehicle (10),

wherein the sensor arrangement, when it will be mounted on the vehicle (10), allows to cover a blind spot behind the trailer (40) which is normally invisible from the vehicle (10) since mirrors of a driver do not cover this area."

Auxiliary request AR2

"A vehicle (10) with a sensor arrangement for detecting an object (60) in a surrounding of a trailer (40) when towed by the vehicle (10),

characterized by :

- at least one sensor (110) mounted at a rear side of the vehicle (10) with a field of view (115) underneath the trailer (40) and configured to capture a detection signal from the object (60); and

- a control unit (120) configured to receive a sensor signal from the at least one sensor (110), wherein the sensor signal is indicative of the object (60) and the control unit (120) is configured to confirm a presence of the object (60) behind the trailer (40),

wherein the sensor arrangement allows to cover a blind spot behind the trailer (40) which is normally invisible from the vehicle (10) since mirrors of a driver do not cover this area."

Auxiliary request AR3

"A sensor arrangement for detecting an object (60) in a surrounding of a trailer (40) towed by a vehicle (10) and when sensor arrangement will be mounted on the vehicle (10),

characterized by:

- at least one sensor (110) mountable at a rear side of the vehicle (10) with a field of view (115) underneath the trailer (40) and configured to capture a detection signal from the object (60) when it will be mounted on the vehicle (10); and

- a control unit (120) configured to receive a sensor signal from the at least one sensor (110), wherein the sensor signal is indicative of the object (60) and the control unit (120) is configured to confirm a presence of the object (60) behind the trailer (40) when it will be mounted on the vehicle (10),

wherein the sensor arrangement, when it will be mounted on the vehicle (10), allows to cover a blind spot behind the trailer (40) which is normally invisible from the vehicle (10) since mirrors of a driver do not cover this area,
and wherein the control unit (120) is further configured to acquire information about a length of the trailer (40) from a data base or a storage device on the vehicle and to take this length information into account to determine a distance from the object (60) to the rear side (12) of the trailer (40)."

Auxiliary request AR4

"A vehicle (10) with a sensor arrangement for detecting an object (60) in a surrounding of a trailer (40) when towed by the vehicle (10),
characterized by :

- at least one sensor (110) mounted at a rear side of the vehicle (10) with a field of view (115) underneath the trailer (40) and configured to capture a detection signal from the object (60); and
- a control unit (120) configured to receive a sensor signal from the at least one sensor (110), wherein the sensor signal is indicative of the object (60) and the control unit (120) is configured to confirm a presence of the object (60) behind the trailer (40),
wherein the sensor arrangement, when it will be mounted on the vehicle (10), allows to cover a blind spot behind the trailer (40) which is normally invisible from the vehicle (10) since mirrors of a driver do not cover this area,
and wherein the control unit (120) is further configured to acquire information about a length of the trailer (40) from a data base or a storage device on the vehicle and to take this length information into

account to determine a distance from the object (60) to the rear side (12) of the trailer (40)."

Auxiliary request AR5

"A sensor arrangement for detecting an object (60) in a surrounding of a trailer (40) towed by a vehicle (10) and when sensor arrangement will be mounted on the vehicle (10),

characterized by:

- at least one sensor (110) mountable at a rear side of the vehicle (10) with a field of view (115) underneath the trailer (40) and configured to capture a detection signal from the object (60) when it will be mounted on the vehicle (10); and

- a control unit (120) configured to receive a sensor signal from the at least one sensor (110), wherein the sensor signal is indicative of the object (60) and the control unit (120) is configured to confirm a presence of the object (60) behind the trailer (40) when it will be mounted on the vehicle (10),

wherein the sensor arrangement, when it will be mounted on the vehicle (10), allows to cover a blind spot behind the trailer (40) which is normally invisible from the vehicle (10) since mirrors of a driver do not cover this area,

and wherein the control unit (120) is further configured to acquire information about a length of the trailer (40) from a data base or a storage device on the vehicle and to take this length information into account to determine a distance from the object (60) to the rear side (12) of the trailer (40),

and wherein the control unit (120) is further configured to distinguish sensor signals received from components of the trailer and the detection signal received from the object (60), and is configured to

ignore sensor signals received from the components of the trailer (40) when confirming the presence of the object (60)."

Auxiliary request AR6

"A vehicle (10) with a sensor arrangement for detecting an object (60) in a surrounding of a trailer (40) when towed by the vehicle (10), characterized by :

- at least one sensor (110) mounted at a rear side of the vehicle (10) with a field of view (115) underneath the trailer (40) and configured to capture a detection signal from the object (60); and

- a control unit (120) configured to receive a sensor signal from the at least one sensor (110), wherein the sensor signal is indicative of the object (60) and the control unit (120) is configured to confirm a presence of the object (60) behind the trailer (40)

wherein the sensor arrangement, when it will be mounted on the vehicle (10), allows to cover a blind spot behind the trailer (40) which is normally invisible from the vehicle (10) since mirrors of a driver do not cover this area,

and wherein the control unit (120) is further configured to acquire information about a length of the trailer (40) from a data base or a storage device on the vehicle and to take this length information into account to determine a distance from the object (60) to the rear side (12) of the trailer (40),

and wherein the control unit (120) is further configured to distinguish sensor signals received from components of the trailer and the detection signal received from the object (60), and is configured to ignore sensor signals received from the components of

the trailer (40) when confirming the presence of the object (60)."

Auxiliary request AR7

"A sensor arrangement for detecting an object (60) in a surrounding of a trailer (40) towed by a vehicle (10) and when sensor arrangement will be mounted on the vehicle (10),

characterized by :

- at least one sensor (110) mountable at a rear side of the vehicle (10) with a field of view (115) underneath the trailer (40) and configured to capture a detection signal from the object (60) when it will be mounted on the vehicle (10); and

- a control unit (120) configured to receive a sensor signal from the at least one sensor (110), wherein the sensor signal is indicative of the object (60) and the control unit (120) is configured to confirm a presence of the object (60) behind the trailer (40) when it will be mounted on the vehicle (10),

wherein the sensor arrangement, when it will be mounted on the vehicle (10), allows to cover a blind spot behind the trailer (40) which is normally invisible from the vehicle (10) since mirrors of a driver do not cover this area,

and wherein the control unit (120) is further configured to acquire information about a length of the trailer (40) from a data base or a storage device on the vehicle and to take this length information into account to determine a distance from the object (60) to the rear side (12) of the trailer (40),

and wherein the control unit (120) is further configured to distinguish sensor signals received from components of the trailer and the detection signal received from the object (60), and is configured to

ignore sensor signals received from the components of the trailer (40) when confirming the presence of the object (60),
and wherein the control unit (120) is configured to detect the object (60) based on signals reflected by ground (80) or an obstacle between the object (60) and the at least one sensor (110)."

