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**Datasheet for the decision
of 2 September 2025**

Case Number: T 1849/23 - 3.2.01

Application Number: 15739459.4

Publication Number: 3166825

IPC: B60T8/17, B60T8/1755

Language of the proceedings: EN

Title of invention:

ADAPTIVE TRAILER OSCILLATION DETECTION AND STABILITY CONTROL

Patent Proprietor:

Lippert Components Inc.

Opponent:

Alois Kober GmbH

Headword:

Relevant legal provisions:

EPC Art. 100(a), 100(b), 100(c), 54, 56
RPBA 2020 Art. 13(2)

Keyword:

Novelty - main request (no)

Inventive step - auxiliary request (yes)

Amendment after summons - exceptional circumstances (yes)

Grounds for opposition - insufficiency of disclosure (no) -
subject-matter extends beyond content of earlier application
(no)

Decisions cited:

G 0001/24

Catchword:

Claim construction - broader than possible strict literal
reading when the description is taken into consideration
(reasons, 1.3)



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Case Number: T 1849/23 - 3.2.01

D E C I S I O N
of Technical Board of Appeal 3.2.01
of 2 September 2025

Appellant: Alois Kober GmbH
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Representative: ERNICKE Patent- und Rechtsanwälte PartmbB
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Respondent: Lippert Components Inc.
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Representative: J A Kemp LLP
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Decision under appeal: **Decision of the Opposition Division of the
European Patent Office posted on 31 August 2023
rejecting the opposition filed against European
patent No. 3166825 pursuant to Article 101(2)
EPC.**

Composition of the Board:

Chairman G. Pricolo
Members: J. J. de Acha González
M. Millet

Summary of Facts and Submissions

I. The opponent's appeal is directed against the decision of the Opposition Division rejecting the opposition to European patent No. 3 166 825.

II. The following evidence is relevant for the present decision:

- D1:** EP 1167141 A1;
- D2:** US 2012/0041659 A1;
- D4:** GB 2445649 A; and
- D9:** EP 1598249 A1.

III. Oral proceedings before the Board were held on 2 September 2025.

The appellant (opponent) requested that the decision under appeal be set aside and that the patent be revoked.

The respondent (patent proprietor) requested that the appeal be dismissed as the main request, or, in the alternative, that the patent be maintained in amended form on the basis of any of the auxiliary requests 1 to 8 filed with the reply to the statement of grounds of appeal of the opponent, or auxiliary requests A, 1a, 3a, 3b, 4a, 4b, 5a, 5b, filed with letter of 14 August 2025, in the following order: 1, A, 1a, 2, 3, 3a, 3b, 4, 4a, 4b, 5, 5a, 5b, 6, 7, 8.

IV. Claims 1 and 15, as granted, read as follows (feature numbering according to the contested decision, with differences to the originally filed claims 1 and 18 underlined, respectively):

- 1.1 A trailer oscillation and stability control device (10) comprising:
 - 1.2 an accelerometer (12) configured to measure lateral acceleration of a trailer (14) and to generate corresponding trailer lateral acceleration signals;
 - 1.3 an angular rate sensor (16) positioned and configured to measure rate of angular trailer deflection
 - 1.3.1 about a hitch pivot point (18) and
 - 1.3.2 to generate corresponding angular trailer deflection rate signals;
 - 1.4 an oscillation detection discriminator (22) coupled with the accelerometer (12) and the angular rate sensor (16) and configured to detect oscillatory lateral trailer motion
 - 1.4.1 based on acceleration signals received from the accelerometer (12) and angular trailer deflection rate signals received from the angular rate sensor (16), and
 - 1.4.2 to generate corresponding oscillatory event data;
 - 1.5 wherein said oscillation detection discriminator (22) is configured to use data received from the angular rate sensor (16) and the accelerometer (12) to distinguish between a trailer oscillation event and a non-oscillatory trailer excursion or lateral deflection;
 - 1.6 a brake controller (30) configured to generate a trailer braking control signal in response to oscillatory event data received from the oscillation detection discriminator (22).
-
- 15.1 A trailer oscillation detection method comprising the steps of:
 - 15.2 obtaining a trailer lateral acceleration value from an acceleration signal received from an accelerometer (12) carried by the trailer;
 - 15.3 deriving an angular trailer deflection value from an

