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D E C I S I O N
of 28 May 2004

Case Number: T 0642/02 - 3.4.3

Application Number: 97111628.0

Publication Number: 0805481

IPC: H01L 21/00

Language of the proceedings: EN

Title of invention:

Vacuum processing apparatus and operating method therefor

Applicant:

Hitachi, Ltd.

Opponent:

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Headword:

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Relevant legal provisions:

EPC Art. 76 and 123 EPC

Keyword:

"Subject-matter extending beyond the contents of the earlier application (no)"

Decisions cited:

-

Catchword:

-



Case Number: T 0642/02 - 3.4.3

D E C I S I O N
of the Technical Board of Appeal 3.4.3
of 28 May 2004

Appellant:

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Decision under appeal:

Decision of the Examining Division of the
European Patent Office posted 10 April 2002
refusing European application No. 97111628.0
pursuant to Article 97(1) EPC.

Composition of the Board:

Chairman: R. K. Shukla
Members: E. Wolff
J. P. B. Seitz

Summary of Facts and Submissions

I. This is an appeal from the decision of the examining division, posted 10 April 2002, to refuse European patent application No. 97 111 628.0 (published as EP-A2-0 805 481), a divisional application of European patent application 91 307 625.3 (published as EP-A1-475 604), on the ground that, contrary to the requirements of Article 76(1) EPC, the subject matter of claim 1 of the application extended beyond the contents of the earlier application.

Claim 1, had the following wording which has been subdivided by the Board into paragraphs (a) to (d) to facilitate its discussion:

"1. A method of operating a vacuum processing apparatus having a plurality of vacuum processing chambers (11a, 11b, 11c) and two load lock chambers (5, 6)

said method comprising the steps of:

- (a) storing substrates (20) being processed in at least one store (1a, 1b) in air before and after their processing in said vacuum chambers (11a, 11b, 11c), said at least one store being located in front of said load lock chambers (5, 6);
- (b) transferring said substrates between said at least one store (1a, 1b) and said vacuum processing chambers via said load lock chambers (5, 6), and subjecting said substrates to etching under vacuum in said vacuum processing chambers (11a, 11b, 11c);

- (c) judging the time at which dry cleaning of at least one said vacuum processing chamber (11a, 11b, 11c) is required by counting the number of said substrates processed in each said vacuum processing chamber; and
- (d) carrying out dry cleaning of each said vacuum processing chamber (11a, 11b, 11c) by means of plasma in accordance with the judgement of the time when dry cleaning is required."

The examining division considered that dummy wafers and their use in the claimed method were an essential part of the invention described and claimed in the parent application, and that, contrary to the applicant's view, an expert reader would not derive from the parent application a further invention which did not involve dummy wafers. Therefore, the omission of dummy wafers from the method as claimed in the divisional application in suit contravened Article 76(1) EPC.

- II. The notice of appeal against the decision of the examining division was filed on 24 May 2002, together with the payment of the appeal fee and the statement setting out the grounds of appeal.

The appellant requested that the decision of the examining division be set aside and the case be remitted to the examining division to be examined for novelty and inventive step. Oral proceedings were requested in the event that the Board intended not to allow the appellant's request.

III. In response to a communication attached to summons to oral proceedings, in which the Board expressed the preliminary opinion that the claims were not in compliance with the requirements of Article 76(1), the applicant filed on 19 February 2004 a new request containing a set of revised claims.

IV. Claim 1 of the request has the following wording, which has been subdivided by the Board into paragraphs (a') to (h') to facilitate its discussion:

"1. A method of operating a vacuum processing apparatus having a plurality of vacuum processing chambers (11a, 11b, 11c) and a load lock chamber (5) and an unload lock chamber (6);

said method comprising the steps of:

(a') storing substrates (20) being processed in at least one first store (1a, 1b) in air before and after their processing in said vacuum processing chambers (11a, 11b, 11c), said at least one first store being located in front of said load and unload lock chambers (5, 6);

(b') storing dummy substrates (30) in a second store (1c) in air;

(c') transferring said substrates (20) being processed from said at least one first store (1a, 1b) to said vacuum processing chambers via said load lock chamber (5),

