

PATENT COOPERATION TREATY

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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
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International application No. PCT/US2020/016472	International filing date (day/month/year) 04.02.2020	Priority date (day/month/year) 01.05.2019
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International Patent Classification (IPC) or both national classification and IPC INV. F16B33/00 F16B37/04 ADD. B29C65/46 B29C65/00
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Applicant SIEMENS ENERGY, INC.

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.

Name and mailing address of the ISA:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Fax: +49 89 2399 - 4465	Date of completion of this opinion see form PCT/ISA/210	Authorized Officer Härtig, Thomas Telephone No. +49 89 2399-0	
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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:
 - 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 13ter.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 13ter.1(a)).
 - on paper or in the form of an image file (Rule 13ter.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:

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, 6, 8, 10, 13</u>
	No: Claims	<u>1, 3, 5, 7, 9, 11, 12</u>
Inventive step (IS)	Yes: Claims	
	No: Claims	<u>1-13</u>
Industrial applicability (IA)	Yes: Claims	<u>1-13</u>
	No: Claims	

2. Citations and explanations

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

item V

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

1 Reference is made to the following documents:

- D1 DE 197 05 172 C1 (SCHULZ HANS GEORG [DE]) 26 March 1998 (1998-03-26)
- D2 DE 10 2010 008259 A1 (HENKEL & ROTH GMBH [DE]) 16 December 2010 (2010-12-16)
- D3 JP S62 1525 A (SAILOR PEN CO LTD) 7 January 1987 (1987-01-07)
- D4 DE 197 55 985 A1 (ROHWEDDER GMBH U CO KG PRAEZIS [DE]) 1 July 1999 (1999-07-01)
- D5 DE 196 41 533 C1 (SCHULZ HANS GEORG [DE]) 7 August 1997 (1997-08-07)
- D6 EP 3 072 626 A1 (NEWFREY LLC [US]) 28 September 2016 (2016-09-28)

2 Novelty and inventive step

The present application does not meet the criteria of Article 33(2) PCT, because the subject-matter of claims 1-3, 5, 7, 9, 11 and 12 is not new. Further, the subject-matter of claims 2, 4, 6, 8, 10 and 13 does not involve an inventive step in the sense of Article 33(3) PCT.

2.1 Independent claims

2.1.1 Claim 1

D1 discloses (the references in brackets refer to this document):

A method of installing an insert (**claim 1: "Metallteil 12"**) into a base material (**claim 1: "Kunststoffteil 14"**), the method comprising:

forming a hole (**implicit in column 3, l. 35-38: "eine für das Metallteil vorgesehene Bohrung 36 des Kunststoffteils"**) in the base material;

placing (**column 4, l. 17-18: "das Metallteil am Haltedorn 28 des Einpressdorns 22 befestigt"**) the insert on an interface portion (**Haltedorn 28**) of an insertion tool (**claim 1: "Vorrichtung zum Einpressen von Metallteilen in Kunststoffteile"**);

providing electrical power to a coil (*implicit in column 3, l. 17-27: "elektromagnetischen Wandler 34 ..., der mit einem nicht dargestellten Generator verbunden ist, der eine mittelfrequente Wechselspannung hoher Stromstärke abgibt"*);
inducing a current in the insert in response to electrical power passing through the coil (*implicit in column 3, l. 17-27: "Mit Hilfe des vom elektromagnetischen Wandler 34 abgegebenen elektromagnetischen Feldes wird das Metallteil 12 durch die im Metallteil erzeugte Induktionswärme berührungslos auf die Schmelztemperatur des Kunststoffteils erwärmt"*); and
pushing the insert into the hole (*claim 1: "Einpressen des erwärmten Metallteils in das Kunststoffteil"*).

For the sake of completeness, reference is made to documents D2 (claim 1, 10; para. [0035, 0036, 0052]; fig. 1-5; the insert "Metallteil 2" is heated inductively "Induktionsspule 6" and pressed into a base material "Kunststoffteil 3"), D3 (claim 1; para. [0001]; fig. 1-3), D4 (claim 1, 3; fig. 1) and D5 (claim 1; column 3, l. 60-62; fig. 2-4) which are equally harmful to novelty.

2.1.2 Claim 7

The same reasoning (under 2.1.1) applies mutatis-mutandis to the subject-matter of the independent product claim 7, which neither fulfils the requirements of novelty.

It is noted that a controller is implicitly disclosed by D1 (column 3, l. 17-27: "elektromagnetischen Wandler 34 ..., der mit einem nicht dargestellten Generator verbunden ist, der eine mittelfrequente Wechselspannung hoher Stromstärke abgibt") and D2 (para. [0022]: "...Dadurch ist das jeweils einzubettende Metallteil gezielt präzise und Energie sparend auf eine vorgegebene Temperatur erwärmbar.").