- angular trailer deflection rate signal received from an angular rate sensor (16) carried by the trailer,*
- 15.3.1** *said angular trailer deflection rate being measured about a hitch pivot point (18); and*
- 15.4** *determining whether the acceleration value and the angular deflection value exceed respective pre-determined threshold values;*
- 15.5** *wherein said determining includes using data received from the angular rate sensor (16) and the accelerometer (12)*
- 15.6** *to distinguish between a trailer oscillation event and a non-oscillatory trailer excursion or lateral deflection.*

Claim 1 of auxiliary request 1 is identical to granted claim 1.

The sole claim of auxiliary request A is identical to claim 15 as granted.

Reasons for the Decision

1. *Main request - Novelty - D4*
- 1.1 The subject-matter of granted claim 1 is not new over the device disclosed in D4 (Article 54 EPC).
- 1.2 The Opposition Division concluded that D4 did not disclose features 1.3.1, (1.3.2 as a consequence) and 1.5. In particular, it took the view that the yaw rate sensor disclosed therein did not measure the rate of trailer deflection around the hitch pivot point, and

that the device of D4 did not discriminate between oscillatory and a non-oscillatory events. The Opposition Division also noted that the yaw angle and the angle about the hitch pivot point (i.e. the trailer or hitch angle) "*are referred to different axis of the trailer*" (point 5.1.1 of the impugned decision). Consequently, their corresponding angular rates may differ. For example, in a curve of constant radius, the hitch angle remains constant (with a rate of zero), while the yaw rate of both the tractor and the trailer is the same and non-zero.

The respondent agreed with this view, and also argued that the absolute yaw rate and the rate of angular trailer deflection about the hitch pivot point were distinct physical quantities, even if their values coincided during straight-line vehicle operation. These two physical quantities did not become the same physical quantity simply because their values coincided in one specific condition. The claim clearly defined the angular rate sensor as being configured to measure the rate of angular trailer deflection about a hitch pivot point. The appellant was undoubtedly broadening the subject-matter of claim 1 too much. In particular, the wording of claim 1 excluded a single yaw rate sensor as the angular rate sensor. Figure 3 depicted a "gyro" for the angular rate sensor but such a sensor was not mentioned in the description. Furthermore, gyroscopic sensors were not excluded by the wording of claim 1, but at least two gyroscopic sensors embodying the features 1.3 and 1.3.1 of the angular rate sensor would be needed.

Regarding feature 1.5, D4 only discussed the general detection and reduction of trailer oscillations, and offered no guidance on distinguishing between this type

of oscillation from non-oscillatory trailer excursions or lateral deflections.

The respondent also concluded that D4 did not disclose features 1.4 and 1.6 due to the novelty of features 1.3.1 to 1.3.2.

- 1.3 In the present case, the Board judges that the appellant's interpretation of features 1.3 and 1.3.1 of claim 1 is justified. The Board agrees with the respondent that, when the claim is read in isolation, features 1.3.1 and 1.3.2 can be read literally such that the angular rate measured by the sensor is the rate of the angle made by an axis passing through the hitch pivot point with respect to a reference axis. However, in accordance with G 1/24, the description and drawings shall always be consulted to interpret the claims when assessing the patentability of an invention under Articles 52 to 57 EPC. This implies that claim interpretation requires taking into consideration the wording of the claim and the content of the description. As was correctly pointed out by the appellant at the oral proceedings, the patent discloses a gyroscope sensor (i.e. a sensor for measuring the yaw rate) as the only specific implementation of the claimed angular rate sensor. This is not only denoted in figures 3 and 4 as a "gyro", but the description of the preferred embodiments of the invention also describes the sensor as a raw angular rate sensor, i.e. a sensor measuring absolute yaw rate (see column 4, lines 48 to 54). A measure of the yaw rate of the trailer coincides with the rate of the angle made by an axis passing through the hitch pivot point with respect to a reference axis, when the yaw rate of the towing vehicle is null or negligible (e.g. when the towing vehicle is moving along a straight line). Consequently,