- (d') subjecting said substrates being processed to etching under vacuum in said vacuum processing chambers (11a, 11b, 11c),
- (e') and transferring said substrates being processed from said vacuum processing chambers (11a, 11b, 11c) to said at least one first store (1a, 1b) via said unload lock chamber (6);
- (f') judging the time at which dry cleaning of each said vacuum processing chamber (11a, 11b, 11c) is required by counting the number of said substrates processed in each said vacuum processing chamber;
- (g') carrying out dry cleaning of each said vacuum processing chamber (11a, 11b, 11c) by means of plasma in accordance with the judgement of the time when dry cleaning is required; and
- (h') before and after the dry cleaning of the respective vacuum processing chambers (11a, 11b, 11c), transferring the dummy substrates (30) from said second store (1c) to said vacuum processing chambers (11a, 11b, 11c) via said load lock chamber (5), and returning the dummy substrates (30) from said vacuum processing chambers (11a, 11b, 11c) via said unload lock chamber (6)."

Reasons for the Decision

1. The appeal is admissible

2. *Article 76*
 - 2.1 The sole objection raised by the examining division under Article 76(1) EPC concerned the absence from claim 1 of any reference to the use of dummy wafers. The examining division considered the use of dummy wafers to be an essential aspect of the invention as described and claimed in the earlier application and therefore concluded that application in suit included subject matter which went beyond the contents of the earlier application as filed.

 - 2.2 The parent application contained three independent claims, one of which claimed an apparatus and the other two a method of operating the apparatus, with all of them including a reference to dummy wafers. The transfer of dummy wafers from their storage means to the vacuum processing chamber for dry cleaning and thereafter back to their storage means is an indispensable feature of the method as described in the parent application under the heading "Summary of invention" (see EP-A1-475 604, column 2, lines 25 to 55) and in the detailed description of the embodiments with reference to the drawings (see EP-A1-475 604, column 6, line 4 to column 7, line 25). For these reasons the Board concurs with the view taken by the examining division that dummy wafers and their use form an essential aspect of the invention described and claimed in the earlier application and omitting their mention from claim 1 extended the subject matter of the

divisional application beyond the contents of the earlier application as filed.

2.3 The amended method claim 1 of the request specifies in paragraphs (b') and (h') the use of dummy wafers and, in particular, that they are transferred before dry cleaning from their storage means to the vacuum processing chamber and returned after dry cleaning to their storage means. The objection under Article 76(1) EPC is therefore met.

3. *Article 123(2)*

3.1 In the decision under appeal, the examining division had not raised any objections under Article 123(2) EPC to the amendments made to claim 1 forming the basis of the decision. These amendments which are also present in claim 1 of the appellant's request have been considered by the Board and the Board is satisfied that they comply with Article 123(2) EPC.

3.2 In addition to the amendments referred to in paragraph 2.3 above, claim 1 of the request also differs from claim 1 forming the basis of the decision in that the reference to "transferring the substrates between said at least one store (1a, 1b) and said vacuum processing chambers via said load lock chambers (5, 6), and subjecting said substrates to etching under vacuum in said vacuum processing chambers (11a, 11b, 11c)" set out in paragraph (b) of the claim forming the basis of the decision, has been replaced with a more detailed definition of the wafer flow set out in paragraphs (c') to (e') of claim 1 of the request.

- 3.3 The processing steps specified in paragraph (c') to (e') of claim 1 correspond to those described with reference to Figures 1 and 2 of the drawings (see EP-A2-0 805 481, column 3, line 45 to column 4, line 50 and column 5, lines 2 to 29).
- 3.4 The Board is therefore satisfied that the amendments do not introduce subject matter which goes beyond the contents of the application as filed, in compliance with the requirements of Article 123(2) EPC.
4. Further prosecution of the application is, however, necessary for the examination of novelty and inventive step of amended claim 1. The Board considers it appropriate to remit the case under Article 111(2) EPC to the department of first instance for this purpose.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the department of first instance for further prosecution.

The Registrar:

The Chairman:

D. Meyfarth

R. K. Shukla