

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY
(PCT Rule 43*bis*.1)

To:

see form PCT/ISA/220

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/US2010/038452

International filing date (day/month/year)
14.06.2010

Priority date (day/month/year)
27.08.2009

International Patent Classification (IPC) or both national classification and IPC
INV. G01R19/32
ADD. G01R15/24

Applicant
GENERAL ELECTRIC COMPANY

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 43*bis*.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 usually 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 66.1*bis*(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.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA:



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Date of completion of
this opinion

see form
PCT/ISA/210

Authorized Officer

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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 43bis.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 filed or furnished:
- a. (means)
- on paper
 - in electronic form
- b. (time)
- in the international application as filed
 - together with the international application in electronic form
 - subsequently to this Authority for the purposes of search
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 in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
5. Additional comments:

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	<u>2, 4, 10-14</u>
	No: Claims	<u>1, 3, 5-9, 15-21</u>
Inventive step (IS)	Yes: Claims	
	No: Claims	<u>1-21</u>
Industrial applicability (IA)	Yes: Claims	<u>1-21</u>
	No: Claims	

2. Citations and explanations

see separate sheet

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/US2010/038452

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 separate sheet

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 separate sheet

Re Item VIII

- 1 Certain observations on the international application**
- 1.1 The vague and imprecise statement in the description paragraphs [0023] and [0052] implies that the subject-matter for which protection is sought may be different to that defined by the claims, thereby resulting in lack of clarity (Article 6 PCT) when used to interpret them.
- 1.2 Furthermore, the description describes in paragraph [0009] and in fig. 2 "a method of providing a temperature compensated current measurement according to one embodiment of the present invention". However, the actual claims do not comprise a method claim. Thus the description implies that the subject-matter for which protection is sought may be different to that defined by the claims, thereby resulting in lack of clarity (Article 6 PCT).
- 1.3 A further lack of clarity (Article 6 PCT) originates from the apparently undefined formulation "passive control system", as the term "control" normally implies active manipulations. For the further discussion of novelty, each containment having an isolating effect (i.e. each containment or housing) is considered to represent a passive temperature control system.

Re Item V

- 2 Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**
- 2.1 Reference is made to the following documents:
- D1 US 2002/145414 A1 (LANAGAN MICHAEL T [US] ET AL) 10 October 2002 (2002-10-10)
- D2 US 5 416 860 A (LEE YEN-ZEN [TW] ET AL) 16 May 1995 (1995-05-16)
- D3 CA 2 703 344 A1 (TOKYO ELECTRIC POWER CO [JP]) 30 April 2009 (2009-04-30)
- D4 WO 98/12565 A1 (SIEMENS AG [DE]; BOSSELMANN THOMAS [DE]) 26 March 1998 (1998-03-26)

- D5 MADDEN W I ET AL: "TEMPERATURE COMPENSATION FOR OPTICAL CURRENT SENSORS" OPTICAL ENGINEERING, SOC. OF PHOTO-OPTICAL INSTRUMENTATION ENGINEERS, BELLINGHAM LNKD- DOI:10.1117/1.602222, vol. 38, no. 10, 1 October 1999 (1999-10-01) , pages 1699-1707, XP000859861 ISSN: 0091-3286
- D6 EP 0 248 111 A2 (CV TECHNOLOGY INC [US]) 9 December 1987 (1987-12-09)
- D7 ZAIDI S H ET AL: "Faraday-effect magnetometry: compensation for the temperature-dependent Verdet constant" MEASUREMENT SCIENCE AND TECHNOLOGY, IOP, BRISTOL, GB LNKD- DOI:10.1088/0957-0233/5/12/008, vol. 5, no. 12, 1 December 1994 (1994-12-01) , pages 1471-1479, XP020065827 ISSN: 0957-0233
- D8 EP 0 901 006 A1 (CIT ALCATEL [FR]) 10 March 1999 (1999-03-10)
- D9 GB 2 164 145 A (WESTINGHOUSE ELECTRIC CORP) 12 March 1986 (1986-03-12)
- D10 WO 92/15895 A1 (BRITISH TECH GROUP [GB]) 17 September 1992 (1992-09-17)
- D11 US 2009/199646 A1 (SAKAMOTO AKIRA [JP] ET AL) 13 August 2009 (2009-08-13)

2.2 The present application does not meet the criteria of Article 33(2) PCT, because the subject-matter of claim 1 is not new.

2.2.1 Document D1 discloses (references in brackets are applying to said document):

A fiber optic current sensing system (pars. [0018,0019,0023], figs. 1,2,5) comprising:

a fiber optic current transducer (ref. 210 and 220 in fig.2) configured to sense a current flowing through an electrical conductor (par.0023);

a temperature sensor configured to measure the operational temperature of the fiber optic current transducer (par. [0009,0010 and 0034,0035], the sensor head fig. 2 ref. 210 in combination with fig. 2 ref. 285 acting as temperature sensor); and

signal-processing electronics (refs. 280, 290 in fig.2) configured to adjust the sensed current measurement to substantially compensate for temperature induced errors associated with the sensed current measurement in response to the measured operational temperature of the fiber optic current transducer (pars. [0009,**0035** and 0036]).

- 2.2.2 As thus all features of claim 1 are already disclosed in combination in document D1, the present claim does not meet the requirements of Article 33 (2) PCT.
- 2.2.3 The same would be true if considering the respective disclosure of documents D2-D5 (see cited passages in the search report).
- 2.3 Dependent claims 2-21 do not appear to contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of novelty and/or inventive step, because the slight constructional changes are considered to come within the scope of the customary practice followed by persons skilled in the art, especially as the advantages thus achieved can readily be foreseen, see also documents D1-D11 and the respective passages cited in the search report.
- 2.3.1 Particularly, it is noted that
- a fibre-optic temperature sensor comprising GaAs is already disclosed in document D6 (col. 14 l. 15-16),
 - the idea of using a temperature control system to control/stabilize the environmental influence on the current sensor is not considered to be inventive, and
 - a device comprising a current sensor system as claimed and a temperature control system is already disclosed in e.g. document D5 (fig. 13).

Re Item VII

3 Certain defects in the international application

- 3.1 Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in documents D1-D7 is not mentioned in the description, nor are these documents identified therein.

- 3.2 Independent claim 1 is not in the two-part form in accordance with Rule 6.3(b) PCT, which in the present case would be appropriate, with those features known in combination from the prior art D1 (or one of D2-D5) being placed in the preamble (Rule 6.3(b)(i) PCT) and the remaining features being included in the characterising part (Rule 6.3(b)(ii) PCT).
- 3.3 The features of claims 1-21 are not provided with reference signs placed in parentheses (Rule 6.2(b) PCT).