contrary to the respondent's submissions, when consulting the description the claim cannot be strictly construed as requiring the measurement of the rate of the angle made by an axis passing through the hitch pivot point with respect to a reference axis under any conditions or movements of the towing vehicle. The claim must be construed in a broader manner, i.e. as only requiring that the rate of the angle made by an axis passing through the hitch pivot point with respect to a reference axis can be made under certain conditions. One such condition is the most common condition in which the yaw rate of the towing vehicle is null or negligible. Accordingly, since D4 discloses a yaw rate sensor on the trailer (see the passages cited by the opposition division in point 5.1.2 of the decision, namely page 4, line 30 and page 16, lines 14-18), which measures the rate of the angular deflection about a hitch pivot point when the towing vehicle is driving in a straight line, for example, it follows that features 1.3 to 1.3.2 are known from D4.

With regard to feature 1.5, D4 detects trailer oscillation using signals from both the yaw rate and lateral acceleration sensors (see page 16 of D4). The respondent also confirmed this. Once the device of D4 determines an oscillation event, it distinguishes between trailer oscillation and non-oscillation events. Otherwise, the device would not be able to detect oscillation events.

The respondent's argument on non disclosure of features 1.4 and 1.6 does no longer hold either, since features 1.3.1 and 1.3.2 are disclosed in D4.

- 1.4 The respondent also objected under Article 13(2) RPBA to the admissibility of the appellant's argument that

the gyroscopic sensor's yaw rate measurement on the trailer corresponded to that of an angular sensor configured to measure the rate of angular trailer deflection about a hitch pivot point. This argument was presented for the first time in a letter dated 7 March 2025, after the issuance of the summons to oral proceedings on 5 March 2025.

This objections does not hold on two reasons. Firstly, this argument was already presented in the appellant's statement of grounds of appeal (see page 15, fifth paragraph onwards). Secondly, discretion under Article 13(2) RPBA is exercised following notification of a communication under Article 15(1) RPBA, rather than after the summons to oral proceedings is issued.

2. As claim 1 of auxiliary request 1 is identical to the granted claim 1, the same conclusion as above for the main request also applies to auxiliary request 1.

3. *Auxiliary request A*

The auxiliary request A comprises only one claim. Claim 1 corresponds to granted method claim 15.

3.1 *Admissibility*

3.1.1 The Board admits auxiliary request A under Article 13(2) RPBA.

3.1.2 Auxiliary request A was filed after notification of the Board's communication under Article 15(1) RPBA.

Under Article 13(2) RPBA any amendment to a party's appeal case made after notification of a communication under Article 15 (1) shall, in principle, not be taken

into account unless there are exceptional circumstances, which have been justified with cogent reasons by the party concerned.

- 3.1.3 The respondent argued that admitting auxiliary request A was in line with the principle of procedural economy, since deleting claims 1-14 would not alter the factual situation or require re-evaluation of the case, thus preserving efficiency. Furthermore, since claim 1 (granted claim 15) was deemed novel (in accordance with section 1.3.5 of the Board's preliminary opinion in its communication under Article 15(1) RPBA, and the appellant's objection regarding lack of inventive step was deemed inadmissible (in accordance with section 1.5.2), there were no valid objections against auxiliary request A, making it clearly allowable.

The appellant had no objections in this regard.

