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Datasheet for the decision of 28 September 2020

Case Number: T 0947/16 - 3.4.02

Application Number: 02757284.1

Publication Number: 1421345

IPC: G01F1/84

Language of the proceedings: EN

Title of invention:
CORIOLIS FLOW METER WITH EXCITATION OPTIMIZATION

Applicant:
Micro Motion, Inc.

Relevant legal provisions:
EPC Art. 84
RPBA Art. 13(1)
RPBA 2020 Art. 11

Keyword:
Amended claims submitted during oral proceedings: Admittance (no)
Remittal for further prosecution (no)

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Boards of Appeal

Chambres de recours

Boards of Appeal of the
European Patent Office
Richard-Reitzner-Allee 8
85540 Haar
GERMANY
Tel. +49 (0)89 2399-0
Fax +49 (0)89 2399-4465

Case Number: T 0947/16 - 3.4.02

D E C I S I O N
of Technical Board of Appeal 3.4.02
of 28 September 2020

Appellant: (Applicant)	Micro Motion, Inc. 7070 Winchester Circle Boulder, CO 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 19 November 2015 refusing European patent application No. 02757284.1 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman	R. Bekkering
Members:	F. J. Narganes-Quijano
	B. Müller

Summary of Facts and Submissions

I. The applicant lodged an appeal against the decision of the examining division refusing European patent application No. 02757284.1.

In its decision the examining division held, *inter alia*, that claim 1 of the sole request then on file was not clear and was not supported by the description (Article 84 EPC).

II. On 7 May 2019 the board issued a summons to oral proceedings together with a communication setting out its preliminary assessment of the case.

III. Oral proceedings before the board were held on 28 September 2020. As requested by the appellant, the oral proceedings were conducted by video conference.

During the oral proceedings the appellant submitted as a main request a set of claims 1 to 39 labelled 16:10 hours BST (British Summer Time).

The appellant requested that the decision under appeal be set aside and that a patent be granted on the basis of claims 1 to 39 according to the main request labelled 16:10 hours BST or that the case be remitted to the department of first instance for further prosecution.

At the end of the oral proceedings the chairman announced the decision of the board.

IV. Claim 1 of the main and sole request of the appellant reads as follows:

"A method (200) of controlling a Coriolis flow sensor (100) comprising a conduit (103) configured to contain a material, the method comprising determining (210) a first force excitation (f_k) applied to the conduit by one or more actuators and determining (220) motion of the conduit in response to the first force excitation (f_k), characterized by:

iteratively determining (230) a second force excitation to apply to the conduit based on a process represented by the equation:

$$\mathbf{f}_{k+1} = \mathbf{f}_k - \mu \mathbf{H}_o^H [\mathbf{v}_{k+1} - \mathbf{v}_T]$$

where:
$\mathbf{v}_T$ is a vector representation of a desired response,
$\mathbf{v}_{k+1}$ is a determined response to the first force excitation;
$\mathbf{H}_o^H$-represents a frequency response model
μ is a convergence constant
$\mathbf{f}_k$ is a vector representation of the first force excitation; and
$\mathbf{f}_{k+1}$ is a vector representation of the second force excitation; and

applying (240) the second force excitation (f_{k+1}) to the conduit so as to iteratively adjust vibration of the conduit (103) such that if the process represented by the equation converges the determined response (v_{k+1}) approaches the desired response (v_T), wherein the second force excitation (f_{k+1}) becomes the first force excitation (f_k) upon each new iteration."

Reasons for the Decision

1. The appeal is admissible.

2. *Main request - Article 13(1) RPBA 2007 and Article 11 RPBA 2020*

2.1 The amended claims of the present main request were submitted during the oral proceedings before the board. The amendments to claim 1 involved, among others, the introduction for the first time during the proceedings of the following features taken from the description:

a) "*based on a process represented by the equation:*

$$\mathbf{f}_{k+1} = \mathbf{f}_k - \mu \mathbf{H}_o^H [\mathbf{v}_{k+1} - \mathbf{v}_T]$$

where:
$\boldsymbol{v}_T$ *is a vector representation of a desired response,*
$\boldsymbol{v}_{k+1}$ *is a determined response to the first force excitation;*
$\mathbf{H}_o^H$ *-represents a frequency response model*
μ *is a convergence constant*
$\boldsymbol{f}_k$ *is a vector representation of the first force excitation; and*
$\boldsymbol{f}_{k+1}$ *is a vector representation of the second force excitation*", and

b) "*such that if the process represented by the equation converges the determined response* (v_{k+1}) *approaches the desired response* (v_T)".

