

Internal distribution code:

- (A) [-] Publication in OJ
(B) [-] To Chairmen and Members
(C) [-] To Chairmen
(D) [X] No distribution

**Datasheet for the decision
of 25 October 2013**

Case Number: T 2075/12 - 3.4.02

Application Number: 05717853.5

Publication Number: 1721130

IPC: G01D5/20

Language of the proceedings: EN

Title of invention:

POSITION SENSOR

Patent Proprietor:

Sagentia Limited

Opponent:

Micro-Epsilon Messtechnik GmbH & Co. KG

Headword:

Relevant legal provisions:

EPC Art. 56

RPBA Art. 12(4)

Keyword:

Inventive step - (yes)

Late-filed evidence - submitted with the statement of grounds
of appeal

Decisions cited:

G 0009/91, G 0010/91

Catchword:



**Beschwerdekammern
Boards of Appeal
Chambres de recours**

European Patent Office
D-80298 MUNICH
GERMANY
Tel. +49 (0) 89 2399-0
Fax +49 (0) 89 2399-4465

Case Number: T 2075/12 - 3.4.02

D E C I S I O N
of Technical Board of Appeal 3.4.02
of 25 October 2013

Appellant: Micro-Epsilon Messtechnik GmbH & Co. KG
(Opponent) Königbacher Strasse 15
94496 Ortenburg (DE)

Representative: Naumann, Ulrich
Ullrich & Naumann
Patent- und Rechtsanwälte
Schneidmühlstrasse 21
69115 Heidelberg (DE)

Respondent: Sagentia Limited
(Patent proprietor) Harston Mill,
Harston,
Cambridge
CB2 5GG (GB)

Representative: MacDougall, Alan John Shaw
Mathys & Squire LLP
120 Holborn
London
EC1N 2SQ (GB)

Decision under appeal: **Interlocutory decision of the Opposition
Division of the European Patent Office posted on
16 July 2012 concerning maintenance of the
European Patent No. 1721130 in amended form.**

Composition of the Board:

Chairman: A. Klein
Members: H. von Gronau
D. Rogers

Summary of Facts and Submissions

- I. The opponent (appellant) lodged an appeal against the decision of the Opposition Division to maintain the patent in amended form.
- II. The opponent (appellant) requested that the decision under appeal be set aside and that the European patent be revoked. In addition the appellant requested that documents D15, D16 and D17, filed with the grounds of appeal, be admitted into the proceedings.
- III. The patent proprietor (respondent) requested, as a main request, that the appeal be dismissed, or alternatively that the decision under appeal be set aside and that the patent be maintained upon the basis of the claims of any of the auxiliary requests 1 - 4, all auxiliary requests being filed with letter dated 25 February 2013. In addition, the patent proprietor (respondent) requests that the documents D15, D16, and D17 not be admitted into the proceedings.
- IV. Independent claims 1 and 26 in accordance with the respondent's main request (as maintained by the Opposition Division) have the following wording:

"1. A position encoder comprising:

first and second members (19;9) which are relatively movable along a measurement path;

an excitation winding (31) and a sensor winding (33), at least one of which is carried by the first member (19);

a magnetic field generator (10) carried by the second member (9) and operable to generate a magnetic field which varies with position along the measurement path;

a film (25) of magnetisable material which is located, in use, within said positionally varying magnetic field to cause the film to have a positionally varying magnetisation state along the measurement path;

wherein the excitation and sensor windings (31, 33) are arranged relative to said film (25) so that a mutual electromagnetic coupling between them varies in dependence upon the positionally varying magnetisation state of said film (25) of magnetisable material, so that when said excitation winding (31) is energised with an excitation signal, a sensor signal is generated in said sensor winding (33) that varies with the relative position between said first and second members (19;9)

an excitation circuit (87) operable to generate an excitation signal having an excitation frequency for energising the excitation winding (31) to cause the excitation winding (31) to generate an excitation electromagnetic field; and

a processing circuit (95) operable to process the sensor signal generated in the sensor winding (33) which is at substantially the same frequency as said excitation frequency, to determine a value indicative of the relative position between the first and second relatively movable members (19;9)."