Auxiliary request AR8

"A vehicle (10) with a sensor arrangement for detecting an object (60) in a surrounding of a trailer (40) when towed by the vehicle (10),

characterized by :

- at least one sensor (110) mounted at a rear side of the vehicle (10) with a field of view (115) underneath the trailer (40) and configured to capture a detection signal from the object (60); and
- a control unit (120) configured to receive a sensor signal from the at least one sensor (110), wherein the sensor signal is indicative of the object (60) and the control unit (120) is configured to confirm a presence of the object (60) behind the trailer (40)

wherein the sensor arrangement, when it will be mounted on the vehicle (10), allows to cover a blind spot behind the trailer (40) which is normally invisible from the vehicle (10) since mirrors of a driver do not cover this area,

and wherein the control unit (120) is further configured to acquire information about a length of the trailer (40) from a data base or a storage device on the vehicle and to take this length information into account to determine a distance from the object (60) to the rear side (12) of the trailer (40),
and wherein the control unit (120) is further configured to distinguish sensor signals received from

components of the trailer and the detection signal received from the object (60), and is configured to ignore sensor signals received from the components of the trailer (40) when confirming the presence of the object (60), and wherein the control unit (120) is configured to detect the object (60) based on signals reflected by ground (80) or an obstacle between the object (60) and the at least one sensor (110)."

Auxiliary request AR9

"A sensor arrangement for detecting an object (60) in a surrounding of a trailer (40) towed by a vehicle (10) and when sensor arrangement will be mounted on the vehicle (10),

characterized by:

- at least one sensor (110) mountable at a rear side of the vehicle (10) with a field of view (115) underneath the trailer (40) and configured to capture a detection signal from the object (60) when it will be mounted on the vehicle (10); and

- a control unit (120) configured to receive a sensor signal from the at least one sensor (110), wherein the sensor signal is indicative of the object (60) and the control unit (120) is configured to confirm a presence of the object (60) behind the trailer (40) when it will be mounted on the vehicle (10),

wherein the sensor arrangement, when it will be mounted on the vehicle (10), allows to cover a blind spot behind the trailer (40) which is normally invisible from the vehicle (10) since mirrors of a driver do not cover this area,

and wherein the control unit (120) is further configured to acquire information about a length of the trailer (40) from a data base or a storage device on

the vehicle and to take this length information into account to determine a distance from the object (60) to the rear side (12) of the trailer (40), and wherein the control unit (120) is further configured to distinguish sensor signals received from components of the trailer and the detection signal received from the object (60), and is configured to ignore sensor signals received from the components of the trailer (40) when confirming the presence of the object (60), and wherein the control unit (120) is configured to detect the object (60) based on signals reflected by ground (80) or an obstacle between the object (60) and the at least one sensor (110), and wherein the control unit (120) is configured to detect, at a beginning of a trip, the trailer (40) itself or one of its components (42)."

Auxiliary request AR10

"A vehicle (10) with a sensor arrangement for detecting an object (60) in a surrounding of a trailer (40) when towed by the vehicle (10), characterized by :

- at least one sensor (110) mounted at a rear side of the vehicle (10) with a field of view (115) underneath the trailer (40) and configured to capture a detection signal from the object (60); and
- a control unit (120) configured to receive a sensor signal from the at least one sensor (110), wherein the sensor signal is indicative of the object (60) and the control unit (120) is configured to confirm a presence of the object (60) behind the trailer (40)

wherein the sensor arrangement, when it will be mounted on the vehicle (10), allows to cover a blind spot behind the trailer (40) which is normally invisible

from the vehicle (10) since mirrors of a driver do not cover this area,
and wherein the control unit (120) is further configured to acquire information about a length of the trailer (40) from a data base or a storage device on the vehicle and to take this length information into account to determine a distance from the object (60) to the rear side (12) of the trailer (40),
and wherein the control unit (120) is further configured to distinguish sensor signals received from components of the trailer and the detection signal received from the object (60), and is configured to ignore sensor signals received from the components of the trailer (40) when confirming the presence of the object (60),
and wherein the control unit (120) is configured to detect the object (60) based on signals reflected by ground (80) or an obstacle between the object (60) and the at least one sensor (110),
and wherein the control unit (120) is configured to detect, at a beginning of a trip, the trailer (40) itself or one of its components (42)."

Auxiliary request AR11

"A sensor arrangement for detecting an object (60) in a surrounding of a trailer (40) towed by a vehicle (10) and when sensor arrangement will be mounted on the vehicle (10),

characterized by:

- at least one sensor (110) mountable at a rear side of the vehicle (10) with a field of view (115) underneath the trailer (40) and configured to capture a detection signal from the object (60) when it will be mounted on the vehicle (10); and

- a control unit (120) configured to receive a sensor signal from the at least one sensor (110), wherein the sensor signal is indicative of the object (60) and the control unit (120) is configured to confirm a presence of the object (60) behind the trailer (40) when it will be mounted on the vehicle (10),
wherein the sensor arrangement, when it will be mounted on the vehicle (10), allows to cover a blind spot behind the trailer (40) which is normally invisible from the vehicle (10) since mirrors of a driver do not cover this area,
and wherein the control unit (120) is further configured to acquire information about a length of the trailer (40) from a data base or a storage device on the vehicle and to take this length information into account to determine a distance from the object (60) to the rear side (12) of the trailer (40),
and wherein the control unit (120) is further configured to distinguish sensor signals received from components of the trailer and the detection signal received from the object (60), and is configured to ignore sensor signals received from the components of the trailer (40) when confirming the presence of the object (60),
and wherein the control unit (120) is configured to detect the object (60) based on signals reflected by ground (80) or an obstacle between the object (60) and the at least one sensor (110),
and wherein the control unit (120) is configured to detect, at a beginning of a trip, the trailer (40) itself or one of its components (42),
and wherein the control unit (120) is configured to determine an articulation angle (α) between the vehicle (10) and the trailer (40) based on the detection of the trailer (40) or at least one of its components (42)."