These amendments were made in response to the following issues relating to features present in claim 1 of the request underlying the decision under appeal and also present in claim 1 of the requests considered during the written phase of the appeal proceedings (see the request underlying the decision under appeal and maintained as main request with the statement of grounds of appeal, the first and second auxiliary requests filed with the statement of grounds of appeal, and the main and the first and second auxiliary requests filed with the letter dated 19 August 2019 in reply to the communication annexed to the summons to the oral proceedings):

i) the clarity of claim 1 in respect of the claimed feature "a desired motion for the conduit", the corresponding objection having already been raised under Article 84 EPC by the examining division in its decision (see reasons for the decision, point 11, penultimate paragraph) and by the board in the communication annexed to the summons to the oral proceedings (see point 2.2, paragraph ii)), and

ii) the clarity of the method of claim 1 in respect of the step "determining (230) a second [...] excitation to apply to the conduit from the determined first [...] excitation, the determined motion in response to the first [...] excitation, [...] a desired motion for the conduit", without the claimed method specifying how the determination is carried out, the corresponding objection having already been raised under Article 84 EPC by the examining division in its decision (see reasons for the decision, point 11, first to third paragraphs) and discussed during the oral proceedings before the board.

2.2 As noted by the appellant during the oral proceedings, the amendments a) and b) referred to above were directed to overcome the objections i) and ii) mentioned above and were based on the specific, detailed embodiment of the claimed method disclosed in the description (see page 22, line 31, to page 33, line 3, and more particularly the passages on page 23, lines 3 to 15, page 25, lines 18 to 20, and page 27, lines 1 to 9) and referred to in the reasons given by the examining division in its decision in respect of the issues under consideration. However, in the opinion of the board it is not *prima facie* apparent that amendments a) and b) are sufficient to overcome the objections i) and ii) and, in addition, the mentioned amendments raise new and complex issues. In particular, as noted by the board during the oral proceedings:

- it is questionable that the replacement of the feature "a desired motion for the conduit" present in claim 1 of the previous requests considered during the written phase of the proceedings by a reference to a vector representation (v_T) "of a desired response" overcomes the objection under Article 84 EPC considered during the proceedings and referred to in paragraph i) above; and

- the fact of specifying in claim 1 the determination of the second force excitation to apply to the conduit on the basis of the equation introduced into claim 1 would appear to overcome the objection under Article 84 EPC referred to in paragraph ii) above, but the corresponding amendments give rise to new issues under Article 84 EPC such as

- the meaning of the unspecified "frequency response model" on which the equation, and more particularly the matrix $\mathbf{H}_o^H$, is based,

- the meaning of the coefficient μ, and more particularly of the requirement that the coefficient constitutes a "convergence constant",

- the meaning in the context of the claimed method of the condition "such that if the process represented by the equation converges", and

- whether the "convergence constant" μ and the claimed convergence condition of the process are related to each other (for instance, in the sense that the "convergence constant" is not a constant, but a parameter to be adjusted to ensure that the process converges) and, if this is the case, how the constant is selected in the claimed method and/or at which stage of the method the constant is being adjusted.

2.3 According to Article 13(1) RPBA 2007 (*cf.* Article 25(3) RPBA 2020), "[a]ny amendment to a party's case after it has filed its grounds of appeal [...] may be admitted and considered at the board's discretion. The discretion shall be exercised in view of inter alia the complexity of the new subject-matter submitted, the current state of the proceedings and the need for procedural economy."

In view of the fact that the amendments to claim 1 of the present main request involve features taken from the description and introduced into the claim for the first time at such a late stage of the proceedings as an attempt to overcome objections already raised in the decision under appeal, and also in view of the fact that the amendments do not *prima facie* overcome all the mentioned objections and give rise to new complex issues, with the consequence that the admission of the amended claims would have run counter to the need for procedural economy, the board, in the exercise of its discretion under Article 13(1) RPBA 2007, decided

during the oral proceedings not to admit the main and sole request into the appeal proceedings.

2.4 In the absence of an admitted request, remittal of the case to the department of first instance for further prosecution would serve no purpose and need not be considered.

3. Since the main and sole request for the grant of a patent of the appellant is not admitted into the proceedings and the procedural request for remittal serves no purpose, the appeal is to be dismissed.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

L.Gabor R. Bekkering

Decision electronically authenticated