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Datasheet for the decision of 9 August 2019

Case Number: T 0663/18 - 3.4.02

Application Number: 06738345.5

Publication Number: 1875194

IPC: G01N9/00, G01N33/28, G01F1/84

Language of the proceedings: EN

Title of invention:
METER ELECTRONICS AND METHODS FOR DETERMINING A LIQUID FLOW FRACTION IN A GAS FLOW MATERIAL

Applicant:
MICRO MOTION INCORPORATED

Relevant legal provisions:
RPBA Art. 13(1)
EPC 1973 Art. 84

Keyword:
Late-filed requests - requests clearly allowable (no)

Decisions cited:
T 1634/09, T 1129/97

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Case Number: T 0663/18 - 3.4.02

D E C I S I O N
of Technical Board of Appeal 3.4.02
of 9 August 2019

Appellant: (Applicant)	MICRO MOTION INCORPORATED 7070 Winchester Circle Boulder Colorado 80301 (US)
Representative:	Ellis, Christopher Paul Ollila Law Limited Warwick Innovation Centre Warwick Technology Park Gallows Hill Warwick CV34 6UW (GB)
Decision under appeal:	**Decision of the Examining Division of the European Patent Office posted on 17 October 2017 refusing European patent application No. 06738345.5 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman	F. J. Narganes-Quijano
Members:	A. Hornung
	G. Decker

Summary of Facts and Submissions

I. The applicant appealed against the decision of the examining division refusing European patent application No. 06738345.5. In its decision the examining division held that the claims of the main request then on file did not meet the requirements of Articles 123(2) and 84 EPC, and that the subject-matter of the claims of the auxiliary request then on file was not new.

II. Oral proceedings before the board were held on 9 August 2019.

III. As its final requests, the appellant requested that the decision under appeal be set aside and that a patent be granted on the basis of the claims according to a "Main Request 19:20" or, alternatively, to a "1st Aux. Request 19:20", both requests filed at the oral proceedings held before the board.

IV. Independent claim 1 according to the main request reads as follows:

"Meter electronics (20) for determining a liquid flow fraction in a gas flow material flowing through a flow meter (5) having one or more flow tubes configured to oscillate by a driver, comprising:

an interface (201) for receiving a first sensor signal and a second sensor signal representative of an oscillating motion of the flow tube from the flow meter (5); and

a processing system (203) in communication with the interface (201) having a storage system (204) arranged to:

store at least one of a predetermined gas density that is representative of a gas flow fraction of the gas flow material and a predetermined liquid density that is representative of a liquid flow fraction;

receive the first and second sensor signals from the interface (201);

generate a 90 degree phase shift signal of the first sensor signal;

determine an instantaneous response frequency of a pick off of the first sensor signal of the one or more flowtubes to a vibration generated by the driver, by processing the first sensor signal and the 90 degree phase shift signal;

determine a response phase difference between the pick off of the first sensor signal and a pick off of the second sensor signal, using the first sensor signal, the second sensor signal, and the 90 degree phase shift signal, wherein the phase difference comprises a phase difference due to Coriolis forces in the flow meter (5);

determine a substantially instantaneous flow stream density of the gas flow material from the instantaneous response frequency;

determine the liquid flow fraction from a comparison of the determined substantially instantaneous flow stream density and the stored predetermined gas density and the stored predetermined liquid density; and

compute a mass flowrate of the gas flow material from the phase difference and the frequency response."

Independent claim 1 according to the first auxiliary request reads as follows (the added features are underlined):

"Meter electronics (20) for determining a liquid flow fraction in a gas flow material flowing through a flow meter (5) having one or more flow tubes configured to oscillate by a driver, comprising:

an interface (201) for receiving a first sensor signal and a second sensor signal representative of an oscillating motion of the flow tube from the flow meter (5); and

a processing system (203) in communication with the interface (201) having a storage system (204) arranged to:

store at least one of a predetermined gas density that is representative of a gas flow fraction of the gas flow material and a predetermined liquid density that is representative of a liquid flow fraction;

receive the first and second sensor signals from the interface (201);

generate a 90 degree phase shift signal of the first sensor signal;

<u>generate a delayed first sensor signal (LPO I) by applying a delay to the first sensor signal;</u>

determine an instantaneous response frequency of a pick off of the first sensor signal of the one or more flowtubes to a vibration generated by a driver, by processing the <u>delayed</u> first sensor signal and the 90 degree phase shift signal;

determine a response phase difference between the pick off of the first sensor signal and a pick off of the second sensor signal, using the first sensor signal, the second sensor signal, and the 90 degree phase shift signal, wherein the phase difference comprises a phase difference due to Coriolis forces in the flow meter (5);

determine a substantially instantaneous flow stream density of the gas flow material from the instantaneous response frequency;

determine the liquid flow fraction from a comparison of the determined substantially instantaneous flow stream density and the stored predetermined gas density and the stored predetermined liquid density; and

compute a mass flowrate of the gas flow material from the phase difference and the frequency response."

