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**Datasheet for the decision
of 2 June 2017**

Case Number: T 2456/12 - 3.5.02

Application Number: 05724190.3

Publication Number: 1721067

IPC: G08C17/00

Language of the proceedings: EN

Title of invention:

Process device with improved power generation

Patent Proprietor:

Rosemount Inc.

Opponent:

ABB AG

Relevant legal provisions:

EPC Art. 54, 56

Keyword:

Novelty - non-prejudicial disclosure
Inventive step - (yes)



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Case Number: T 2456/12 - 3.5.02

D E C I S I O N
of Technical Board of Appeal 3.5.02
of 2 June 2017

Appellant: Rosemount Inc.
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Decision under appeal: **Decision of the Opposition Division of the
European Patent Office posted on 5 October 2012
revoking European patent No. 1721067 pursuant to
Article 101(3) (b) EPC.**

Composition of the Board:

Chairman R. Lord
Members: M. Léouffre
W. Ungler

Summary of Facts and Submissions

- I. On 28 November 2012 the patent proprietor appealed against the decision of the opposition division to revoke the European patent No. 1 721 067.
- II. The opposition division held that the subject-matter of claim 1 of the patent as granted was known from document DE 20107112 U1 (D4).
- III. In an annex to the summons to oral proceedings, the board expressed its preliminary view that the claimed subject-matter was new having regard to D4.
- IV. With a letter dated 25 April 2017 the respondent-opponent informed the board that they would not attend the oral proceedings scheduled for 2 June 2017.
- V. In a communication dated 23 May 2017 the board informed the parties that the oral proceedings were cancelled.
- VI. The appellant requested that the decision under appeal be set aside and that the opposition be rejected (and thus that the patent be maintained as granted), or alternatively that the contested decision be set aside and that the patent be maintained in amended form on the basis of the set of claims of the auxiliary request filed with the statement of grounds of appeal.
- VII. Claim 1 of the patent as granted reads as follows:

"A field device (34,50,70,80,91,100) comprising:
a wireless communications module (32) configured to wirelessly communicate process-related information with another device;

an energy conversion module (38) coupled to the wireless communications module (32), the energy conversion module (38) configured to couple to a thermal source, and to convert thermal potential energy into electricity to power circuitry within the field device,

characterised in that the field device (34,50,70,80,91,100) is arranged such that the amount of electrical power converted by the energy conversion module (38) is used to provide a temperature indication related to the thermal source."

Claims 2 to 18 are dependent on claim 1.

Claim 19 of the patent as granted reads as follows:

"A method of operating a field device having a wireless communications module coupled to an energy conversion module, the method comprising:
thermally coupling the energy conversion module to a source of thermal potential energy;
converting thermal potential energy into electricity to power circuitry in the field device by using the energy conversion module;
wirelessly communicating process related information with another process device by using the wireless communications module,
the method characterised in that the amount of electrical power converted by the energy conversion module is used to provide a temperature indication related to the thermal source."

VIII. The appellant argued essentially as follows:

The invention as set out in independent claims 1 and 19 concerned a temperature-sensing field device comprising

a wireless communication module and an energy conversion module. The energy conversion module converted thermal energy into electricity to power the field device. The field device provided a temperature indication based on the amount or quantity of electrical power converted, as set out in the description of the embodiment of figure 5B of the patent.

The opposition division considered the expression "the amount of electrical power" in the characterising part of claim 1 as not being unequivocally related to a measured value, and thus interpreted it as meaning the electricity itself, so that D4 (DE20107112) anticipated all of the features of claim 1.

This expression had however to be interpreted to mean a value, level, or quantity. This interpretation was evident from the claims, description and figures of the patent.

Furthermore, the pre-characterising part of claim 1 made use of the word "electricity" in the phrase "to convert thermal potential energy into electricity to power circuitry", while the characterising part of claim 1 used the words "electrical power" in the phrase "amount of electrical power converted is used to provide a temperature indication". The term "electricity" in the pre-characterizing part was indicative of a phenomenon whereas "electrical power" in the characterizing part indicated a measurable quantity. Both expressions "amount of" and "electrical power" in the characterising part of claim 1 related to a measure or quantification of the electricity, so that the claim had to be interpreted such that "amount of

electrical power" referred to an amount or value, rather than the electricity itself.

