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Datasheet for the decision of 31 January 2022

Case Number: T 1588/18 - 3.4.02

Application Number: 12163727.6

Publication Number: 2650658

IPC: G01F17/00, G01C7/06

Language of the proceedings: EN

Title of invention:
Apparatus for the measurement of capacity of a container and associated method of measurement

Patent Proprietors:
Assytech SRL
Start Italiana SRL

Opponent:
Asis Otomasyon ve Akaryakit Sistemleri A.S.

Relevant legal provisions:
EPC Art. 56, 70(2), 83, 100(c)
EPC R. 7

Keyword:
Added subject-matter (main request: yes)
Clarity (auxiliary request: yes)
Sufficiency of disclosure (auxiliary request: yes)
Inventive step (auxiliary request: yes)

Decisions cited:
G 0003/14, T 0331/87

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Case Number: T 1588/18 - 3.4.02

D E C I S I O N
of Technical Board of Appeal 3.4.02
of 31 January 2022

Appellant: Opponent	Asis Otomasyon ve Akaryakit Sistemleri A.S. Yukari Dudullu Mah. Tatli Su Mevkli Akif Inan Sok. No. 14 Ümraniye-Istanbul (TR)
Representative:	Müller Schupfner & Partner Patent- und Rechtsanwaltspartnerschaft mbB Schellerdamm 19 21079 Hamburg (DE)
Respondents: Patent Proprietors	Assytech SRL Via Val d'Aosta, 5 23018 Talamona (SO) (IT) and Start Italiana SRL Via Pola, 6 20813 Bovisio Masciago (MB) (IT)
Representative:	Vitillo, Giuseppe Barzanò & Zanardo Milano S.p.A. Corso Vittorio Emanuele II, 61 10128 Torino (IT)
Decision under appeal:	**Decision of the Opposition Division of the European Patent Office posted on 10 April 2018 rejecting the opposition filed against European patent No. 2650658 pursuant to Article 101(2) EPC.**

Composition of the Board:

Chairman	R. Bekkering
Members:	F. J. Narganes-Quijano
	T. Karamanli

Summary of Facts and Submissions

I. The appellant (opponent) lodged an appeal against the decision of the opposition division rejecting the opposition filed against European patent No. 2650658.

The opposition filed by the appellant against the patent as a whole was based on the grounds for opposition of added subject-matter (Article 100(c) EPC), insufficiency of disclosure (Article 100(b) EPC), and lack of inventive step (Article 100(a) in combination with Articles 52(1) and 56 EPC).

II. The following documents considered during the first-instance proceedings have been referred to by the parties during the appeal proceedings:

D1: WO 2009/051571 A1
D3: US 2007/0153296 A1.

In its decision the opposition division held in respect of the patent as granted *inter alia* that

- the subject-matter of claim 1 did not extend beyond the content of the application as filed (Article 100(c) EPC),

- the claimed invention was sufficiently disclosed (Article 100(b) EPC), and

- the subject-matter of claim 1 involved an inventive step within the meaning of Article 56 EPC, in particular over document D1 as closest state of the art in combination with document D3, and also over document D3 as closest state of the art under consideration of the common general knowledge.

III. In the statement setting out the grounds of appeal the appellant referred to Fig. 1 of the following document cited during the examination proceedings:

A1: FR 2 752 295 A1.

IV. With its reply to the statement setting out the grounds of appeal dated 7 January 2019, the respondents (patent proprietors) filed sets of claims according to a first to third auxiliary request.

V. Oral proceedings before the board were held on 31 January 2022.

The respondents submitted an amended page 2 of the description of the patent specification.

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

The respondents requested that the appeal be dismissed (main request) or, in the alternative, that the decision under appeal be set aside and that the patent be maintained as amended according to the first auxiliary request, i.e. in the following version:

- Claims: Nos. 1 to 10 according to the first auxiliary request filed by letter dated 7 January 2019.
- Description: Page 2 as filed during the oral proceedings of 31 January 2022, and pages 3 to 6 of the patent specification.
- Drawings: Sheets 10 to 14 of the patent specification.

As a further auxiliary measure, they requested that the decision under appeal be set aside and that the patent be maintained as amended on the basis of the claims of

the second or third auxiliary request filed by letter dated 7 January 2019.

At the end of the oral proceedings the chairman announced the decision of the board.