Auxiliary request AR12

"A vehicle (10) with a sensor arrangement for detecting an object (60) in a surrounding of a trailer (40) when towed by the vehicle (10),
characterized by :

- at least one sensor (110) mounted at a rear side of the vehicle (10) with a field of view (115) underneath the trailer (40) and configured to capture a detection signal from the object (60); and
- a control unit (120) configured to receive a sensor signal from the at least one sensor (110), wherein the sensor signal is indicative of the object (60) and the control unit (120) is configured to confirm a presence of the object (60) behind the trailer (40),
wherein the sensor arrangement, when it will be mounted on the vehicle (10), allows to cover a blind spot behind the trailer (40) which is normally invisible from the vehicle (10) since mirrors of a driver do not cover this area,
and wherein the control unit (120) is further configured to acquire information about a length of the trailer (40) from a data base or a storage device on the vehicle and to take this length information into account to determine a distance from the object (60) to the rear side (12) of the trailer (40),
and wherein the control unit (120) is further configured to distinguish sensor signals received from components of the trailer and the detection signal received from the object (60), and is configured to ignore sensor signals received from the components of the trailer (40) when confirming the presence of the object (60),
and wherein the control unit (120) is configured to detect the object (60) based on signals reflected by

ground (80) or an obstacle between the object (60) and the at least one sensor (110),
and wherein the control unit (120) is configured to detect, at a beginning of a trip, the trailer (40) itself or one of its components (42),
and wherein the control unit (120) is configured to determine an articulation angle (α) between the vehicle (10) and the trailer (40) based on the detection of the trailer (40) or at least one of its components (42)."

Auxiliary request AR13

"A vehicle (10) with trailer (40) and a sensor arrangement for detecting an object (60) in a surrounding of a trailer (40) when towed by the vehicle (10),

characterized by :

- at least one sensor (110) mounted at a rear side of the vehicle (10) with a field of view (115) underneath the trailer (40) and configured to capture a detection signal from the object (60); and
- a control unit (120) configured to receive a sensor signal from the at least one sensor (110), wherein the sensor signal is indicative of the object (60) and the control unit (120) is configured to confirm a presence of the object (60) behind the trailer (40),
wherein the sensor arrangement allows to cover a blind spot behind the trailer (40) which is normally invisible from the vehicle (10) since mirrors of a driver do not cover this area."

Auxiliary request AR14

"A vehicle (10) with a trailer (40) and a sensor arrangement for detecting an object (60) in a surrounding of the trailer (40),

characterized by:

- at least one sensor (110) mounted at a rear side of the vehicle (10) with a field of view (115) underneath the trailer (40) and configured to capture a detection signal from the object (60); and
- a control unit (120) configured to receive a sensor signal from the at least one sensor (110), wherein the sensor signal is indicative of the object (60) and the control unit (120) is configured to confirm a presence of the object (60) behind the trailer (40), wherein the sensor arrangement allows to cover a blind spot behind the trailer (40) which is normally invisible from the vehicle (10) since mirrors of a driver do not cover this area, and wherein the control unit (120) is further configured to acquire information about a length of the trailer (40) from a data base or a storage device on the vehicle and to take this length information into account to determine a distance from the object (60) to the rear side (12) of the trailer (40)."

Auxiliary request AR15

"A vehicle (10) with a trailer (40) and a sensor arrangement for detecting an object (60) in a surrounding of the trailer (40), characterized by:

- at least one sensor (110) mounted at a rear side of the vehicle (10) with a field of view (115) underneath the trailer (40) and configured to capture a detection signal from the object (60); and
- a control unit (120) configured to receive a sensor signal from the at least one sensor (110), wherein the sensor signal is indicative of the object (60) and the control unit (120) is configured to confirm a presence of the object (60) behind the trailer (40)

wherein the sensor arrangement allows to cover a blind spot behind the trailer (40) which is normally invisible from the vehicle (10) since mirrors of a driver do not cover this area, and wherein the control unit (120) is further configured to acquire information about a length of the trailer (40) from a data base or a storage device on the vehicle and to take this length information into account to determine a distance from the object (60) to the rear side (12) of the trailer (40), and wherein the control unit (120) is further configured to distinguish sensor signals received from components of the trailer and the detection signal received from the object (60), and is configured to ignore sensor signals received from the components of the trailer (40) when confirming the presence of the object (60)."

Auxiliary request AR16

"A vehicle (10) with a trailer (40) and a sensor arrangement for detecting an object (60) in a surrounding of the trailer (40), characterized by:

- at least one sensor (110) mounted at a rear side of the vehicle (10) with a field of view (115) underneath the trailer (40) and configured to capture a detection signal from the object (60), the at least one sensor (110) comprises at least one of the following units: a radar, an ultrasonic sensor, a Lidar; and
- a control unit (120) configured to receive a sensor signal from the at least one sensor (110), wherein the sensor signal is indicative of the object (60) and the control unit (120) is configured to confirm a presence of the object (60) behind the trailer (40)

wherein the sensor arrangement allows to cover a blind spot behind the trailer (40) which is normally invisible from the vehicle (10) since mirrors of a driver do not cover this area,
and wherein the control unit (120) is further configured to acquire information about a length of the trailer (40) from a data base or a storage device on the vehicle and to take this length information into account to determine a distance from the object (60) to the rear side (12) of the trailer (40),
and wherein the control unit (120) is further configured to distinguish sensor signals received from components of the trailer and the detection signal received from the object (60), and is configured to ignore sensor signals received from the components of the trailer (40) when confirming the presence of the object (60),
and wherein the control unit (120) is configured to detect the object (60) based on signals reflected by ground (80) or an obstacle between the object (60) and the at least one sensor (110)."

Auxiliary request AR17

"A vehicle (10) with a trailer (40) and a sensor arrangement for detecting an object (60) in a surrounding of the trailer (40), characterized by:
- at least one sensor (110) mounted at a rear side of the vehicle (10) with a field of view (115) underneath the trailer (40) and configured to capture a detection signal from the object (60), the at least one sensor (110) comprises at least one of the following units: a radar, an ultrasonic sensor, a Lidar; and
- a control unit (120) configured to receive a sensor signal from the at least one sensor (110), wherein the sensor signal is indicative of the object (60) and the

control unit (120) is configured to confirm a presence of the object (60) behind the trailer (40) wherein the sensor arrangement allows to cover a blind spot behind the trailer (40) which is normally invisible from the vehicle (10) since mirrors of a driver do not cover this area, and wherein the control unit (120) is further configured to acquire information about a length of the trailer (40) from a data base or a storage device on the vehicle and to take this length information into account to determine a distance from the object (60) to the rear side (12) of the trailer (40), and wherein the control unit (120) is further configured to distinguish sensor signals received from components of the trailer and the detection signal received from the object (60), and is configured to ignore sensor signals received from the components of the trailer (40) when confirming the presence of the object (60), and wherein the control unit (120) is configured to detect the object (60) based on signals reflected by ground (80) or an obstacle between the object (60) and the at least one sensor (110), and wherein the control unit (120) is configured to detect, at a beginning of a trip, the trailer (40) itself or one of its components (42)."