- 3.1.4 The Board judges that these circumstances qualified as exceptional and were justified with cogent reasons. The subject-matter of claim 1 corresponds to that of granted claim 15, and the appellant's case had already been submitted in this regard. Furthermore, since auxiliary request A appeared clearly allowable, procedural economy was ensured.

3.2 *Sufficiency of disclosure*

- 3.2.1 The patent discloses the invention according to claim 1 in a manner sufficiently clear and complete for it to be carried out by the person skilled in the art (Article 100(b) EPC).
- 3.2.2 The appellant argued that the patent did not explain how and where a skilled person could install an angular

rate sensor on a towing vehicle or trailer in order to measure the rate at which the trailer deflects around the hitch pivot point (i.e. the angular velocity of the hitch angle or trailer angle). The same applied for the accelerometer for obtaining the trailer lateral acceleration value.

Furthermore, according to point 5.1.1 of the decision under appeal, the gyroscope sensor of D9, which was similarly designed and arranged, did not implement feature 15.3.1. This meant that, with such a yaw rate sensor arrangement, feature 15.3.1 and consequently claim 15 could not be implemented.

Lastly, the appellant also considered that features 15.5 and 15.6 left open the means by which unspecified data was received from the angular rate sensor (16) and the accelerometer (12) and how this data was to be used in distinguishing and detecting a trailer oscillation. The patent did neither disclose how an angle existing only between the centreline of the towing vehicle and the centreline of the single-sidedly deflected trailer was to be determined from the angular velocity values of an angular rate sensor or gyroscope sensor.

- 3.2.3 The Board judges that the skilled person is in a position to provide an angular rate sensor as claimed (e.g. gyroscopes, optical encoders, potentiometers, cameras, LiDAR, ultrasonic or radar-based sensors, Hall effect sensors, etc.), which can be mounted either on the trailer or on the towing vehicle, depending on the selected solution. The claim does not specify the type of sensor used to measure the rate of change of the trailer angle. In this regards see also the considerations under point 1.3 above.

The skilled person also knows that the accelerometer needs to be mounted on the trailer rather than the tow vehicle because it needs to measure the trailer's independent motion. If the accelerometer were mounted on the tow vehicle, it would capture the vehicle's accelerations, which may differ from the trailer's due to the hitch's pivot. The patent's design focuses on trailer-mounted sensors for direct measurement of trailer dynamics.

The reference to D9 and how it is interpreted is irrelevant when examining the requirements under Articles 100(b) and 83 EPC, as these must be considered in the light of the entire patent disclosure, bearing in mind the common general knowledge of the skilled person.

As regards features 15.5 and 15.6, the data in question are the signals from each sensor that represent the measured parameters (i.e. the rate of change of the trailer angle and the lateral acceleration of the trailer), as specified in claim 15. The Board cannot follow the objection of the appellant in this regard. The patent explains how differentiation between an oscillation and a non-oscillation event is carried out by using these sensor signals, i.e. by deriving angular trailer deflection values from the angular trailer deflection rate signals received from the angular rate sensor 16, and determining whether the acceleration values and angular deflection values exceed respective pre-determined threshold values (see paragraphs [0014] to [0016] of the patent).

3.3 *Inadmissible extension*

- 3.3.1 The subject-matter of claim 1 does not extend beyond the content of the application as originally filed (Article 100(c) EPC).
- 3.3.2 Claim 1 differs from claim 15 as originally filed in that it further includes features 15.3.1, 15.5 and 15.6.
- 3.3.3 The Opposition Division's conclusions regarding feature 15.3.1 are correct (see page 7 of the contested decision).

The arguments put forward by the appellant in this regard were the same as those considered by the Opposition Division in its decision; the passage referred to as the basis for the feature in the original description (see page 3, line 5) relating to the device rather than the method.

Additionally, it was argued that the claim lacked clarification regarding the position of the angular rate sensor.