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

"Apparatus (2) for measuring the capacity of a container (C) for explosive and/or inflammable substances, said apparatus comprising:

- a laser measurement device (3), for generating a ray (R) for the measurement of a distance;
- at least one bearing shaft (4) which extends along a longitudinal axis (k), to be inserted, at least partially, into the container (C);
- a guide (22) arranged along a direction that is parallel to longitudinal axis (k) of shaft (4);
- an optic deflector (31), for deflecting said ray (R) in a desired direction;
- at least one electronic control device (8), for calculating the position of the optic deflector (31) and to process the data obtained from said laser measurement device (3);
- an actuating device (5), for moving:
  - said laser measurement device (3);
  - said actuating device (5) itself;
  - said at least one bearing shaft (4);
  - at least one electronic control device (8);

  [*sic*] of the apparatus (2), in order to perform the measurement of the capacity of said container (C),

said actuating device (5) comprising:

- at least one electric motor,
- at least one mechanism;

the apparatus being **characterized in that**:

- said laser measurement device (3), said electronic control device (8), sad guide (22) and the electronic part of the actuating device (5) are arranged outside of the container (C), and
- the optic deflector (31) is fixed to said bearing shaft (4). [*sic*]
- said at least one motor and said at least one mechanism, of the actuating device (5), are able to:
  - cause said optic deflector (31) to rotate around the longitudinal axis (k), rotating said shaft (4), and
  - to move the deflector (31) itself along a direction that is parallel to the longitudinal axis (k) of the shaft (4), moving said laser measurement device (3), said bearing shaft (4), said electronic control device (8) and actuating device (5) itself, comprised in said apparatus, along sad guide (22)."

Claim 1 of the first auxiliary request differs from claim 1 of the main request in that the first sub-paragraph of the characterizing part of the claim reads as follows:

"• said laser measurement device (3) is arranged outside the container (C) so that all the electronic apparatus, including said electronic control device (8), sad guide (22) and the electronic part of the actuating device (5) are arranged outside of the container (C), and" [*amended feature underlined by the board*].

The claims of the first auxiliary request also include claim 6 directed to a method for measuring the capacity of a container by means of the apparatus according to

claim 1, claim 9 directed to a vehicle comprising at least one articulated arm characterised in that it comprises an apparatus according to claim 1, and dependent claims 2 to 5, dependent claims 7 and 8, and dependent claim 10 directed to particular embodiments of claims 1, 6 and 9, respectively.

Reasons for the Decision

1. The appeal is admissible.

2. *Main request - Ground for opposition under Article 100(c) EPC*

2.1 The European patent application, on which the present patent is based, was originally filed in Italian and, unless otherwise appropriate in view of the respondents' submissions, in the following the English translation thereof filed under Article 14(2) EPC will be referred to as "the application as filed" in accordance with Article 70(2) and Rule 7 EPC.

2.2 Claim 1 as granted results from the combination of claim 1 of the application as filed directed to an "Apparatus (2) for measuring the capacity of a container (C) [which] allows the measurement of the capacity of a container (C) for explosive and/or inflammable substances" with features of the embodiment disclosed on page 3, line 25 *et seq*. of the description of the application as filed. In particular, the claimed feature "said laser measurement device (3), said electronic control device (8) [...] and the electronic part of the actuating device (5) are arranged outside

of the container (C)" is based on the passage on page 4, lines 13 to 19, of the description of the application as filed reading "Laser measurement device 3 is arranged outside of container C, so that all the electronic apparatuses, including electronic control device 8 and the electronic part of actuating device 5, are outside container C itself. Optic deflector 31 [...] is the only element that is present inside container C while the measurement is performed." [*emphasis added by the board*].

In its decision the opposition division held that the fact that claim 1 as granted did not require that all the electronic apparatuses were outside the container did not constitute an unallowable intermediate generalisation of the content of the application as filed. During the appeal proceedings the appellant disputed this finding of the opposition division and referred to the mentioned passage on page 4, lines 13 to 19, and also to the passage on page 2, lines 10 to 17, of the description of the application as filed.

2.2.1 The board first notes that according to the passage on page 2, lines 3 to 9, of the description of the application as filed referring to the state of the art "[i]n particular applications, such as for example containers adapted to contain fuels, the safety law provisions currently in force establish that, in order to perform any kind of measurement, no electronic device has to be inserted into the container itself" [*emphasis by the board*]. Moreover, according to the following passage on page 2, lines 10 to 17, referred to by the appellant, "[t]he object of the present invention is to solve the above-mentioned technical problems by providing an apparatus, which avoids the introduction of electronic devices into the

container being measured [...]" [*emphasis added by the board*].

The board is of the opinion that, in the technical context of the mentioned introductory passages on page 2 of the description, the skilled person reading the passage on page 4, lines 13 to 19, of the description of the application as filed mentioned above, and more particularly the phrase reading "[o]ptic deflector 31 [...] is the only element that is present inside the container C while the measurement is performed" [*emphasis added by the board*], would understand that not only the laser measurement device, the electronic control device and the electronic part of the actuating device, but also all remaining electronic components of the claimed apparatus are outside the container while the measurement is performed. This arrangement concerns structurally and functionally all the electronic components as a whole and inextricably confines all the electronic components of the apparatus to a predetermined position within the claimed apparatus, and a possible dissociation between electronic components arranged outside the container and additional electronic components that may or not be arranged outside the container is neither directly nor unambiguously derivable from the content of the application as filed.

