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**Datasheet for the decision  
of 1 December 2011**

**Case Number:** T 0569/10 - 3.2.07  
**Application Number:** 04026537.3  
**Publication Number:** 1584707  
**IPC:** C23C 14/34, H01J 37/34  
**Language of the proceedings:** EN

**Title of invention:**  
Power coupling for high-power sputtering

**Applicants:**  
Applied Materials, Inc.  
Applied Materials GmbH & Co. KG

**Headword:**  
-

**Relevant legal provisions:**  
EPC Art. 84  
EPC R. 115(2)  
RPBA Art. 15(3)

**Relevant legal provisions (EPC 1973):**  
-

**Keyword:**  
"Oral proceedings continued in the absence of the appellant"  
"Clarity (no - claim 1 does not contain all essential features)"

**Decisions cited:**  
T 0032/82, G 0001/98, G 0006/88, G 0001/04

**Catchword:**  
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Case Number: T 0569/10 - 3.2.07

**D E C I S I O N**  
of the Technical Board of Appeal 3.2.07  
of 1 December 2011

**Appellants:** Applied Materials, Inc. et al  
(Applicants) 3050 Bowers Avenue  
Santa Clara, CA 95054 (US)

**Representative:** Schickedanz, Willi  
Langener Straße 68  
D-63073 Offenbach (DE)

**Decision under appeal:** Decision of the Examining Division of the  
European Patent Office posted 18 January 2010  
refusing European patent application  
No. 04026537.3 pursuant to Article 97(2) EPC.

**Composition of the Board:**

**Chairman:** H. Meinders  
**Members:** H. Hahn  
I. Beckedorf

## Summary of Facts and Submissions

- I. The applicants lodged an appeal against the decision of the Examining Division to refuse the European patent application No. 04 026 537.3.

The appellants requested to set aside the decision and to grant a patent on the basis of the claims 1-20 of the main request (of which the claims 1-19 are identical with those underlying the impugned decision and correspond to claims 1-19 as originally filed), alternatively on the basis of the claims of one of the auxiliary requests 1-5, all as filed together with the grounds of appeal dated 12 February 2010. Unless a patent was granted on the basis of the aforementioned requests, an "oral hearing" was requested.

- II. In the present decision the following documents are cited:

D1 = US-A-2003/0136672

D2 = JP-A-01 305 523 & Patent Abstracts of Japan,  
vol. 014, no. 102 (E-0894), 23 February 1990

D6 = US-A-2002/0189939.

- III. The Examining Division held that claims 1-20 as originally filed do not fulfil the requirements of Article 82 EPC since the subject-matter of claims 1-13 attempts to solve a different technical problem than that according to claims 14-20 and do not comprise a special technical feature fulfilling the requirements of Rule 44 EPC in view of the sputtering system of D1.

IV. With a communication dated 2 August 2011 and annexed to the summons to oral proceedings the Board gave its preliminary and non-binding opinion with respect to the claims of these six requests (see point I above). The appellant's request for "an oral hearing" was interpreted as a request for oral proceedings.

The Board stated amongst others that the Examining Division's conclusion concerning Article 82 EPC in the light of Rule 44(1) EPC with respect to the main request appeared correct.

The Board further stated, amongst others, that the four independent claims 1, 12, 14, and 17 of the main request, taking account of the problem underlying the present application, did not contain all essential features and thus did not meet the requirement of Article 84 EPC.

The same conclusion was considered to be valid for the auxiliary requests 1-5 which contained at least two identical independent claims corresponding to claims 1 and 12 of the main request.

Furthermore, the subject-matter of claim 17 of the main and auxiliary request 1 appeared to lack novelty over D2.

V. With letter dated 20 October 2011 the appellants submitted an amended set of claims 1-14 as a new single request, which replaced the previous requests, comprising a single independent claim 1, supported by arguments concerning the basis of the amendments carried out therein as well as the patentability.

Additionally, they submitted amongst others arguments concerning the clarity objections raised by the Board with respect to the independent claims of the replaced six requests in combination with an article (W. Anders, "Die unwesentlichen Merkmale im Patentanspruch - Die wesentlichen Merkmale der Erfindung", GRUR 2001, 867).

