

From the INTERNATIONAL SEARCHING AUTHORITY

To:

PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

Applicant's or agent's file reference 368856		Date of mailing (day/month/year) 02 February 2018
International application No. PCT/EP2017/076567		FOR FURTHER ACTION See paragraph 2 below
International filing date (day/month/year) 18 October 2017	Priority date (day/month/year) 12 December 2016	
International Patent Classification (IPC) or both national classification and IPC G01N 21/85(2006.01)i; G01N 33/22(2006.01)i; G01N 33/28(2006.01)i; G01M 3/02(2006.01)i; G01M 3/20(2006.01)i; G01M 3/38(2006.01)i; G01N 21/03(2006.01)n; G01N 21/27(2006.01)n		
Applicant ROBERT BOSCH GMBH		

1. This opinion contains indications relating to the following items:

- Box No. I Basis of the opinion
- Box No. II Priority
- Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- Box No. IV Lack of unity of invention
- Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step and industrial applicability; citations and explanations supporting such statement
- Box No. VI Certain documents cited
- Box No. VII Certain defects in the international application
- Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

Name and mailing address of the ISA/	Date of completion of this opinion	Authorized officer

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International application No.

PCT/EP2017/076567

Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of:
 - the international application in the language in which it was filed.
 - a translation of the international application into _____ which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).
2. This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43*bis*.1(a)).
3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, this opinion has been established on the basis of a sequence listing:
 - a. forming part of the international application as filed:
 - in the form of an Annex C/ST.25 text file.
 - on paper or in the form of an image file.
 - b. furnished together with the international application under PCT Rule 13*ter*.1(a) for the purposes of international search only in the form of an Annex C/ST.25 text file.
 - c. furnished subsequent to the international filing date for the purposes of international search only:
 - in the form of an Annex C/ST.25 text file (Rule 13*ter*.1(a)).
 - on paper or in the form of an image file (Rule 13*ter*.1(b) and Administrative Instructions, Section 713).
4. In addition, in the case that more than one version or copy of a sequence listing has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that forming part of the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
5. Additional comments:

**WRITTEN OPINION OF THE
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International application No.

PCT/EP2017/076567**Box No. VII Certain defects in the international application**

The following defects in the form or contents of the international application have been noted:

See Supplemental Box

**WRITTEN OPINION OF THE
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International application No.

PCT/EP2017/076567**Box No. VIII Certain observations on the international application**

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

See Supplemental Box

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.
Continuation of:

Box V**Reasoned statement with regard to novelty, inventive step and industrial applicability; citations and explanations supporting such statement**

- [1] Reference is made to the following documents:

D1	WO 2012/170743 A1 (SENTELLIGENCE INC [US]; COATES JOHN [US]; QUALLS ROBERT [US]) 13 December 2012 (2012-12-13)
D2	WO 2012/168151 A1 (CASTROL LTD [GB]; CHAHINE SAMIR [GB]; WEST KEVIN RICHARD [GB]) 13 December 2012 (2012-12-13)

- [2] The present application does not meet the requirements of PCT **Article 33(1)** because the subject matter of **claims 1 and 10** is not novel (PCT **Article 33(2)**).

- [2.1] With respect to **claim 1**, document D1 discloses

a method for detecting a contaminant in an operating fluid which is conducted in a machine or apparatus in a conduit path(cf. **paragraph 2; paragraph 69: "dirty fluid" ; as well as paragraph 43 in conjunction with figures 5A and 5B**), *wherein*

- [2.1.1] *scanning light is radiated through at least one optical measurement location within the conduit path*(cf. **paragraph 41**), *which light includes at least one wavelength for which the absorption coefficient of the operating fluid differs from the absorption coefficient of the contaminant, and*

- [2.1.2] *wherein the optical absorption A of the scanning light is measured in the operating fluid*(cf. **paragraph 47**), *wherein*

- [2.1.3] *in addition, the temperature T of the operating fluid at the optical measurement location is determined*(cf. **paragraph 59: "... a temperature sensor 110 for measuring the temperature of a fluid 104 to be sampled"**).

- [2.2] A corresponding objection concerns the device according to **claim 10**.

- [3] The subject matter of **dependent claims 2, 5-7, 12 and 13** is not novel (PCT **Article 33(2)**). The subject matter of **dependent claims 3, 4, 8, 9 and 11** does not involve an inventive step (PCT **Article 33(3)**).

- [3.1] Document D1 discloses the additional features **of claims 2 and 12** (cf. paragraph 56, lines 1-9 on page 23), **of claim 5** (*supra*), **of claim 6** (for example, cf. paragraph 59: passage beginning with "Memory device 108 [...] may store calibration data,..."), **of claim 7** (is implicit for the use of dye markers; see paragraph 71, feature (i)) and **of claim 13** (disclosed to an expert reader by paragraphs 4-6).

- [3.2] Document D2 discloses the additional features **of claim 9** (cf. page 3, lines 15 and 16; page 29, lines 16-27 for engine fuel as a contaminant; or page 27, line 19 to page 28, line 14 for lubricant as a contaminant). A person skilled in the art would combine the teachings of D2 and D1 in order to achieve a more stable detection of lubricant in engine fuel or of engine fuel in lubricant.

- [3.3] The additional features of dependent **claims 3, 4, 8 and 11** concern minor modifications to the method or to the device of the kind that a person skilled in the art would normally make on the basis of routine considerations, especially since the resulting advantages are readily foreseeable. Consequently, the subject matter of these claims does not appear to involve an inventive step either.

Box VII**Certain defects in the international application**

Supplemental Box

- [4] In order to meet the requirements of PCT **Rule 5.1(a)(ii)**, the documents listed in this opinion should be included in the description.

Box VIII**Certain observations on the international application**

- [5] The application does not meet the requirements of PCT Article 6 because **claim 9** is unclear.

In this respect, the use of the conjunction "*and*" in the definition of the engine fuel or contaminant results in a lack of clarity, because in the case of a single measurement, the substances to be measured (fuel as a contaminant in lubricant, lubricant as a contaminant in fuel) can only be understood as mutually exclusive alternatives.