The respondents submitted that, as found by the opposition division in its decision, the passage on page 4, lines 13 to 19, of the description of the application as filed only related to the electronic apparatuses or devices mentioned up to the passage itself and it did not exclude the presence within the container of other electronic components, and that in any case the mentioned passage only related to a

particular embodiment.

The board, however, is not convinced by this argument because the mentioned passage is not to be interpreted in isolation, but in its technical context, and in particular - as noted above - in the context of the introductory passages on page 2, lines 3 to 17 explaining the main object of the invention. In addition, as noted by the appellant by reference to the passage of the application as filed on page 6, lines 10 to 28, disclosing additional electronic components of the apparatus, and in particular an encoder 81 and memory means 82 also arranged outside the container (see Figs. 1 and 5 to 7), the skilled person would interpret the application as filed as requiring that any other electronic component of the apparatus - such as the mentioned encoder and memory means - not explicitly mentioned in the passage on page 4, lines 13 to 19, is also arranged outside the container.

The respondents also submitted that the passage on page 2, lines 10 to 17, of the application as filed only referred to a goal, and not to the main object of the invention. The board cannot follow this argument either because the mentioned goal is presented in the introductory part of the application as filed not as an additional or optional object, but as the main object of the invention. A further argument of the respondents according to which the main object of the invention or technical problem addressed in the introductory part of the application as filed had changed in view of the objective technical problem addressed in the discussion of the issue of the inventive step cannot be followed either because the understanding by the skilled person of the content of the application as originally filed cannot subsequently depend on the formulation of the

objective technical problem solved by the claimed subject-matter in the context of the assessment of inventive step.

Claim 1 as granted is directed to an apparatus "for measuring the capacity of a container (C) for explosive and/or inflammable substances". This claim already specifies that all the electronic components explicitly required by the claimed subject-matter (i.e. the laser measurement device, the electronic control device, and the electronic part of the actuating device) are arranged outside the container. However, claim 1 as granted is directed to an apparatus "comprising" the electronic components specified in the claim and, therefore, it does not exclude that the apparatus comprises additional electronic components. In addition, claim 1 as granted leaves open whether these additional electronic components, if any, are all also arranged outside the container or, on the contrary, may be arranged inside the container, and for this reason the claim does not exclude that the claimed apparatus comprises electronic components arranged inside the container while measurements are performed. Therefore, in view of the considerations above, the claimed subject-matter constitutes an unallowable intermediate generalisation of the content of the application as filed.

In this context, the respondents made reference to decision T 331/87 and argued that neither the possible provision of additional electronic components other than those defined in claim 1 as granted, and in particular of the encoder and the memory means referred to by the appellant, nor their arrangement outside the container, were disclosed as essential or were indispensable for the function of the invention in the

light of the technical problem that was intended to be solved.

This argument, however, is not convincing because, as already noted above, claim 1 as granted does not exclude the presence of additional electronic components, and in particular of the mentioned encoder and memory means, and - contrary to the understanding by the skilled person of the content of the application as filed - the claim does not exclude either the presence of any of these components inside the container. Analogous considerations apply to the further submission of the respondents that the skilled person reading claim 1 as granted was not presented with new information beyond that disclosed in the application as filed.

2.2.2 During the appeal proceedings the respondents referred to Article 70(2) EPC and submitted that the first sentence of the mentioned passage on page 4, lines 13 to 19, of the English translation of the description of the application as filed reading "Laser measurement device 3 is arranged outside of container C, so that all the electronic apparatuses, including electronic control device 8 and the electronic part of actuating device 5, are outside container C itself." [*emphasis by the board*] did not appropriately reflect the technical content of the corresponding passage on page 5, lines 1 to 8 of the application originally filed in Italian, reading "... in modo tale che le apparecchiature elettroniche, compreso anche ..., siano tutti esterni al recipiente 'C' stesso"). In particular, the respondents submitted during the oral proceedings before the board that a correct English translation of the mentioned sentence in Italian should read: "Laser measurement device 3 is arranged outside of container

so that ~~all~~ **the** electronic apparatuses, comprising the electronic control device 8 and the electronic part of actuating device 5, are all outside container "C" while the measurement is performed." [*emphasis in the original*].

Article 70(2) EPC provides that, if a European patent application has been filed in a language other than English, French or German, that text has to be the application as filed within the meaning of the EPC. However, the question of whether the mentioned sentence is to be understood as expressed in the English translation of the application as filed or as submitted by the respondents on the basis of the original Italian text has no incidence on the considerations in point 2.2.1 above because the subsequent sentence of the mentioned passage in the English translation of the application as filed ("Optic deflector 31 [...] is the only element that is inside container C ...") further supports the mentioned considerations, and the English translation of the first sentence of the passage of the original Italian application now submitted by the respondents is consistent, and in any case not at variance, with the mentioned considerations.