Reasons for the Decision

1. Main request

The board decides not to admit the main request into the proceedings under Article 13(1) RPBA.

1.1 The main request, comprising the claims according to the "Main Request 19:20", was filed during oral proceedings at 19:20, i.e. at a very late stage of the appeal proceedings.

1.2 According to established jurisprudence of the boards of appeal (see Case Law of Boards of Appeal, 8th edition 2016, sections IV.E.4.4.1 and IV.E.4.4.2a), new requests

containing amended claims, filed after the appellant has filed its statement of grounds of appeal, may be admitted into the proceedings at the board's discretion (Article 13(1) RPBA) *inter alia* if the claims are *prima facie* clearly allowable, wherein "[c]aims are clearly allowable if the board can quickly ascertain that they do not give rise to new objections and overcome all outstanding objections".

1.3 In the present case, this condition is not fulfilled since claim 1 *prima facie* lacks clarity (Article 84 EPC 1973) for at least the reasons corresponding in substance to the objections previously raised in points 6.3.3 and 6.3.4 of the communication annexed to the summons to oral proceedings.

1.3.1 Claim 1 comprises a processing system having a storage system "arranged to [...] determine an instantaneous response frequency of a pick off of the first sensor signal of the one or more flowtubes to a vibration generated by a driver, by processing the first sensor signal and the 90 degree phase shift signal".

1.3.2 It is *prima facie* not clear what is meant by the expression of claim 1 "an instantaneous response frequency of a pick off of the first sensor signal of the one or more flowtubes to a vibration generated by a driver".

What is clear is that the sensor is sensing instantaneously, i.e. without a delay, a frequency response to a vibration generated by a driver. However, this sensing of a frequency response does not require a processing of signals for its determination, contrary to the wording of claim 1. See e.g. the frequency spectrum shown in figure 10 of the patent application and corresponding to a typical frequency response sensed by a sensor. In case that a different frequency as this sensed instantaneous frequency response is

intended to be referred to by the expression above, it is unclear which frequency is specifically meant (see also point 6.3.3 of the board's communication). Incidentally, this clarity objection is not affected by changing the expression "frequency response" (used in claim 1 underlying the board's communication) into "response frequency", since the frequency to be determined is undefined in both cases.

1.3.3 Moreover, this feature of claim 1 "arranged to [...] determine an instantaneous response frequency of a pick off of the first sensor signal of the one or more flowtubes to a vibration generated by a driver, by processing the first sensor signal and the 90 degree phase shift signal" attempts to define the storage system of claim 1 in terms of a result to be achieved, i.e. "to determine an instantaneous response frequency", instead of defining it in terms of technical features of the storage system responsible for achieving the claimed result.

The only step in claim 1 which is of any relevance for obtaining the claimed result is "processing the first sensor signal and the 90 degree phase shift signal". No further information about the kind of processing is provided in claim 1. However, this processing step has such a broad scope that it is manifestly insufficient to guarantee the determination of an instantaneous response frequency over the whole scope of the claim comprising no restriction of the kind of processing of the two signals. In addition, the mere fact of specifying that the processing is based on the first sensor signal and on a signal generated from it (i.e. on the 90 degree shift signal), without however specifying how these two signals related to each other are then actually processed, is - contrary to the appellant's submissions during the oral proceedings - insufficient in defining clearly the claimed determination operation (see also point 6.3.4 of the board's communication).

1.4 The appellant presented the following counter-arguments:

1.4.1 The appellant argued that the amendments of claim 1 addressed the clarity issues raised for the first time in the board's communication annexed to the summons to oral proceedings. Therefore, the appellant should be allowed to amend the claim in order to overcome the new objections raised, and the corresponding amended claim should be admitted.

The board is not convinced by this argument. One of the criteria for admitting new requests into the proceedings is indeed that sound reasons, for instance, new developments occurring during the proceedings, exist therefor. New objections raised by the board may represent such new developments. It remains, however, that a new request filed in response to a summons to oral proceedings represents an amendment of the party's case in the sense of Article 13(1) RPBA. Such an amendment of the party's case may be admitted only at the board's discretion. See e.g. the decision of the board of appeal in case T 1634/09, Reasons 3. Otherwise, the automatic admission of any amendments submitted in response to new objections, including amendments not overcoming all the objections raised and/or introducing new objections, would bear the risk of running counter to the need of procedural efficiency.