The interpretation of claim 1 used by the opposition division was not in line with the invention as set out in the embodiment of the invention, as shown in figure 5B.

It was clear from figure 5A that separate energy converter and temperature sensor were present, because of the presence of the two items at the end of the thermowell 54 in figure 5A, each having separate reference numbers, and each having separate lines for connection to the electronics compartment of the field device.

It was however immediately apparent from figure 5B that only one device 72 was present at the end of the thermowell, and this device had only two lines providing signal and power (signal + power in the figure) to the electronics compartment 52 of the field device 70. From paragraphs [0013] and [0025] it was known that the device 70 was a temperature-sensing field device but with no separate temperature sensor. Given that the device 72 generated electricity related to the temperature to which it was exposed, the device 72 had to use some measure or assessment of the amount of electricity generated to provide the temperature indication. This was precisely the invention of claim 1.

The opposition division considered that claim 1 lacked novelty based on figure 1 of D4.

D4 disclosed a field device comprising a wireless communication module, an energy conversion module and a temperature sensor. The energy conversion module converted thermal energy into electrical energy to power a sensor and the wireless communication module.

D4 did not disclose or suggest that the "amount" (or numerical value, quantity) of electrical power converted by the energy conversion module was used to provide a temperature indication related to the thermal source. Using the correct interpretation of claim 1, wherein no sensor was required because the "temperature" related to the thermal source was derived from the value of the electrical power harvested, claim 1 was novel and inventive over D4. Independent method claim 19 was correspondingly novel and inventive.

IX. With a letter dated 11 June 2013 the respondent replied to the statement of grounds of appeal by referring solely to their statement of opposition.

In the statement of opposition the respondent argued that the subject-matter of claim 1 lacked an inventive step of having regard to the combination of document D4 with any of documents D1 (US2004/0033704 A1) to D3 (DE 196 08 310 C1), in particular D2 (DE 101 28 447 A1).

Reasons for the Decision

1. The appeal is admissible.
2. Novelty (Article 54 EPC)
 - 2.1 The opposition division considered the subject-matter of claim 1 of the main request to be known from D4.
 - 2.1.1 The first embodiment shown in figure 1 of document D4 is a field device reporting the temperature of a medium 3 flowing in a tube 2. It makes use of a temperature

sensor 13 separate from the energy conversion module 14 (see D4, page 3, lines 17 to 19 and 29 to 32, and figure 1). Since the field device of the first embodiment of D4 does not carry out any operation other than reporting the temperature, the division concluded that the amount of energy converted by the conversion module, i.e. the thermo-elements 141, 142, could be seen as being totally provided to and used by the field device 1 to provide a temperature indication related to the thermal source.

2.1.2 Nevertheless, the board understands D4 as disclosing that the field device is provided with an energy storage element 15 constituted by either an accumulator or a high value, low loss capacitor (see D4, page 4, lines 22 to 26). The energy delivered by the thermo-elements 141-142 is first accumulated in the storage element 15 and then delivered to the field device. The temperature reporting field device does not continuously report the temperature. The temperature is reported periodically. The energy used to power the field device at the instants during which the temperature needs be reported is provided by the storage element 15, which is able to deliver a higher amount of energy than the thermo-couple could deliver in the same given period of time (see D4, page 4, lines 28 to 31).

2.1.3 At point 12. v) of the grounds for decision, the opposition division, discussing the features of claim 1, referred to "the electrical connections in figure 1 (of D4), where the whole amount of converted thermopower from the thermoelements 141 and 142 is harvested" and considered therefore that the feature "the amount of electrical power converted by the energy conversion module is used to provide a temperature

indication related to the thermal source" was known from D4.

Referring to D4, the opposition division also expressed the opinion that the amount of electrical power - either part of it or in its entirety - could be used to power the temperature sensor part of the field device and thus be used to provide the temperature indication (see last paragraph of item 12 of the grounds for decision).

2.1.4 The board understands on the other hand that in D4 the converted thermopower is not sufficient to power or supply the temperature sensor part of the field device, only the storage is able to deliver the necessary level of power. The expression of the opposition division "the whole amount of converted thermopower from the thermoelements 141 and 142 is harvested" should have therefore read: the whole amount of converted thermoenergy from the thermoelements 141 and 142 is harvested. Indeed the whole amount of energy delivered by the thermoelements of D4 is harvested to supply the field device of D4, which is the only device connected to the thermoelements 141, 142.

