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Datasheet for the decision of 27 September 2016

Case Number: T 1586/15 - 3.2.07

Application Number: 12196408.4

Publication Number: 2610017

IPC: B08B3/12

Language of the proceedings: EN

Title of invention:
Ultrasonic cleaning method

Applicant:
Siltronic AG

Headword:

Relevant legal provisions:
EPC Art. 123(2)

Keyword:
Amendments - allowable (no)

Decisions cited:

Catchword:

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Case Number: T 1586/15 - 3.2.07

D E C I S I O N
of Technical Board of Appeal 3.2.07
of 27 September 2016

Appellant: (Applicant)	Siltronic AG Hanns-Seidel-Platz 4 81737 München (DE)
Representative:	Siltronic AG INTELLECTUAL PROPERTY Gebäude LP244 Johannes-Hess-Straße 24 84489 Burghausen (DE)
Decision under appeal:	**Decision of the Examining Division of the European Patent Office posted on 17 April 2015 refusing European patent application No. 12196408.4 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman	H. Meinders
Members:	K. Poalas
	G. Weiss

Summary of Facts and Submissions

I. The appellant (applicant) lodged an appeal against the decision refusing European patent application 12 196 408.4.

II. In its decision, the Examining Division held that the subject-matter of claim 1 of the set of claims filed on 5 February 2015 is not novel.

III. During the oral proceedings before the Board, which took place on 27 September 2016, the appellant requested that the decision under appeal be set aside and that a patent be granted on the basis of claim 1 as filed during the oral proceedings.

IV. Claim 1 according to the appellant's sole request reads as follows (amendments over claim 1 as originally filed are depicted in bold):

"An ultrasonic cleaning **[0025]** (*sic*) method for irradiating ultrasonic waves to a solution having **nitrogen** gas dissolved therein for cleaning an object to be cleaned in said solution, said method comprising the steps of:
- irradiating ultrasonic waves to said solution having a first dissolved **nitrogen** gas concentration, **said first dissolved nitrogen gas concentration is in the range of 10 ppm to 15 ppm**; and
- changing a dissolved **nitrogen** gas concentration in said solution from said first dissolved **nitrogen** gas concentration to a second dissolved **nitrogen** gas concentration lower than said first dissolved gas concentration **and that second dissolved nitrogen gas concentration is not less than 4 ppm and not more than 10 ppm [0019]** (*sic*), in a state where ultrasonic waves

are being irradiated to said solution, sonoluminescence occurring by irradiating ultrasonic waves to said solution while said dissolved **nitrogen** gas concentration in said solution is changed from said first dissolved **nitrogen** gas concentration to said second dissolved **nitrogen** gas concentration, **and sonoluminescence continues at said second dissolved nitrogen gas concentration, whereby the object to be cleaned is cleaned at said second dissolved nitrogen gas concentration**".

V. The appellant's arguments, in so far as they are relevant for the present decision, can be summarised as follows:

Basis for the feature introduced into the ultrasonic cleaning method according to claim 1, that the **first** dissolved nitrogen gas **concentration** is in the range of **10 ppm** to **15 ppm**, can be found in figure 14a and in the corresponding description part on page 27, lines 4 to 8 of the originally filed application.

The requirements of Article 123(2) EPC are therefore fulfilled.

Reasons for the Decision

1. *Claim 1 - amendments, Article 123(2) EPC*

1.1 The Board considers that an ultrasonic cleaning method, in which after starting irradiation with ultrasonic waves in a **first** dissolved nitrogen gas **concentration**, the dissolved nitrogen gas concentration is reduced to a **second** dissolved nitrogen gas **concentration**, said second dissolved nitrogen gas concentration being not

less than **4 ppm** and not more than **10 ppm**, whereby the object to be cleaned is cleaned at said second dissolved nitrogen gas concentration, has been disclosed in the originally filed application, see page 5, lines 11 to 25, page 6, lines 30 to 32, page 15, line 30 to page 16, line 18, and originally filed claims 1 and 5.

1.2 The question at stake is, however, whether a basis can be found in the originally filed application for the feature that the range for the **first** dissolved nitrogen gas **concentration** in the above-mentioned ultrasonic cleaning method is in the range of **10 ppm** to **15 ppm**.

1.3 The Board notes that **no specific values** for the **first** dissolved nitrogen gas **concentration** in the above ultrasonic cleaning method are given in the general part of the original description, nor are they in the originally filed claims. In the examples 1 and 2 "according to the present invention" only a **specific value of 14 ppm** is given for the first/higher dissolved nitrogen gas concentration, see page 22, line 7 to page 23, line 10 and figures 9 and 11.

According to the appellant figure 14a and the corresponding page 27, lines 4 to 8 of the originally filed application are the basis for the feature introduced into claim 1.

1.4 The Board notes in this respect that on page 8, lines 22 to 24 of the originally filed application is stated that **figure 14(a)** "is a diagram showing the relationship between the dissolved nitrogen concentration and the luminescent state according to the method in the **comparative example**" (emphasis added

by the Board).

1.5 Indeed, according to page 26, line 25 to page 27, line 8 of the originally filed application this comparative example involved **16 single** dissolved nitrogen gas **concentrations** ranging from 0 ppm to 15 ppm and being adjusted upwards for each 1 ppm, which were irradiated independently from each other via ultrasonic waves. Luminescent state was then observed in the single dissolved nitrogen concentrations lying within the range between not less than **10 ppm** and not more than **15 ppm**. These are the results shown in figure 14a.

1.6 Another **comparative example** of ultrasonic cleaning was carried out at a **single** dissolved nitrogen gas **concentration** of **6 ppm** during the whole cleaning process. It is described on page 24, lines 12 to 35 of the originally filed application and is depicted in figure 13.

From the above it becomes apparent that according to the originally filed application the ultrasonic cleaning method and the corresponding conditions applied in the **comparative example** are different from the ones used in the examples 1 and 2 of the present invention, see hereto also page 25, lines 7 to 19 of the originally filed application. The examples 1 and 2 were executed with the first dissolved nitrogen gas concentration at **14 ppm**. It started at that value directly or reached it starting from **6 ppm**.

1.7 In the originally filed application there is no indication that the dissolved nitrogen gas concentration range of 10 to 15 ppm of the comparative example should be selectively applied for the first dissolved nitrogen gas concentration in the invention.

Secondly, there is no indication available that the range between not less than **10 ppm** and not more than **15 ppm** should be combined with a second (lower) dissolved nitrogen gas concentration as now claimed.

Therefore, the appellant's argument mentioned under point 1.4 above cannot be followed by the Board.

1.8 As a consequence, due to the introduction into claim 1 of the features that the **first** dissolved nitrogen gas **concentration** has to be in the range of **10 ppm** to **15 ppm**, claim 1 violates the requirements of Article 123(2) EPC.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

G. Nachtigall H. Meinders

Decision electronically authenticated