Auxiliary request AR18

"A vehicle (10) with a trailer (40) and a sensor arrangement for detecting an object (60) in a surrounding of the trailer (40), characterized by:
- at least one sensor (110) mounted at a rear side of the vehicle (10) with a field of view (115) underneath the trailer (40) and configured to capture a detection signal from the object (60), the at least one sensor

(110) comprises at least one of the following units: a radar, an ultrasonic sensor, a Lidar; and
- a control unit (120) configured to receive a sensor signal from the at least one sensor (110), wherein the sensor signal is indicative of the object (60) and the control unit (120) is configured to confirm a presence of the object (60) behind the trailer (40), wherein the sensor arrangement allows to cover a blind spot behind the trailer (40) which is normally invisible from the vehicle (10) since mirrors of a driver do not cover this area, and wherein the control unit (120) is further configured to acquire information about a length of the trailer (40) from a data base or a storage device on the vehicle and to take this length information into account to determine a distance from the object (60) to the rear side (12) of the trailer (40), and wherein the control unit (120) is further configured to distinguish sensor signals received from components of the trailer and the detection signal received from the object (60), and is configured to ignore sensor signals received from the components of the trailer (40) when confirming the presence of the object (60), and wherein the control unit (120) is configured to detect the object (60) based on signals reflected by ground (80) or an obstacle between the object (60) and the at least one sensor (110), and wherein the control unit (120) is configured to detect, at a beginning of a trip, the trailer (40) itself or one of its components (42), and wherein the control unit (120) is configured to determine an articulation angle (α) between the vehicle (10) and the trailer (40) based on the detection of the trailer (40) or at least one of its components (42)."

Auxiliary request AR19

"A vehicle (10) with a trailer (40) and a sensor arrangement for detecting an object (60) in a surrounding of the trailer (40), characterized by:

- at least one sensor (110) mounted at a rear side of the vehicle (10) with a field of view (115) underneath the trailer (40) and configured to capture a detection signal from the object (60), the at least one sensor (110) comprises at least one of the following units: a radar, an ultrasonic sensor, a Lidar; and
- a control unit (120) configured to receive a sensor signal from the at least one sensor (110), wherein the sensor signal is indicative of the object (60) and the control unit (120) is configured to confirm a presence of the object (60) behind the trailer (40), wherein the sensor arrangement allows to cover a blind spot behind the trailer (40) which is normally invisible from the vehicle (10) since mirrors of a driver do not cover this area, and wherein the control unit (120) is further configured to acquire information about a length of the trailer (40) from a data base or a storage device on the vehicle and to take this length information into account to determine a distance from the object (60) to the rear side (12) of the trailer (40), wherein the control unit (120) is configured to use the length information to ignore all potential detection signals received from positions under the trailer."

Auxiliary request AR20

"A vehicle (10) with a trailer (40) and a sensor arrangement for detecting an object (60) in a surrounding of the trailer (40),

characterized by:

- at least one sensor (110) mounted at a rear side of the vehicle (10) with a field of view (115) underneath the trailer (40) and configured to capture a detection signal from the object (60); and
- a control unit (120) configured to receive a sensor signal from the at least one sensor (110), wherein the sensor signal is indicative of the object (60) and the control unit (120) is configured to confirm a presence of the object (60) behind the trailer (40), wherein the sensor arrangement allows to cover a blind spot behind the trailer (40) which is normally invisible from the vehicle (10) since mirrors of a driver do not cover this area, and wherein the control unit (120) is configured to alert an autonomous driving management system of the vehicle about the presence of the object (60) behind the trailer."

Auxiliary request AR21

"A vehicle (10) with a trailer (40) and a sensor arrangement for detecting an object (60) in a surrounding of the trailer (40), characterized by:

- at least one sensor (110) mounted at a rear side of the vehicle (10) with a field of view (115) underneath the trailer (40) and configured to capture a detection signal from the object (60); and
- a control unit (120) configured to receive a sensor signal from the at least one sensor (110), wherein the sensor signal is indicative of the object (60) and the control unit (120) is configured to confirm a presence of the object (60) behind the trailer (40), wherein the sensor arrangement allows to cover a blind spot behind the trailer (40) which is normally

invisible from the vehicle (10) since mirrors of a driver do not cover this area,
and wherein the control unit (120) is configured to alert an autonomous driving management system of the vehicle about the presence of the object (60) behind the trailer,
and wherein the control unit (120) is further configured to acquire information about a length of the trailer (40) from a data base or a storage device on the vehicle and to take this length information into account to determine a distance from the object (60) to the rear side (12) of the trailer (40)."

Auxiliary request AR22

"A vehicle (10) with a trailer (40) and a sensor arrangement for detecting an object (60) in a surrounding of the trailer (40) when towed by the vehicle (10),
characterized by :

- at least one sensor (110) mounted at a rear side of the vehicle (10) with a field of view (115) underneath the trailer (40) and configured to capture a detection signal from the object (60); and
- a control unit (120) configured to receive a sensor signal from the at least one sensor (110), wherein the sensor signal is indicative of the object (60) and the control unit (120) is configured to confirm a presence of the object (60) behind the trailer (40)

wherein the sensor arrangement allows to cover a blind spot behind the trailer (40) which is normally invisible from the vehicle (10) since mirrors of a driver do not cover this area,
and wherein the control unit (120) is configured to alert an autonomous driving management system of the

vehicle about the presence of the object (60) behind the trailer,
and wherein the control unit (120) is further configured to acquire information about a length of the trailer (40) from a data base or a storage device on the vehicle and to take this length information into account to determine a distance from the object (60) to the rear side (12) of the trailer (40),
and wherein the control unit (120) is further configured to distinguish sensor signals received from components of the trailer and the detection signal received from the object (60), and is configured to ignore sensor signals received from the components of the trailer (40) when confirming the presence of the object (60)."

Auxiliary request AR23

"A vehicle (10) with a trailer (40) and a sensor arrangement for detecting an object (60) in a surrounding of the trailer (40) when towed by the vehicle (10),

characterized by :

- at least one sensor (110) mounted at a rear side of the vehicle (10) with a field of view (115) underneath the trailer (40) and configured to capture a detection signal from the object (60), the at least one sensor (110) comprises at least one of the following units: a radar, an ultrasonic sensor, a Lidar; and
- a control unit (120) configured to receive a sensor signal from the at least one sensor (110), wherein the sensor signal is indicative of the object (60) and the control unit (120) is configured to confirm a presence of the object (60) behind the trailer (40)
wherein the sensor arrangement allows to cover a blind spot behind the trailer (40) which is normally

invisible from the vehicle (10) since mirrors of a driver do not cover this area,
and wherein the control unit (120) is configured to alert an autonomous driving management system of the vehicle about the presence of the object (60) behind the trailer,
and wherein the control unit (120) is further configured to acquire information about a length of the trailer (40) from a data base or a storage device on the vehicle and to take this length information into account to determine a distance from the object (60) to the rear side (12) of the trailer (40),
and wherein the control unit (120) is further configured to distinguish sensor signals received from components of the trailer and the detection signal received from the object (60), and is configured to ignore sensor signals received from the components of the trailer (40) when confirming the presence of the object (60),
and wherein the control unit (120) is configured to detect the object (60) based on signals reflected by ground (80) or an obstacle between the object (60) and the at least one sensor (110)."