2.3 In view of the above, the board concludes that the subject-matter of claim 1 as granted constitutes - contrary to the opposition division's view - an intermediate generalisation of the content of the application as filed for which no basis can be found in the application as filed. Consequently, the ground for opposition under Article 100(c) EPC prejudices the maintenance of the patent as granted and, therefore, the main request of the respondents is not allowable.

3. *First auxiliary request - Articles 84 and 123(2) EPC*

3.1 When compared with claim 1 as granted, claim 1 of the first auxiliary request has been amended to specify that the laser measurement device "is arranged outside the container (C) so that all the electronic apparatus [...] are arranged outside of the container". This amendment overcomes the objection addressed under Article 100(c) EPC in point 2 above.

3.2 During the oral proceedings the appellant objected that the amended feature "all the electronic apparatus, including said electronic control device (8), sad guide (22) and ..." of claim 1 of the first auxiliary request referred to "the electronic apparatus" in singular but related in fact to a plurality of devices, and that for this reason the mentioned feature was not clear (Article 84 EPC) and contrary to Article 123(2) EPC.

The board notes, however, that the English term "apparatus" has two plural equivalent forms, namely "apparatuses" and also "apparatus", and that the skilled person would understand from the use of the term "all" and also of the term "are" in the phrase "so that all the electronic apparatus, including [...] are arranged outside of the container" that "the electronic apparatus" is used in its plural form. Therefore, the mentioned objections raised by the appellant under Articles 84 and 123(2) EPC are not found convincing by the board.

3.3 Paragraphs [0014] and [0015] of the description of the patent as granted wrongly referred, respectively, to the method and to the vehicle defined "in appended claim 8" and "in appended claim 11", and in amended page 2 of the description these expressions have respectively been amended to read "in appended claim 6"

and "in appended claim 9" in accordance with the subject-matter of these claims (see point VI above, last paragraph).

3.4 The board is therefore satisfied that the patent as amended according to the first auxiliary request complies with the requirements of Articles 84 and 123(2) EPC.

4. *First auxiliary request - Article 83 EPC*

4.1 During the first-instance proceedings the appellant submitted in respect of claim 1 as granted, and also in respect of claim 9 as granted which refers back to claim 1, that the claimed invention required that the claimed apparatus was moved including the actuation device and the guide, and that this was not feasible. The opposition division found this argument not persuasive because claim 1 specified the movement of predetermined ones of the components of the claimed apparatus "along said guide" (see last sub-paragraph of claim 1 as granted), but neither claim 1 nor claim 9 as granted required that the guide was moved.

During the appeal proceedings the appellant contested the opposition division's view in this respect and maintained the mentioned objection under Article 83 EPC in respect of the apparatus of claim 1 and of the vehicle of claim 9 of the first auxiliary request. The appellant submitted in particular that either there was no support in the application as filed for the feature of claim 1 according to which the guide was part of the claimed apparatus, or that the claimed invention could not be implemented.

However, as submitted by the respondents, both the application as filed and the patent specification disclose an apparatus comprising a guide (guide 22 in Fig. 1, 2, 5 and 7) along which the remaining components of the apparatus move, and neither claim 1 nor claim 9 require that the guide moves. More particularly, the passage on page 5, line 27, to page 6, line 4, of the application as filed and the corresponding passage of the description of the patent specification disclose an arrangement comprising apparatus 2 and the guide 22, and the skilled person would understand that the mentioned arrangement constitutes itself an "apparatus". The subject-matter of claim 1 is directed to this apparatus comprising apparatus 2 and the guide 22 as two components thereof. It is also noted that the use of the reference sign "(2)" in claim 1 as granted as referring to the whole claimed apparatus does not limit the claim (Rule 43(7) EPC, last sentence). Furthermore, any possible discordance between the "Apparatus (2)" defined in claim 1 and the "apparatus 2" mentioned in the description of the patent specification would at the most, justify an objection under Article 84 EPC. However, such a possible discordance was already present in claim 1 as granted and therefore does not arise from an amendment to claim 1 as granted. Therefore, claim 1 of the first auxiliary request cannot be examined in this respect for compliance with the requirements of Article 84 EPC (see decision G 3/14, OJ EPO 2016, A102). In addition, claim 1 of the first auxiliary request does not require that the guide of the claimed apparatus is also moved together with the other components under the action of the actuating device (see last sub-paragraph of the preamble and of the characterizing part of claim 1).

Therefore, the board cannot see in what sense the fact that the guide cannot be moved along itself would imply that the guide cannot be part of the claimed apparatus and/or would question sufficiency of disclosure of the invention defined in claims 1 and 9 of the first auxiliary request.