"26. A method of determining relative position of first and second relatively movable members, the method comprising the steps of:

providing a position encoder according to any preceding claim;

causing said excitation circuit (87) to generate said excitation signal at said excitation frequency for energising the excitation winding (31); and

processing the sensor signal induced in said sensor winding (33) which is at substantially the same

frequency as said excitation frequency and which varies in dependence upon the relative position of the first and second members, to determine a value indicative of the relative position between the first and second relatively movable members."

V. The following documents are relevant for the present decision:

D1: US-A-6 118 271

D9: US-A-5 204 621

D15: DE-A-4 103 603

D16: DE-A-4 311 973

D17: US-B-6 605 939

D18: B. Riedmüller, Praktikum "Materialien für elektrische und magnetische Bauelemente, Versuch E: Förster-Sonde", 10. Februar 2012

VI. Oral proceedings were held on 25 October 2013 at the end of which the appeal was dismissed.

Reasons for the Decision

1. Document D1 is the only prior art document referred to in the "Reasons for the decision" section of the decision under appeal.

2. Novelty with respect to document D1 (Article 54 EPC)

The opponent (appellant) did not object against the novelty of the subject-matter of claim 1 with respect to document D1. The Board has no objections of its own.

3. Inventive step in view of document D1 (Article 56 EPC).

3.1 The Board agrees with the parties that the subject-matter of claim 1 differs from document D1 in that the defined processing circuit is operable to process the sensor signal in the sensor winding "at substantially the same frequency as the excitation frequency". In document D1 the frequency of the sensor signal is twice the excitation frequency; see column 10, lines 39 to 41.

3.2 The description of the patent explains that the same frequency for the sensor signal and the excitation signal is due to the particular operating principle of the position encoder. As set out explicitly in paragraph 0021 of the patent, "The signals generated in each sensor winding are at the same frequency as the excitation frequency because, in this embodiment, the direction and magnitude of the AC excitation magnetic field (generated by the AC current flowing in the excitation winding 31) is such that it does not saturate the film 25 of magnetisable material in the vicinity of the sensor windings".

- 3.3 In contrast, the operating principle of the device disclosed in document D1 is fundamentally different. There the whole soft magnetic film is driven into saturation by the excitation magnetic field: "As can be seen from FIG. 3, when the excitation magnetic field H_e reaches H_{sat} , the magnetic flux density B inside the saturable material 23 reaches its maximum value B_{sat} , and at this time the material 23 is said to be fully saturated" (cf. column 7, lines 64 to 67). The DC magnetic fields from the N and S poles recorded on the encoder ring 3 interact with the excitation magnetic field H_e to produce local changes in the magnetic field in the vicinity of sense coils 27 and 29 (cf. column 8, lines 8 to 32). "As shown in FIG. 4b, the EMF induced in sense coil 27 is a periodic square wave having a fundamental component (shown in phantom) 41, whose frequency is twice that of the excitation current" (cf. figure 4b, column 10, lines 39 to 42). That the frequency in the sense coil of document D1 is twice the excitation frequency thus directly results from the fact that the soft magnetic material is saturated twice during a period of the excitation signal, namely once close to its maximum and once close to its minimum, as is clearly apparent from figures 4a and 4B.
- 3.4 Taking into account the above fundamental difference in the modes of operation of the two position encoders, the technical problem solved by the claimed device over that of document D1 can be seen generally in providing a different type of position encoder.
- 3.5 The document D1 does not, in the Board's view, provide any suggestion towards fundamentally modifying the way of operation of the encoder it describes.

- 3.6 The opponent (appellant) did not provide any convincing arguments as to why the person skilled in the art, should he envisage such a fundamental modification, would implement the modification in such a way that the signal in the sense coil is at substantially the same frequency as the excitation frequency. The development disclosed in document D1 starts from position encoders with flux-gate sensors. It is an inherent characteristic of such sensors that they deliver a sense signal at a frequency twice the excitation frequency; see document D1, column 2, lines 36 to 49.
- 3.7 The opponent (appellant) cited document D18, which explains the operating principle of flux-gate sensors, where a magnetic member is driven by an excitation coil into saturation, and an EMF from the magnetic member induces a signal in the sense coil. This document in fact confirms that the sense signal in such sensors normally has twice the frequency of the excitation signal; see page 7, lines 3 to 5 of document D18.
- 3.8 The opponent (appellant) further argued that the person skilled in the art, faced with the problem of designing another position encoder, will recognize that processing a higher frequency signal in the sensor winding requires an expensive circuit, because a frequency divider is required. The person skilled in the art would recognize that the need for such frequency divider could be avoided if the frequency in the sensing winding were the same as the frequency in the excitation winding. He would therefore modify the sensor winding in document D1 in such a way that only part of the magnetic field changes around the soft magnetic film induce a current peak in the sensor coil. As a result the frequency in the sensor winding would

then be substantially the same as that in the excitation winding as is defined in claim 1.