Auxiliary request AR24

"A vehicle (10) with a trailer (40) and a sensor arrangement for detecting an object (60) in a surrounding of the trailer (40) when towed by the vehicle (10),

characterized by :

- at least one sensor (110) mounted at a rear side of the vehicle (10) with a field of view (115) underneath the trailer (40) and configured to capture a detection signal from the object (60), the at least one sensor

(110) comprises at least one of the following units: a radar, an ultrasonic sensor, a Lidar; and
- a control unit (120) configured to receive a sensor signal from the at least one sensor (110), wherein the sensor signal is indicative of the object (60) and the control unit (120) is configured to confirm a presence of the object (60) behind the trailer (40)
wherein the sensor arrangement allows to cover a blind spot behind the trailer (40) which is normally invisible from the vehicle (10) since mirrors of a driver do not cover this area,
and wherein the control unit (120) is configured to alert an autonomous driving management system of the vehicle about the presence of the object (60) behind the trailer,
and wherein the control unit (120) is further configured to acquire information about a length of the trailer (40) from a data base or a storage device on the vehicle and to take this length information into account to determine a distance from the object (60) to the rear side (12) of the trailer (40),
and wherein the control unit (120) is further configured to distinguish sensor signals received from components of the trailer and the detection signal received from the object (60), and is configured to ignore sensor signals received from the components of the trailer (40) when confirming the presence of the object (60),
and wherein the control unit (120) is configured to detect the object (60) based on signals reflected by ground (80) or an obstacle between the object (60) and the at least one sensor (110),
and wherein the control unit (120) is configured to detect, at a beginning of a trip, the trailer (40) itself or one of its components (42)."

Auxiliary request AR25

"A vehicle (10) with trailer (40) and a sensor arrangement for detecting an object (60) in a surrounding of a trailer (40) when towed by the vehicle (10),

characterized by :

- at least one sensor (110) mounted at a rear side of the vehicle (10) with a field of view (115) underneath the trailer (40) and configured to capture a detection signal from the object (60), the at least one sensor (110) comprises at least one of the following units: a radar, an ultrasonic sensor, a Lidar; and
- a control unit (120) configured to receive a sensor signal from the at least one sensor (110), wherein the sensor signal is indicative of the object (60) and the control unit (120) is configured to confirm a presence of the object (60) behind the trailer (40), wherein the sensor arrangement allows to cover a blind spot behind the trailer (40) which is normally invisible from the vehicle (10) since mirrors of a driver do not cover this area, and wherein the control unit (120) is configured to alert an autonomous driving management system of the vehicle about the presence of the object (60) behind the trailer, and wherein the control unit (120) is further configured to acquire information about a length of the trailer (40) from a data base or a storage device on the vehicle and to take this length information into account to determine a distance from the object (60) to the rear side (12) of the trailer (40), and wherein the control unit (120) is further configured to distinguish sensor signals received from components of the trailer and the detection signal received from the object (60), and is configured to

ignore sensor signals received from the components of the trailer (40) when confirming the presence of the object (60),
and wherein the control unit (120) is configured to detect the object (60) based on signals reflected by ground (80) or an obstacle between the object (60) and the at least one sensor (110),
and wherein the control unit (120) is configured to detect, at a beginning of a trip, the trailer (40) itself or one of its components (42),
and wherein the control unit (120) is configured to determine an articulation angle (α) between the vehicle (10) and the trailer (40) based on the detection of the trailer (40) or at least one of its components (42)."

Auxiliary request AR26

"A sensor arrangement for detecting an object (60) in a surrounding of a trailer (40) when towed by a vehicle (10),

characterized by:

- at least one sensor (110) mountable at a rear side of the vehicle (10) with a field of view (115) underneath the trailer (40) and configured to capture a detection signal from the object (60); and
- a control unit (120) configured to receive a sensor signal from the at least one sensor (110), wherein the sensor signal is indicative of the object (60) and the control unit (120) is configured to confirm a presence of the object (60) behind the trailer (40),
wherein the control unit (120) is configured to detect, at a beginning of a trip, the trailer (40) itself or one of its components (42), wherein the at least one sensor (110) is configured to provide the detection of the trailer (40) or its component,

and wherein the control unit (120) is configured to determine an articulation angle (α) between the vehicle (10) and the trailer (40) based on the detection of the trailer (40) or at least one of its components (42)."

Auxiliary request AR27

"A sensor arrangement for detecting an object (60) in a surrounding of a trailer (40) when towed by a vehicle (10),

characterized by:

- at least one sensor (110) mountable at a rear side of the vehicle (10) with a field of view (115) underneath the trailer (40) and configured to capture a detection signal from the object (60); and

- a control unit (120) configured to receive a sensor signal from the at least one sensor (110), wherein the sensor signal is indicative of the object (60) and the control unit (120) is configured to confirm a presence of the object (60) behind the trailer (40),

wherein the control unit (120) is configured to detect, at a beginning of a trip, the trailer (40) itself or one of its components (42) and to track its position in time,

and wherein the control unit (120) is configured to determine an articulation angle (α) between the vehicle (10) and the trailer (40) based on the detection of the trailer (40) or at least one of its components (42) and from the tracking information in time,

and wherein the control unit (120) is configured to repeatedly detect the trailer to identify relative motions of the trailer when compared to the vehicle and to distinguish signals received from the object from signals received from the trailer."

Auxiliary request AR28

"A sensor arrangement for detecting an object (60) in a surrounding of a trailer (40) when towed by a vehicle (10),

characterized by:

- at least one sensor (110) mountable at a rear side of the vehicle (10) with a field of view (115) underneath the trailer (40) and configured to capture a detection signal from the object (60), wherein the field of view covers the left-hand side and the right-hand side of the tractor (10) and of trailer (40); and

- a control unit (120) configured to receive a sensor signal from the at least one sensor (110), wherein the sensor signal is indicative of the object (60) and the control unit (120) is configured to confirm a presence of the object (60) behind the trailer (40),

wherein the control unit (120) is configured to detect, at a beginning of a trip, the trailer (40) itself or one of its components (42) and to track its position in time,

and wherein the control unit (120) is configured to determine an articulation angle (α) between the vehicle (10) and the trailer (40) based on the detection of the trailer (40) or at least one of its components (42) and from the tracking information in time,

and wherein the control unit (120) is configured to repeatedly detect the trailer to identify relative motions of the trailer when compared to the vehicle and to distinguish signals received from the object from signals received from the trailer."