4.2 The appellant also submitted that, contrary to the opposition division's view, the apparatus of claim 1 could not measure the volume of containers having an inclination relative to the beam of the laser (see the first of the containers represented on page 3 of the statement of grounds of appeal) and that, in addition, the claimed apparatus was unsuitable for measuring the volume of containers having an unknown form or an unknown inclination and, in particular, an irregular shape as that shown in Fig. 1 of document A1 (see the second of the containers represented on page 3 of the statement of grounds of appeal).

The board notes, however, that claim 1 is directed to an apparatus "for measuring the capacity of a container (C) for explosive and/or inflammable substances", without the claim requiring any further specific suitability. In particular, neither claim 1 nor claim 9 require that the apparatus is suitable for measuring the capacity of a container with a predetermined high degree of measurement precision, and/or for measuring the capacity of a container having an arbitrary shape, and/or for carrying out the measurement under arbitrary conditions. Therefore, as long as the patent specification contains sufficient indications that would enable the skilled person to carry out with the claimed apparatus the measurement of the capacity of a general container (in particular, of a container generally having a regular form) and/or under general

conditions (in particular, a container regularly oriented with respect to the vertical or the horizontal) to a predetermined degree of precision, the fact that for specific containers and/or under specific conditions (in particular, for containers having an irregular shape or a predetermined degree of inclination as those mentioned by the appellant) the claimed apparatus might not appropriately fulfil the function of measuring the capacity of the container with a high precision is not *per se* detrimental to the requirement of sufficiency of disclosure.

4.3 Therefore, the appellant's submissions that the apparatus defined in claim 1, and therefore also the vehicle defined in claim 9 by reference to the apparatus of claim 1, of the first auxiliary request would not be sufficiently disclosed are not persuasive. In the board's opinion, the disclosure of the claimed invention fulfils the requirements of Article 83 EPC.

5. *First auxiliary request - Novelty and inventive step*

5.1 Novelty

No objection of lack of novelty was raised by the appellant in respect of the subject-matter of claim 1 of the first auxiliary request and, as it is apparent from the following discussion on the issue of inventive step, the claimed invention is new over the documents considered during the appeal proceedings in that respect (Articles 52(1) and 54(1) EPC).

5.2 Inventive step - Claim 1 - Document D1 as closest state of the art

5.2.1 Document D1 discloses an apparatus suitable, among other functions, for measuring the capacity of a fuel tank (abstract, together with page 4, line 31, to page 5, line 6, and page 7, lines 18 to 20). A first embodiment of the apparatus involves the use of a laser distance measuring device including a sensor (device 2 in Fig. 1) which, in use, rotates around a vertical axis and pivots around a horizontal axis (see, respectively, arrows B and A in Fig. 1), and in a second embodiment this device is replaced by "a mirror set" or "mirror" so that the measurement is carried out by way of reflection from the mirror or mirror set "having the same movement capability" as the device (paragraph bridging pages 9 and 10). According to the appellant this second embodiment of document D1 constituted the closest state of the art.

5.2.2 The appellant disputed the opposition division's finding in the decision under appeal that the apparatus of claim 1 as granted differed from the apparatus of the second embodiment of document D1 in the following features:

a1) the provision of a guide arranged along a direction that is parallel to the longitudinal axis of the shaft;

a2) the at least one electronic control device is configured to calculate the position of the optic deflector;

a3) the actuating device is for moving the laser measurement device, the actuating device and the at least one electronic control device of the apparatus in order to perform the measurement of the capacity of the container; and

a4) the at least one motor and the at least one mechanism of the actuating device are able to move the deflector along a direction that is parallel to

the longitudinal axis of the shaft, moving the laser measurement device, the bearing shaft, the electronic control device and the actuating device itself along said guide.

The respondents for their part submitted that paragraph bridging pages 9 and 10 of document D1 did not constitute an enabling disclosure of the second embodiment. In addition, contrary to the opposition division's view, document D1 did not disclose the following claimed feature

a5) the laser measurement device is arranged outside the container,

and, in addition, also the following feature of claim 1 of the first auxiliary request was not disclosed in document D1:

a6) all the electronic apparatus are placed outside the container.

5.2.3 In support of the objection that the mentioned second embodiment of document D1 did not constitute an enabling disclosure the respondents submitted that its description was not clear at least in respect of the arrangement of the "mirror set" or "the mirror" and that, in addition, the embodiment would, without non-obvious modifications, not be suitable for the purpose specified in the document.

The board shares in part the respondents' submissions that the paragraph bridging pages 9 and 10 of document D1 does not provide a clear and complete disclosure as to how the device would be constituted after replacement of the laser distance measuring device 2 of Fig. 1 by the "mirror set" or "the mirror" mentioned in the paragraph. In any case, as it will become apparent in the following, in the board's view the claimed

subject-matter does not result in an obvious way from the second embodiment of document D1 as closest state of the art to the extent that it represents an enabling disclosure and, therefore, there is no need for the board to decide whether the mentioned disclosure of document D1 constitutes an enabling disclosure.