The Board does not agree with this line of argumentation which is a hindsight argumentation based on knowledge of the solution proposed in the patent. The Board shares the view of the proprietor (respondent) that devices of the type disclosed in document D1 are usually controlled using a high frequency oscillator. The frequency of the clock signal at the output of such a high frequency oscillator output must anyway be divided a number of times so as to get to the desired excitation frequency. The effort and cost to divide the frequency by a single further step is therefore negligible. So there is no obvious motivation for the skilled person to alter the sense winding of document D1 in the way suggested by the opponent (appellant). Further, the opponent (appellant) did not show why it would be obvious for the skilled person to modify the sensing coil arrangement of the encoder of document D1 such that part of the electromagnetic field leaving the soft magnetic film is not used to generate the sensor signal which, in the opponent's (appellant) view, is required for the sensing coil to deliver a signal at the excitation frequency.

- 3.9 For the reasons set out above, the subject-matter of claim 1 involves an inventive step in view of the disclosure of document D1.

The same conclusion applies to the subject-matter of independent claim 26 which defines a method of determining the relative position of first and second members with the help of a position encoder according

to claim 1, and for the remaining claims, all of which are dependent on independent claim 1.

4. Admissibility of late filed documents

4.1 Documents D15, D16 and D17 have only been filed by the opponent (appellant) with its statement of the grounds of appeal.

4.2 The opponent (appellant) explained that he could not have cited the documents earlier, since he had found them by chance during the preparation of the appeal. In addition document D15 is the German equivalent of document D9 as filed with the grounds of opposition and it comes closer to the claimed subject-matter because its claims define a combination of features which in document D9 were disclosed in separate embodiments only. This new claim combination as disclosed in document D15 could not have been expected, and the document should therefore be admitted into the procedure.

4.3 The purpose of the inter partes appeal procedure is mainly to give the losing party a possibility to challenge the decision of the Opposition Division on its merits and to obtain a judicial ruling on whether the decision of the Opposition Division is correct (G 9/91 and G 10/91). The appeal proceedings are not about bringing an entirely fresh case; rather, the decision of the Board of appeal will in principle be taken on the basis of the subject of the dispute in the first-instance proceedings. The appeal proceedings are thus largely determined by the factual and legal scope of the preceding opposition proceedings and the parties have only limited scope to amend the subject of the dispute in appeal proceedings.

In the present case, the Board notes that in the opposition procedure the opponent (appellant) had based its objections against the granted patent entirely on the disclosure of document D1. The decision under appeal consequently only refers to this document in its reasons.

It is true that a series of document D2 to D13 - including the document D9 relied upon by the opponent (appellant) in support of the admissibility of document D15 - have been formally cited in the notice of opposition. The opposition file however contains no analysis of the technical content of these documents or explanation as to why they would be relevant against the opposed patent. Quite to the contrary, it is stated in the notice of opposition that in view of the objections raised for lack of novelty in view of document D1, no detailed discussion of the other documents seemed useful at that stage of the procedure; see page 20, last sentence of the notice of opposition dated 18 March 2009. Nor was any attempt made by the opponent (appellant) to rely on these documents until the appealed decision was issued by the Opposition Division.

Accordingly, the attempt made by the opponent (appellant) to introduce into the appeal procedure documents D15 to D17 and new arguments based either upon them or upon document D9 is tantamount to confronting the Board with an entirely fresh case.

The Board therefore exercises the discretion conferred upon it in Article 12(4) RPBA so as to not admit documents D15 to D17 into the appeal procedure.

Order

For these reasons it is decided that:

The appeal is dismissed

The Registrar:

The Chairman:



M. Kiehl

A. Klein

Decision electronically authenticated