Reasons for the Decision

1. The appeal is admissible.

Main request - novelty (Articles 52(1) and 54 EPC)

2. Disclosure of document D8

Document D8 discloses a method for detecting an object in the surroundings of a trailer (Anhänger 14) pulled by a tractor (Zugfahrzeug 12), in particular in the area behind the trailer (see Abstract and paragraph [0008]). Information about the trailer, such as its dimensions, ground clearance and the position of the wheels, may be communicated to the tractor via a suitable interface such as a controller area network (CAN) bus (see paragraph [0015]). A sensor (24), such as a radar sensor, is installed at the rear of the tractor (Figures 1 and 2) in such a way that the signals, e.g. electromagnetic signals, emitted by the sensor can travel under the trailer (see paragraphs [0014] and [0024]). The signals emitted are partly reflected back to the sensor by obstacles under the trailer, such as the wheels (22) of the trailer, but some of the signals emitted reach the area behind the trailer and can be reflected back to the sensor by an object in that area (see paragraph [0025]). The signals reflected from the trailer itself may be identified and algorithmically removed to keep only the reflected signals corresponding to an object located behind the trailer (see paragraph [0026]). The driver of the tractor is informed of the detection of an object behind the trailer (see paragraph [0008]). The reflected signals from an object behind the trailer allow determining the distance between the trailer and

the object (see paragraph [0009]). When the distance diminishes at a certain rate, an alarm may be triggered to warn of a risk of collision (paragraph [0009]).

3. The disclosure of document D8 summarised above discloses all the features of the sensor arrangement of claim 1 of the main request (the presence of a control unit is implicit in D8).

The appellant did not submit any counterarguments, neither in writing nor orally during the oral proceedings, against the above conclusion.

Hence, the subject-matter of claim 1 lacks novelty (Articles 52(1) and 54 EPC).

Auxiliary requests AR1 to AR18 - amendments

4. Compared to claim 1 of the main request, claim 1 of each of auxiliary requests AR1 to AR18 comprises a different combination of at least two of the additional features listed below:

[F1] the sensor arrangement is or will be mounted on the vehicle

[F2] the sensor arrangement allows to cover a blind spot behind the trailer which is normally invisible from the vehicle since mirrors of a driver do not cover this area

[F3] a vehicle with a sensor arrangement

[F4] the control unit is further configured to acquire information about a length of the trailer from a database or a storage device on the vehicle and to take this length information into account to determine a distance from the object to the rear side of the trailer

- [F5] the control unit is further configured to distinguish sensor signals received from components of the trailer and the detection signal received from the object, and is configured to ignore sensor signals received from the components of the trailer when confirming the presence of the object
- [F6] the control unit is configured to detect the object based on signals reflected by ground or an obstacle between the object and the at least one sensor
- [F7] the control unit is configured to detect, at a beginning of a trip, the trailer itself or one of its components
- [F8] the control unit is configured to determine an articulation angle between the vehicle and the trailer based on the detection of the trailer or at least one of its components
- [F9] a vehicle with a trailer and a sensor arrangement
- [F10] the at least one sensor comprises at least one of the following units: a radar, an ultrasonic sensor, a Lidar

Auxiliary requests AR1 to AR18 - novelty (Articles 52(1) and 54 EPC) and inventive step (Articles 52(1) and 56 EPC)

5. Additional features F1, F2, F3, F4, F5, F6, F7, F9 and F10 are implicitly or explicitly disclosed in document D8 (see summary of D8 in point 2. above).
6. Additional feature F8 is obvious for the following reasons.

Since the trailer of document D8 is articulated with the tractor (see paragraph [0010] and Figures 1 and 2), the articulation angle between the radar sensor (24)

and the trailer varies within a certain range when the vehicle is moving. It would thus have been obvious to the skilled person that the radar sensor of D8 must cover that range of possible articulation angles and that the articulation angle at any given time may advantageously be determined from the reflected radar signal.

7. For the above reasons, the subject-matter of claim 1 of auxiliary requests AR1 to AR18 lacks either novelty or inventive step.
8. The appellant has submitted no argument, neither in writing nor orally during the oral proceedings, against the above conclusion of the board.

Auxiliary request AR19 - admittance

9. Under Article 12(6) RPBA, "*[t]he Board shall not admit requests, facts, objections or evidence which were not admitted in the proceedings leading to the decision under appeal, unless the decision not to admit them suffered from an error in the use of discretion or unless the circumstances of the appeal case justify their admittance*".
10. Auxiliary request AR19 was not admitted by the examining division under Rule 137(3) EPC for the following reasons (see points 28 and 29 of the impugned decision).
 - Claim 1 of auxiliary request AR19 *prima facie* did not meet the requirements of Rule 137(5) EPC because of an additional feature [F11] ("*the control unit is configured to use the length information to ignore all potential detection*

signals received from positions under the trailer") which was not present in the claims of the application as filed and thus had not been searched for.

- Claim 2 of auxiliary request AR19 *prima facie* did not comply with Article 84 EPC because it contradicted additional feature F11 of claim 1.

11. The appellant submitted that auxiliary request AR19 should be admitted into the appeal proceedings because the *prima facie* objections raised by the examining division were not persuasive (see pages 17 and 18 of the statement of grounds of appeal).
12. The board considers that the examining division did not exercise its discretion in accordance with the wrong principles, without taking the right principles into account, or in an arbitrary or unreasonable way. Moreover, the board is not convinced that the examining division's *prima facie* examination was vitiated by manifest errors (see Case Law of the Boards of Appeal of the European Patent Office (Case Law), 11th edition 2025, V.A.3.4.1.b).
13. For the above reasons, the board does not admit auxiliary request AR19 into the appeal proceedings (Article 12(6) RPBA).

Auxiliary requests AR20 to AR25 - admittance

14. Article 12(4) RPBA reads as follows:

"Any part of a party's appeal case which does not meet the requirements in paragraph 2 is to be regarded as an amendment, unless the party demonstrates that this part was admissibly raised and maintained in the proceedings

leading to the decision under appeal. Any such amendment may be admitted only at the discretion of the Board.

The party shall clearly identify each amendment and provide reasons for submitting it in the appeal proceedings. In the case of an amendment to a patent application or patent, the party shall also indicate the basis for the amendment in the application as filed and provide reasons why the amendment overcomes the objections raised.

*The Board shall exercise its discretion in view of, inter alia, the complexity of the amendment, the suitability of the amendment to address the issues which led to the decision under appeal, and the **need for procedural economy.**" (Emphasis added by the board.)*

15. Auxiliary requests AR20 to AR25 differ from auxiliary requests AR13 to AR18, respectively, on account of the following additional feature in claim 1 (and of a similar additional feature in the corresponding method claim):

[F12] the control unit is configured to alert an autonomous driving management system of the vehicle about the presence of the object behind the trailer

16. Document D8 discloses that the detection of objects behind the trailer can be used in driver assistance systems ("*Fahrerassistenzsysteme*") which can carry out exiting and entering operations automatically ("*die... Aus- und Einschervorgängen automatisiert durchführen können*") (see the first sentence of paragraph [0009]).