5.2.4 In respect of features a1) to a6) the board notes the following:

As regards feature a1), the board notes that claim 1 requires that the guide is "arranged along a direction that is parallel" to the longitudinal axis of the shaft, and that the laser measuring device, the bearing shaft, the electronic control device and the actuating device are movable "along said guide". Therefore, claim 1 implicitly requires that the guide determines at least a longitudinal guiding dimension along which the mentioned components are movable, and document D1 does not disclose any guide, at least not a guide determining a longitudinal guiding dimension as claimed. In particular, neither the fact that the main shaft 14 of the apparatus of document D1 is said on page 8, lines 21 to 24, to move "up and down" - irrespective of whether the skilled person would understand this movement as a vertical linear movement or only as a reference to the vertical pivoting rotational movement of the distance measuring device 2 (see page 6, line 9, and lines 24 and 25; page 7, lines 1 to 5; page 8, lines 20 to 24; and claims 5 and 11) -, nor the fact that the apparatus is "mounted to the fuel tank" (page 7, lines 26 to 28) necessarily imply the provision of guiding and/or mounting means constituting a guide as claimed - let alone the provision of means implicitly constituted by a friction wheel or by a longitudinal rack gear of a rack-and-pinion gear set as

submitted by the appellant during the proceedings. The appellant presented further arguments in support of the implicit provision of a guide in document D1, and none of these arguments are convincing, among other reasons because, as noted by the opposition division in the decision under appeal, in document D1 the shaft could simply hang from the apparatus through the opening of the container, i.e. without the provision of a guide as claimed.

As regards feature a2), the board notes that there is no detailed disclosure in document D1 relating to the function of the control unit 8 (see, in particular, page 6, lines 21 to 29, page 7, lines 10 to 14, and page 9, lines 10 to 13) from which it could be derived in a direct and unambiguous way that the control unit 8 would be suitable for performing the claimed function of calculating the position of the optical deflector.

As regards features a3) and a4), the board notes in respect of the embodiment disclosed in document D1 in the paragraph bridging pages 9 and 10 the following:

- Document D1 discloses that the laser distance measurement device 2 "may be fixed to an upper position (so that the direction of the laser light is downwards)" (page 9, line 30, to page 10, line 1), but the document leaves open where and how the laser distance measurement device is fixed with respect to the remaining components of the apparatus and also whether the device, and therefore the mirror set replacing it, linearly moves upon the action of the motor or - as it is the case of other components of the apparatus such as the control unit 8 - remains stationary. The appellant's argument that the disclosure of document D1 implicitly required the arrangement of the laser source on the main shaft 14

for ensuring the appropriate optical coupling of the laser source with the mirror set is not convincing either because the laser distance measurement device could be arranged outside the container and fixed to components other than the main shaft 14 (see Fig. 1) and optically coupled to the mirror set by some optical means ensuring an appropriate propagation path for the laser beam between the device and the mirror set. For similar reasons, and contrary to the appellant's submissions, there is no direct and unambiguous disclosure in document D1 of the laser distance measurement device or of the mirror set replacing it, or of any component constituting an electronic control device or part thereof, being moved together with the shaft 14.

- There is no disclosure in document D1 in support of the appellant's contention that the actuating device 5 is also moved up and down together with the shaft 14, it being noted that there is no clear and unambiguous disclosure either that the shaft itself is moved up and down as also submitted by the appellant. In particular, the arrows "B" and "A" in Fig. 1 of document D1 represent, respectively, a rotational movement of the shaft and of the distance measuring device about the longitudinal axis of the shaft, and a pivoting rotational movement of the distance measuring device about an axis orthogonal to the longitudinal axis of the shaft and, after replacement of the device by the mirror set, none of them require necessarily a movement of the shaft 14 along its longitudinal axis.

- In the paragraph on page 10, lines 1 to 5, of document D1 the mirror set is said to have "the same movement capability" as the laser distance measurement device 2 disclosed in connection with the embodiment of Fig. 1. Therefore, the mirror set or at least one mirror of the second embodiment also appears to be

rotated about the longitudinal axis of the shaft and pivoted about an axis orthogonal to the longitudinal axis of the shaft (see in this respect Fig. 1 together with page 6, lines 9 and 10, and page 8, lines 15 to 18), and there is no disclosure of the mirror set or at least one mirror being moved along a direction parallel to the longitudinal axis of the shaft - let alone of the laser measurement device or of the mirror set replacing it, the shaft, the electronic control device and the actuating device itself being moved along a guide upon the action of the motor and the corresponding mechanism.