2.1.3 Claim 13

Independent system claim 13 is not considered to involve an inventive step, because the aggregation of several insertion tools (see reasoning in item 2.1.2) is obvious, see PCT-EPO Guidelines G.VII.7.

Further, D2 discloses the adjustment of parameters for different inserts and base materials (D2, claim 4; para. [0038, 0043, 0045, 0052]). A skilled person would therefore combine several insertion tools for installing a plurality of inserts simultaneously in order to increase the efficiency and arrive at the subject-matter of claim 13. Claim 13 does therefore not involve an inventive step in the sense of Article 33(3) PCT.

For procedural efficiency it is noted, that using one controller to control a plurality of operations is not considered to be inventive. Simultaneous operations for manufacturing efficiency is a common problem already solved by many systems having only one controller, see also PCT-EPO Guidelines, G-VII.14.

2.2 Dependent claims

Dependent claims 2-6 and 8-12 do not appear to contain any additional 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.

2.2.1 Claims 2 and 8

It is considered that the manufacturing technique of the base material does not cause a surprising effect on the method known from D1-D5. Claim 2 is therefore not considered to involve an inventive step.

2.2.2 Claim 3

D1 (claim 1: "Kunststoffteile") discloses the plastic material. The other materials are typical materials where inserts, f.ex. AMTEC-inserts from the company Böllhoff, are used.

2.2.3 Claim 4

Dependent claim 4 is not considered to involve an inventive step, because the aggregation of several insertion tools (see reasoning in item 2.1.2) is obvious, see PCT-EPO Guidelines G.VII.7.

Further, D2 discloses the adjustment of parameters for different inserts and base materials (D2, claim 4; para. [0038, 0043, 0045, 0052]). A skilled person would therefore combine several insertion tools for installing a plurality of inserts simultaneously in order to increase the efficiency and arrive at the subject-matter of claim 4. Claim 4 does therefore not involve an inventive step in the sense of Article 33(3) PCT.

Furthermore, providing a sufficient surface area of the coil is assumed by a person skilled in the art.

2.2.4 Claims 5 and 9

D4 (column 3, l. 59: "Messinghülse") discloses the insert comprising brass.

2.2.5 Claims 6 and 10

D6 (para. [0051, 0060]: "steel...or stainless steel") disclose an insert made of steel, which comprises iron. Further, inserts that comprise iron are well known in the filed of pressing inserts into plastic parts after moulding.

2.2.6 Claim 11

D3 (fig. 3) discloses a close distance of coil and base material. Aside from the several clarity issues with the measurement in claim 11, see item VIII, the base material is not part of the insertion tool. In view of this, the claim is construed as requiring only that the insertion tool must be suitably designed such that the coil – at least for one possible shape of a base surface – could come as close as 3 inches to the surface. This appears to be possible in each of the devices disclosed in D1 to D5.

2.2.7 Claim 12

The insulating material of the interface portion is disclosed in D1 (column 3, l. 52-56: "Damit der untere Abschnitt 38 des Einpressdorns 22 einschliesslich des Haltedorns 28 nicht selbst durch die Induktionswärme erwärmt wird, ist der Abschnitt 38 aus einem elektrisch nicht leitenden Material hergestellt.>").

3 The following is further noted

- 3.1 Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in D1-D5 is not mentioned in the description, nor is this document identified therein.
- 3.2 Independent claims 1, 7 and 13 are 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 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 unit "inch" expressed in claim 11 does not meet the requirements of Rule 10.1(a) PCT and should be replaced by the appropriate SI unit. The present expression should, however, be retained in parentheses after the replacement expression.
- 3.4 Independent claims 7 and 13 should refer to claim 1. Furthermore, it should be ensured that all independent claims must have the same or corresponding technical features. If claim 7 and/or 13 are restricted by features that differ from the features contained in claim 1 and solve other tasks, an objection regarding lack of unity can be expected.

item VIII

- 4 The application does not meet the requirements of Article 6 PCT, because claims 4, 11 and 12 are not clear.

4.1 Claim 4

The term "sufficient" used in claim 4 is vague and unclear and leaves the reader in doubt as to the meaning of the technical feature to which it refers, thereby rendering the definition of the subject-matter of said claim unclear, Article 6 PCT.

4.2 Claim 11

It is unclear firstly when to measure and secondly where it should be measured. For carrying out the process it is clear that the insert tool, having the coil 304, should be moved from and to the base material.

This leads to the problem that the claimed position is unlikely to be kept all the time. Further, it leaves the question: when is the measurement carried out. Furthermore, it is completely unclear from what measuring points the distance should be measured (outside of a coil winding, centre of coil, surface of the base material...).

4.3 Claim 12

The term "insulating material" used in claim 12 is unclear, because it leads to completely different technical features: thermal insulation, electrical insulation, waterproof insulation.... It is noted that no indication for clarifying is given in the present application.