This disclosure renders feature F12 *prima facie* obvious.

17. For the above reasons and taking into account the need for procedural economy, the board does not admit auxiliary requests AR20 to AR25 because they have *prima facie* no prospect of meeting the requirements of Article 56 EPC (Article 12(4) RPBA).

Auxiliary requests AR26 to AR28 - admittance

18. Auxiliary requests AR26 to AR28 were filed in response to the introduction of highly relevant prior-art document D8 by the board in its communication pursuant to Article 15(1) RPBA (see point IV. above).
19. The board considers that this new fact constitutes exceptional circumstances within the meaning of Article 13(2) RPBA). Accordingly, the board admitted auxiliary requests AR26 to AR28 into the appeal proceedings.

Auxiliary request AR26 - inventive step (Articles 52(1) and 56 EPC)

- 19.1 Claim 1 of auxiliary request AR26 differs from claim 1 of the main request on account of the following additional features:

[F7] the control unit is configured to detect, at a beginning of a trip, the trailer itself or one of its components

[F7a] the at least one sensor is configured to provide the detection of the trailer or its component

[F8] the control unit is configured to determine an articulation angle between the vehicle and the trailer based on the detection of the trailer or at least one of its components

19.2 Features F7 and F7a

Feature F7 is known from document D8, which discloses that information about the trailer, such as its dimensions, ground clearance and the position of the wheels, may be communicated to the tractor via a suitable interface such as a CAN bus (see paragraph [0015] of D8).

The appellant essentially argued that there was no reason in document D8 to detect, at the beginning of the trip, the trailer itself or one of its components with the radar sensor (24) because according to paragraph [0015] of document D8, information about the trailer was communicated to the tractor via other means, namely a suitable interface such as a CAN bus. Moreover, there was no need to communicate the information from the trailer to the tractor at the beginning of the trip. It could still be communicated when switching on the driver assistance systems.

19.3 The board does not find this argument persuasive for the following reasons.

The radar sensor of document D8 automatically detects the trailer as soon as it is switched on. Even if the detection of the trailer is algorithmically removed at a later stage, the detection of the trailer must be transmitted to the control unit.

Document D8 does not disclose when the radar sensor is switched on. However, it would have been obvious to start the radar system automatically at the beginning of each trip because the radar sensor is part of a driver assistance system ("*Fahrerassistenzsysteme*" in

paragraph [0009]) which detects objects behind the trailer, and a driver's first move is often to reverse the vehicle.

19.4 Feature F8

19.4.1 The board already held (see point 6. above) that feature F8 is obvious.

19.4.2 The appellant argued that document D8 taught away from using the radar sensor to determine the articulation angle of the trailer for the following reasons.

(1) The system of document D8 algorithmically removed the signal reflected by the trailer to better identify objects behind the trailer (paragraphs [0014] and [0026]). Since the reflections from the trailer were removed, they would not have been used for determining the articulation angle of the trailer.

(2) The radar sensor of D8 only needed to detect the distance of the reflections to determine whether an object was present behind the trailer. The angular direction from which the reflections came was not detected. Without this angular information, the radar sensor of D8 could not be used to determine the articulation angle of the trailer.

(3) If the skilled person had wanted to determine the articulation angle of the trailer in D8, they would have used a simpler solution based on the steering direction of the tractor.

19.4.3 The board does not find the appellant's arguments persuasive for the following reasons.

It is undisputed that document D8 discloses a trailer which is articulated with the tractor (see, for instance, "*gelenkig mit der Zugmaschine gekoppelt*" in paragraphs [0010] and [0022] and Figures 1 and 2).

The skilled person would thus be well aware that the articulation angle of the trailer varied within a given range when the vehicle was driven.

Document D8 further discloses that the system can detect with its radar sensor (24) not only an object **behind** the trailer, but also **to the side** of the trailer and **behind to the side** of the trailer (see "*genau hinter*" and "*seitlich hinter*" in paragraph [0007] and "*hinter und/oder seitlich*" in paragraph [0008]).

The skilled person would thus have understood that the field of view of the radar sensor was sufficiently wide to cover the trailer at all its possible articulation angles plus an area to each side of the trailer.

Moreover, document D8 further discloses that when the system detects that the distance between a vehicle behind the trailer and the trailer decreases at a certain rate, a warning light is triggered to alert the driver of the vehicle behind the trailer of a risk of collision (see paragraphs [0009] and [0026]).

The skilled person would thus have understood that the system of document D8 has to be able to distinguish between a vehicle behind the trailer in the same lane and a vehicle behind the trailer in a different lane (see paragraph [0014]) because only the former creates a collision risk which could trigger the warning light.

From the above considerations, the board is of the view that the skilled person would have understood that in document D8 not only the distance to an object from the radar sensor must be detected, but also the position of the object relative to trailer. Hence **argument (2)** is not persuasive.

Since document D8 does not disclose how the position of a detected object is determined, the skilled person would thus have had to use their common general knowledge and normal skills to bridge this information gap.

The appellant did not dispute that it was common general knowledge that there were radar sensors for vehicles which could measure not only the distance to an object but also the angular direction of the object and which thus could derive from both pieces of information the position of the object relative to the radar sensor.

In the board's view, it would thus have been obviously advantageous for the skilled person to use such a radar sensor in document D8 for determining the position of the object.

Since it was the position of the object **relative to the trailer** which mattered to avoid a risk of collision with the trailer, the articulation angle of the trailer would also have to be known at all times. In the board's view, it would have been obvious to determine the articulation angle from the radar reflections from components of the trailer, e.g. its wheels.

Argument (1) is not persuasive because the skilled person would have used the reflected signal from the trailer **before** algorithmically removing it.

As to **argument (3)**, it might indeed be possible in the system of D8 to derive the articulation angle from the steering direction of the tractor. However, this would not work in the reverse direction because slight variations in the steering direction could lead to unexpected changes of the articulation angle. Because of this drawback, this possible solution would not have been regarded by the skilled person as a better alternative which could teach away from determining the articulation angle with the radar sensor. Hence, **argument (3)** is not persuasive.

19.5 Conclusion on inventive step

For the above reasons, the subject-matter of claim 1 of auxiliary request AR26 does not involve an inventive step (Articles 52(1) and 56 EPC) in view of document D8 and the skilled person's common general knowledge.