As regards feature a5), the board notes that in the embodiment disclosed in the paragraph bridging pages 9 and 10 of document D1 the laser measuring device is said to be fixed "to an upper position" in relation to its position in the embodiment disclosed by reference to Fig. 1, and that the mentioned "upper position" is such that the apparatus can be positioned with respect to a container - in particular, with respect to a buried container as that considered in document D1 with reference to Fig. 1 - so that, in use, the laser measuring device would be arranged outside the container. Therefore, the respondents' submissions that the claimed apparatus would also differ from the apparatus disclosed in document D1 in feature a5) is not found persuasive by the board.

As regards feature a6), the board notes that in the second embodiment of document D1 there is no electronic component within the container and that, therefore, feature a6) does not constitute a distinguishing feature of the claimed apparatus over document D1.

In view of the above considerations, the board is of the opinion that, as held by the opposition division in its decision, the apparatus of claim 1 differs from the apparatus of the second embodiment disclosed in document D1 in features a1) to a4).

5.2.5 The parties submitted different views in respect of the technical effect(s) of the distinguishing features identified in point 5.2.4 above and in respect of the corresponding objective technical problem solved by the claimed apparatus. However, in the board's view the parties' submissions are not persuasive for the following reasons:

- The apparatus of document D1 is already operable under predetermined safety provisions and without the need to empty or degas the container at least to the same extent as the claimed apparatus and, contrary to the respondents' submissions, none of the distinguishing features improves the operation of the claimed apparatus under more restrictive conditions.

- None of features a1) to a4) taken in isolation or in combination imply that the claimed apparatus would necessarily be - as submitted by the appellant and by the respondents and as also stated by the opposition division in its decision - more compact and/or - as submitted by the respondents - easier to assemble and/ or more reliable and/or able to perform measurements with a higher level of accuracy and/or of safety than the apparatus of document D1.

- The scanning linear movement of the claimed deflector does not constitute a technical effect of the claimed apparatus, but a feature of the claimed apparatus itself, and, in addition, the mentioned scanning linear movement does - contrary to the respondents' submissions - not achieve a technical

effect over the scanning rotation and pivoting movement of the mirror set or mirror of document D1.

In view of these considerations, the board is of opinion that the objective technical problem solved by the claimed apparatus is to be formulated in terms of finding an alternative to the apparatus disclosed in the second embodiment of document D1.

5.2.6 The appellant submitted that the claimed apparatus resulted in an obvious way from document D1 under consideration of the disclosure of document D3.

Document D3 discloses an apparatus for measuring the inner wall of a cavity such as a cylindrical drill hole or the auricular canal of a human or animal organism (*cf.* paragraph [0009]). The apparatus (see Fig. 1 together with the corresponding description) comprises

- a measuring head 120 including a light measuring device (point light source 130 and point light detector 150) operating with laser light (paragraph [0023]), a shaft constituted by the glass rod 137 and/or the protective covering 138 and/or the elongated portion of the measuring head surrounding the glass rod (see Fig. 1), a reflector 140 for deflecting light and coupled to the shaft (Fig. 1), and a first actuating device (designated by the second of the reference numbers "155" in Fig. 1 and constituted by the rotary drive 156 mentioned in paragraph [0052]) for causing the glass rod 137, the protective covering 138 and the reflector 140 to rotate around the longitudinal axis of the shaft (arrow 156a in Fig. 1),
- a guide constituted by the horizontal walls of a housing 110,
- a second actuating device (the axial drive 116 in Fig. 1) for moving the whole measuring head along the

mentioned guide in the direction of the longitudinal axis of the shaft (arrow 116a in Fig. 1), and

- an electronic control device (spectrally resolving light detector 174) for processing the data obtained from the light measurement.

The skilled person confronted with the objective technical problem would consider alternative arrangements for measuring the capacity of a liquid fuel container (see document D1, page 1, lines 6 and 7) and/or of a container for explosive and/or inflammable substances and the like known in the art, but neither document D1 nor the objective technical problem would suggest the skilled person to consult other technical fields, let alone a different technical field as that to which document D3 pertains (paragraph [0009]), i.e. the technical field of the measurement of the inner wall of a cavity such as cylindrical drill holes or the auricular canal of a human or animal organism having dimensions which are at least one order of magnitude smaller than the cavities considered in document D1 - i.e. cavities consisting of underground liquid fuel tanks normally used in gas stations (see D1, page 1, lines 6 to 11) - and requiring miniaturized measuring heads with relatively low dimensions (D3, paragraph [0091]). It is noted, in particular, that document D3 is directed to an optical confocal proximity sensor focusing light on the surface of the cavity of the type mentioned above (see paragraphs [0009] and [0050]), and therefore at distances also at least one order of magnitude smaller than the average radius of the cavities considered in document D1. For these reasons, the board is of the opinion that the skilled person working in the technical field to which document D1 pertains would not have considered document D3.