2.1.5 Thus, in order to reach its conclusion concerning lack of novelty, the opposition division interpreted the feature "an amount of electrical power" as meaning or being equivalent to "an amount of energy" or "an amount of electricity" to reuse the expression of the appellant.

2.1.6 However, in accordance with the established case law of the boards of appeal, when interpreting the claims, the person skilled in the art "should however try, with synthetical propensity, i.e. building up rather than tearing down, to arrive at an interpretation of the

claim which is technically sensible and takes into account the whole disclosure of the patent. The patent must be construed by a mind willing to understand, not a mind desirous of misunderstanding" (see Case Law of the Boards of Appeal, 8th edition 2016, Chapter II.A. 6.1, page 287).

2.1.7 Thus, in the view of the board, and for the reasons mentioned by the appellant, a person skilled in the art would have immediately understood from the application as a whole that the expression "the amount of electricity" used in original claim 17 implied that the indicated temperature was a function of the amount of electrical power converted, and not that a part of the electrical power was used to supply a temperature sensor or indicator. The person skilled in the art would also not have interpreted the expression "amount of electricity" as an "amount of energy" since an energy is a power value measured and integrated over a certain time, while a temperature value is an instantaneous value like an electrical power value. The original expression "the amount of electricity" was consequently modified and introduced in granted claims 1 and 19 in the correct form: "the amount of electrical power".

2.1.8 Hence, the board concludes that the only possible interpretation of the contested features of the characterising portions of granted claims 1 and 19, is that a temperature indication is provided on the basis of the amount or quantity of electrical power converted by the energy conversion module 38.

2.1.9 This feature is not known from D4 and therefore the subject-matter of claims 1 and 19 of the main request is novel having regard to D4 (Article 54 EPC).

3. Inventive step (Article 56 EPC)

3.1 In their response to the statement of grounds of appeal and to the summons to oral proceedings, the respondent only referred to their statement of opposition, where they argued that the subject-matter of claim 1 lacked inventive step in the light of the combination of document D4 with any of documents D1 to D3.

The respondent did not give any interpretation of the expression "the amount of electrical power converted by the energy conversion module(38) is used to provide a temperature indication related to the thermal source" and did not discuss this feature on the basis of any of documents D1 to D3. The respondent only mentioned that D2 disclosed a temperature sensor in relation to a thermal source.

Thus the respondent did not provide any complete argument as to why the combination of any of the documents D1 to D3 with document D4 would render the subject-matter of claim 1 or 19 obvious (Article 56 EPC).

3.2 Bearing in mind that the feature in the characterising portions of claims 1 and 19 should, as discussed above, be interpreted in the sense that the temperature indication is provided on the basis of the amount or quantity of electrical power converted by the energy conversion module 38, the invention provides the advantage of simplifying the construction of a field device, such as the one known from the first embodiment of D4, in that wires to the temperature sensor and the temperature sensor itself may be saved, or the advantage of enabling the provision of a temperature value report by field devices originally designed for

reporting other values than the temperature, such as flow quantity (see e.g. second embodiment shown in figure 2 of D4) without modifying the hardware of these field devices. The available prior art contains no suggestion of these advantages.

The board therefore concludes that the subject-matter of claims 1 and 19 of the patent as granted is novel and involves an inventive step in the sense of Articles 54 and 56 EPC having regard to the available prior art. The same therefore applies also to the dependent claims 2 to 18.

4. Since only the appellant has requested oral proceedings, and in particular since the respondent indicated that they would not attend the appointed oral proceedings, the board is in a position to decide against the respondent without holding oral proceedings.

5. For the reasons given above, the opposition ground under Article 100(a) EPC, the only ground which has been raised during the opposition and appeal procedures, does not prejudice the maintenance of the patent as granted. Hence the board has to accede to the request of the appellant to set aside the contested decision and to maintain the patent as granted.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The patent is maintained unamended.

The Registrar:

The Chairman:



U. Bultmann

R. Lord

Decision electronically authenticated