1.4.2 According to the appellant's letter of reply of 4 July 2019, page 3, fourth paragraph, "the frequency response is a well-known term in the art for a vibrational response measured by a pickoff signal that is generated in response to a driver vibrating a flow tube" and that it "would be well understood by a person skilled in the art" how the frequency was computed. During oral proceedings, the appellant elaborated on this argument and pointed to figure 9 of the patent

application and the corresponding description on pages 22 and 23, describing the frequency to be determined and how it is computed. The appellant explicitly referred to equations 12 to 14 of the description.

The board is not convinced by this argument. The terms "frequency response" and "response frequency" in general might be well-known in the art. However, in the present context, where a certain frequency response is sensed by a sensor without a processing step (cf. point 1.3.2 above) and where a frequency response comprises a frequency spectrum as shown in figure 10 of the patent application, it is not clear which frequency is specifically referred to by the expression "response frequency" used in claim 1. Moreover, no evidence or other substantiation was provided for the appellant's allegation that a skilled person would know how to determine a frequency response by a processing step in general, let alone by a processing step involving a sensor signal (i.e. the claimed first sensor signal) together with a signal (i.e. the claimed 90 degree phase shift signal) generated from the sensor signal by a 90 degree phase shift. Finally, the claims must in principle be clear in themselves when read by the person skilled in the art. In the present case, the claim 1 does not define any technical steps, such as those disclosed in the description in connection with figure 9 of the patent application, which would be necessary to achieve the claimed result other than broadly processing the first sensor signal and the 90 degree phase shift signal. Therefore, claim 1 is in itself unclear. This clarity deficiency in the claim wording cannot be rectified by the fact that the description could possibly help the reader to understand the technical subject-matter which the claim was intended to define (see e.g. decision T 1129/97, OJ EPO 2001, 273, Reasons 2.1.2 and 2.1.3).

1.4.3 The appellant further noted that the examining division in its decision to refuse the patent application did not object to the clarity of the feature of claim 1 of the main request then on file, reading "compute a frequency response using the 90 degree phase shift and the first sensor signal" and corresponding to the present feature objected by the board.

This argument is not convincing since the absence of a clarity objection in the appealed decision concerning the feature of the computation of the frequency response does not necessarily imply that the examining division was of the opinion that this feature was effectively clear because claim 1 on file was to be refused already for other reasons. Furthermore, the board is not bound by the findings of the examining division in the decision under appeal.

1.4.4 The appellant was of the view that the subject-matter of claim 1 was novel and inventive over the available prior art. Therefore, in order to present the arguments in favour of novelty and inventive step, the appellant requested that the main request should be admitted into the proceedings.

The board cannot follow the appellant's reasoning. Clarity and inventive step are distinct requirements of the EPC. Even if the subject-matter of claim 1 had been found to be novel and inventive, this would not have helped overcoming the clarity objection.

1.5 In conclusion, since claim 1 of the main request is *prima facie* not clearly allowable, the board exercises its discretion under Article 13(1) RPBA in not admitting the main request into the proceedings.

2. Auxiliary request

The board decides not to admit the auxiliary request into the proceedings under Article 13(1) RPBA for essentially the same reasons as given in points 1.1, 1.2 and 1.3 above.

Indeed, the auxiliary request comprising the set of claims according to the "1st Aux. Request 19:20" was also filed during oral proceedings at 19:20, i.e. at a very late stage of the appeal proceedings and it does also not fulfil the criteria of being *prima facie* clearly allowable for being admitted at such a late stage of the proceedings.

Claim 1 of the auxiliary request differs from claim 1 of the main request only in that a delayed first sensor signal is generated and used for determining the instantaneous response frequency. This amendment specifies one of the characteristics of the first sensor signal used in the determination of the instantaneous response frequency. However, it does not provide any information about how the signal is processed in order to determine the instantaneous response frequency. Therefore, claim 1 of the auxiliary request *prima facie* lacks clarity (Article 84 EPC 1973).

The appellant did not provide any additional argument why the amendment would clarify how the signals were processed in order to determine the instantaneous response frequency.

Order

For these reasons it is decided that:

The appeal is dismissed

The Registrar: The Chairman:

M. Kiehl F. J. Narganes-Quijano

Decision electronically authenticated