In addition, even assuming that the skilled person in search for alternatives to the apparatus of document D1 would have consulted document D3 and would have considered the incorporation in the apparatus of document D1 of predetermined features of the apparatus of document D3, they would not have arrived at the claimed apparatus in an obvious way at least because - as held by the opposition division in its decision - the actuating device of document D3 for moving the laser measurement device and the shaft, i.e. the second actuating device mentioned above and constituted by the axial drive 116 in Fig. 1 for moving the whole measuring head along the mentioned guide (Fig. 1 and paragraph [0048]), does not move - at least not entirely - itself along the guide (i.e. along the horizontal walls of the housing 110 in Fig. 1), and neither document D3, nor a combination of documents D1 and D3 would suggest re-arranging such an actuating device so that - in addition of moving the laser measurement device and the electronic control device - it would also move itself along the guide as required by features a3) and a4) of claim 1.

As regards the appellant's submissions relating to the first actuating device, i.e. the rotary drive 155 of Fig. 1 of document D3 - and referred to as rotary drive 156 in paragraph [0052] -, being moved along the guide together with the measuring head 120, the board notes that this actuating device causes the reflector 140 to rotate around the longitudinal axis of the shaft, but not to move the reflector along a direction parallel to the axis of the shaft as this movement is caused - as already mentioned above - by the second actuating device or axial drive 116, which - as submitted by the respondents - is fixed to the housing 110 and -

contrary to the claimed subject-matter - does not move - at least not entirely - along the guide.

5.2.7 In view of the above considerations, the board is of the opinion that the apparatus of claim 1 does not result in an obvious way from document D1 as closest state of the art under consideration of document D3.

5.3 Inventive step - Claim 1 - Document D3 as closest state of the art

5.3.1 The appellant also submitted that the apparatus of claim 1 would be obvious when starting from document D3 as alternative closest state of the art.

5.3.2 The board first notes that starting with document D3 as closest state of the art amounts to consider as skilled person, not the skilled person working in the technical field to which the claimed invention is primarily directed, i.e. the technical field of the measurement of the capacity of containers for explosive or inflammable substances and the like, but the skilled person working in the technical field to which document D3 pertains, i.e. the technical field of the measurement of the inner wall of a cavity such as cylindrical drill holes or the auricular canal of a human or animal organism and having - as already mentioned in point 5.2.6 above, third paragraph - dimensions which are at least one order of magnitude smaller than the cavities of containers generally considered in the technical field of explosive or inflammable substances and the like.

In addition, the question arises as to whether and why the skilled person working in the technical field to which document D3 pertains would consider, without

hindsight knowledge of the claimed apparatus, modifying the structural and functional features of the device of document D3 (in particular, the dimensions of the miniaturized optical head and/or the focusing distances and/or the data processing means, etc.) in such a way that the device would then turn out to be suitable for measuring the capacity of a container for explosive and/or inflammable substances and the like as required by claim 1, and the appellant has submitted no argument as to why this skilled person would proceed in this way. It is also noted in this respect that the claimed apparatus differs from the apparatus disclosed in document D3 not "only in so far as D3 uses two motors of which only motor (155) is actuated" as submitted by the appellant, but also *inter alia* in that the whole actuating device - i.e. including, in the case of document D3, the corresponding second actuating device (axial drive 116 in Fig. 1) for moving the whole measuring head along the mentioned guide in the direction of the longitudinal axis of the shaft (arrow 116a in Fig. 1) - causes itself to be moved along the guide, and the appellant has submitted no argument as to why this feature would be obvious.

At least for these reasons the appellant's submissions relating to the obviousness of the apparatus of claim 1 over the apparatus of document D3 are in the board's view not persuasive.

5.4 In view of the considerations in points 5.2 and 5.3 above the board concludes that the apparatus of claim 1 of the first auxiliary request involves an inventive step over documents D1 and D3 (Article 56 EPC).

5.5 The method defined in claim 6 and the vehicle defined in claim 9 involve the apparatus defined in claim 1 and

therefore also the subject-matter of claims 6 and 9 is new and involves an inventive step (Articles 52(1), 54 and 56 EPC). The same conclusion applies in respect of dependent claims 2 to 5, dependent claims 7 and 8, and dependent claim 10 by virtue of the reference in these claims to claims 1, 6 and 9, respectively.

6. In view of the above considerations, the board concludes that the patent as amended according to the first auxiliary request meets the requirements of the EPC within the meaning of Article 101(3)(a) EPC and that, therefore, the patent is to be maintained as amended according to this request.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the department of first instance with the order to maintain the patent as amended in the following version:

- Claims: Nos. 1 to 10 according to the first auxiliary request filed by letter dated 7 January 2019.
- Description: Page 2 as filed during the oral proceedings of 31 January 2022, and pages 3 to 6 of the patent specification.
- Drawings: Sheets 10 to 14 of the patent specification.

The Registrar: The Chairman:

H. Jenney R. Bekkering

Decision electronically authenticated