Auxiliary request AR27 - inventive step (Articles 52(1) and 56 EPC)

20. Claim 1 of auxiliary request AR27 differs from claim 1 of the main request on account of the following additional features:

[F7] the control unit is configured to detect, at a beginning of a trip, the trailer itself or one of its components

[F7b] the control unit is configured to track the position of the trailer in time

[F8] the control unit is configured to determine an articulation angle between the vehicle and the trailer based on the detection of the trailer or at least one of its components

[F8a] the control unit is configured to determine an articulation angle from the tracking information in time

[F13] the control unit is configured to repeatedly detect the trailer to identify relative motions of the trailer when compared to the vehicle

[F14] the control unit is configured to distinguish signals received from the object from signals received from the trailer

21. Features F7 and F8 are known and obvious, respectively, for the reasons given in points 19.2 and 19.4 above.
22. Feature F14 is known from document D8 because the signals received from the trailer are algorithmically removed to leave only the signals received from the object (see paragraphs [0014] and [0026]).
23. It is obvious that the position and articulation angle of the trailer and the position of objects have to be repeatedly detected at short time intervals to be of any use in avoiding collisions. Hence, features F7b, F8a and F13 are obvious.
24. The appellant argued that features F7b and F8a defined a two-step determination of the articulation angle, with the position of the trailer being used as an intermediate result, which was neither known nor obvious from document D8.
25. The board does not find this last argument persuasive for the following reasons.

In both the application as filed (see Figure 1) and in document D8 (see Figures 1 and 2), the radar sensor is positioned at the rear of the tractor, i.e. at approximately the same distance behind the axis of rotation of the trailer.

It would thus have been obvious to the skilled person that the angular orientation of the signals reflected by the trailer (e.g. from its wheels) as seen by the radar sensor would not have been exactly the same as the articulation angle of the trailer as seen from the axis of rotation of the trailer and would have had to be further processed to arrive at the correct articulation angle. In other words, it would have been obvious to first determine and monitor the varying position of the trailer, by, for example, tracking its wheels, and then to determine the articulation angle of the trailer from that position information.

26. Conclusion on inventive step

For the above reasons, the subject-matter of claim 1 of auxiliary request AR27 does not involve an inventive step (Articles 52(1) and 56 EPC) in view of document D8 and the skilled person's common general knowledge.

Auxiliary request AR28 - inventive step (Articles 52(1) and 56 EPC)

27. Claim 1 of auxiliary request AR28 differs from claim 1 of auxiliary request AR27 on account of the following additional feature:

[F15] the field of view covers the left-hand side and the right-hand side of the tractor and of trailer

28. Feature F15 is known from document D8, which discloses that the system can detect with its radar sensor (24) not only an object **behind** the trailer but also **to the side** of the trailer and **behind to the side** of the trailer (see "*genau hinter*" and "*seitlich hinter*" in paragraph [0007] and "*hinter und/oder seitlich*" in paragraph [0008]). The board regards it as obvious in document D8, if not implicit, that "*seitlich der Zugmaschine, insbesondere des Gespanns*" (paragraph [0008]) concerns both the left and right sides of the tractor and trailer.

29. Conclusion on inventive step

For the above reasons, the subject-matter of claim 1 of auxiliary request AR28 does not involve an inventive step (Articles 52(1) and 56 EPC) in view of document D8 and the skilled person's common general knowledge.

Conclusion on the main request and auxiliary requests AR1 to AR28

30. For the reasons given above, the appellant's main request and auxiliary requests AR1 to AR18 and AR26 to AR28 are not allowable, and auxiliary requests AR19 to AR25 were not admitted into the appeal proceedings.

Request to remit the case to the examining division

31. The appellant requested that the case be remitted to the examining division.

32. Under Article 111(1) EPC, the board may either exercise any power within the competence of the department which

was responsible for the decision appealed or remit the case to that department for further prosecution.

In accordance with Article 11 RPBA, the board shall not remit a case to the department whose decision was appealed for further prosecution unless special reasons present themselves for doing so. As a rule, fundamental deficiencies which are apparent in the proceedings before that department constitute such special reasons.

33. It is established case law of the boards of appeal that which of the two options of Article 111(1) EPC the board chooses depends on the facts of the case before it and is a matter for its discretion. Parties do not have a fundamental right to have their case examined at two levels of jurisdiction (see Case Law, V.A.9.1.1 and V.A.9.2.1).
34. The appellant submitted that a remittal was justified because it had had only two months to file auxiliary requests in response to the introduction of document D8 via the communication under Article 15(1) RPBA. The introduction of document D8 was a special reason within the meaning of Article 11 RPBA for remitting the case to the department of first instance.
35. The board is not convinced that the introduction of a prior-art document via the board's communication per se constitutes a special reason for remitting the case. Document D8 is relatively short and easy to comprehend. Moreover, the objections raised against auxiliary requests AR26 to AR28 were largely based on issues set out in the board's communication. Hence, the board found itself in a position to decide on all requests on file, including auxiliary requests AR26 to AR28 filed

in response to the introduction of document D8 by the board.

36. The board also notes that the appellant did not request a postponement of the oral proceedings.

37. For the above reasons, the board sees no special reasons within the meaning of Article 11 RPBA to remit the case to the examining division.

Request for reimbursement of the appeal fee

38. On page 2 of its letter dated 16 June 2025, the appellant wrote:

"The purpose of the appeal is to review a decision made by the first instance department. It is not the purpose of the Board of Appeal to perform a search for prior art and to examine whether an application meets the requirements of patentability in view of a newly found prior art. This is the duty of the Search Division (Art. 17 EPC) and the Examining Division (Art. 18 EPC).

Furthermore, the appeal filed, including many requests, would not have been lodged if document D8 were already cited and examined in the first instance. It would thus be fair to reimburse at least the part of the appeal fee which relates to the examination of document D8."

39. Under Rule 103(1)(a) EPC, the appeal shall be reimbursed in full if the appeal is deemed to be allowable and such a reimbursement is equitable by reason of a substantial procedural violation.

40. In the case in hand, neither is the appeal deemed to be allowable, nor has the examination division committed a

substantial procedural violation. The fact that neither the search division nor the examination division found document D8 does not constitute a procedural violation, let alone a substantial one (see decision T 291/93, point 4 of the Reasons).

Hence, the conditions set out in Rule 103(1)(a) EPC for a reimbursement of the appeal fee in full are not met.

41. Rule 103(2) to (5) EPC set out conditions for a partial reimbursement of the appeal fee at 25, 50 or 75%. However, they all depend on the appeal being withdrawn, which is not the case in the current appeal.

Hence, the conditions set out in Rule 103(2) to (5) EPC for a partial reimbursement of the appeal fee are not met.

Order

For these reasons it is decided that:

1. The appeal is dismissed.
2. The request for reimbursement of the appeal fee is refused.

The Registrar:

The Chair:



K. Boelicke

B. Willems

Decision electronically authenticated