However, an analysis of the application as originally filed reveals that the angular trailer deflection rate is measured about a hitch pivot point for the trailer oscillation detection method.

With regard to the omission of the angular rate sensor's position, since the sensor is carried by the trailer (as per feature 15.3), its position in the trailer is such that an angular trailer deflection rate can be measured. Adding the word 'positioned' to the angular rate sensor would not limit the subject-matter of the claim any further.

3.3.4 With regard to features 15.5 and 15.6, the appellant argued that the oscillation detection discriminator feature had been omitted (see page 5, line 26 to page 6, line 3 of the application as originally filed).

However, both the Opposition Division and the respondent are correct in concluding that omitting the oscillation detection discriminator does not provide any additional technical information. This is because the discriminator is implicitly defined in features 15.5 and 15.6, as it is disclosed in the application as originally filed by means of its function.

3.4 *Inventive step*

3.4.1 The subject-matter of claim 1 is not rendered obvious in view of the combination of D2 with either D9 or D4 (Article 56 EPC).

3.4.2 It is common ground that the subject-matter of claim 1 differs from the method of D2 at least in feature 15.2, i.e. obtaining a trailer lateral acceleration value from an acceleration signal received from an accelerometer carried by the trailer. D2 discloses only a sway sensor which measures a sway speed from which it derives a sway acceleration (see paragraph [0027] of D2). The sway acceleration is an angular acceleration and not a lateral acceleration of the trailer.

3.4.3 In view of this difference, the appellant argued that, in order to detect another type of acceleration, in this case lateral acceleration, the skilled person would be prompted by D9 to install a separate transverse acceleration sensor in addition to the sway sensor or yaw rate sensor. This would lead them to

arrive at the subject-matter claimed in an obvious manner.

As regards the combination with D4, the appellant considered that D4 taught the skilled person to use data from a gyroscope (sway sensor) and an accelerometer to better determine trailer swaying or fishtailing. Consequently, the skilled person would be motivated to complete the method described in D2 by adding an accelerometer to the sway sensor in order to measure trailer lateral acceleration. In doing so, they would arrive at the claimed subject matter without exercising an inventive step.

3.4.4 However, both lines of attack are based on hindsight for the following reasons.

Upon learning of D2, the skilled person can identify an oscillation event based solely on the accelerometer data measuring the trailer's lateral acceleration, i.e. the detection of oscillatory lateral trailer motion (see paragraph [0022] of D2). D2 does not specify the use of gyroscope data, let alone for the detection of oscillatory movement. Consequently, while the skilled person would be prompted to use either the trailer oscillation detection method of D2 or that of D9, they would not be motivated to combine them in the manner claimed in an obvious way.

D4 discloses a method of detecting trailer oscillation, in which yaw rate signals (i.e. angular speed signals and no angular deflection values) and lateral acceleration signals are used to determine trailer oscillation or fishtailing. This is achieved by comparing the magnitudes of these signals to associated threshold values (see page 16 of D4). However, the

skilled person has no motivation to take the lateral acceleration sensor of D4 in isolation and mount it in the trailer of D2 to use it together with the sway detection method described in D2 to determine trailer oscillation. Therefore, the skilled person would use either the method of D2 or that of D4 for trailer oscillation detection. A combination of both methods that would arrive at the claimed subject matter is not suggested.

- 3.4.5 The question of admissibility of these inventive step objections can therefore remain unanswered since they do not succeed as to the substance.
4. It follows from the above that the claim of the auxiliary request A is allowable.
5. Since the description needs to be adapted to the claim, the Board considers that it would be more expedient for the Opposition Division to deal with this. Both parties agreed, so the case is remitted to the Opposition Division with the following order.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the Opposition Division with the order to maintain the patent in amended form on the basis of claim 1 of auxiliary request A with a description to be adapted.

The Registrar:

The Chairman:



M. Schalow

G. Pricolo

Decision electronically authenticated