- VI. With letter dated 16 November 2011 submitted by fax on the same day the appellants submitted a new set of claims 1-11 replacing the single request dated 20 October 2011, supported by arguments concerning only the basis of the amendments carried out therein. Furthermore, the appellants stated that they will not attend the oral proceedings. They further requested to remit the case to the department of first instance since claim 1 as on file had never been examined with respect to novelty or obviousness.
- VII. Oral proceedings before the Board were held on 1 December 2011. As announced with their fax dated 21 November 2011 the appellants did not appear so that the oral proceedings were continued in their absence in accordance with Rule 115(2) EPC and Article 15(3) RPBA. At the end of the oral proceedings the Board announced its decision.
- VIII. Independent claim 1 of the single request reads as follows (amendments compared to claim 1 of the application as originally filed are in bold with deletions in brackets; emphasis added by the Board):
- "1. A system for coating a substrate, the system comprising:  
a vacuum chamber **(115)**;

a rotatable tube (195) positioned inside the vacuum chamber (115);  
a shaft (200) connected to the rotatable tube (195), the shaft partially outside the vacuum chamber (115);  
a bearing (230) positioned outside the vacuum chamber (115), the bearing (230) configured to rotatably engage the shaft (200);  
a seal (232) positioned between the bearing (230) and the vacuum chamber (115), the seal (232) configured to provide a seal between the vacuum chamber (115) and the shaft (200); [and]  
**characterized by** a power coupler (210) configured to deliver power to the rotatable tube (195), the power coupler (210) positioned between the bearing (230) and the seal (232) to thereby limit the current that flows through the bearing (230)."

IX. The appellants argued, insofar as relevant for this decision, essentially as follows:

Claim 1 of the single request corresponds to claim 1 as originally filed and differs therefrom only in that it is in a two-part form claim and comprises reference numerals. The preamble of claim 1 is known from D6.

With their letter of 20 October 2011 they had argued with respect to Article 84 EPC and the former main request that it is up to the applicant to decide which features should be incorporated into a claim, i.e. which features are important and which are not important for a claim. The EPO cannot force the applicant to incorporate features against its will (see W. Anders, GRUR 2001, 867). Only the state of the art can force the applicant to incorporate additional

features into a claim in order to restrict said claim against the state of the art. However, in the present case there does not exist any such state of the art. The applicants have not highlighted any features in the description as being essential for the present invention. The word "essential" has not been used at all. Furthermore, there does not exist an objective essentiality resulting from the fact that an applicant has to amend the claims because of the state of the art. If there existed such an objective essentiality, an amendment of a claim because of state of art would regularly violate Article 123(2) EPC, as a new feature is incorporated into a claim but has not been highlighted in the description as being essential.

Also, it is apparent that, "if the applicant incorporated all the features into the independent claims as proposed by the Board of Appeal, these independent claims, in fact, would relate to the same embodiment, so that it is reasonable to only prosecute one independent claim".

According to decision G 0001/98 (OJ EPO 2000, 111, point 3.1 of the reasons) "the applicant may claim his invention in the broadest possible form, i.e. the most general form for which all the patentability requirements are fulfilled. If he has made an invention of general applicability, a generic claim is not the consequence of the verbal skill of the attorney, as the referring decision seems to suggest (Reasons, point 20), but of the breadth of application of the invention".

Therefore, according to this decision, if there does not exist state of the art which forces the applicant

to amend a claim by incorporating additional features, it is up to the applicant to decide which wording a claim should have.

## **Reasons for the Decision**

### **1. *Procedural matters***

The statement of the appellants in their fax dated 16 November 2011 that they will not attend the oral proceedings (see point VI above) is considered by the Board as a withdrawal of the auxiliary request for oral proceedings, as is consistent case law (see Case Law of the Boards of Appeal, 6<sup>th</sup> edition 2006, VI.C.2.2), the appellant thereby relying on its written submissions.

Since the appellants were not represented at the oral proceedings, which were held in accordance with Rule 115(2) EPC and Article 15(3) RPBA in their absence, the principle of the right to be heard pursuant to Article 113(1) EPC is not contradicted since that principle only affords the opportunity to be heard and, by absenting itself from the oral proceedings, a party gives up that opportunity (see the explanatory note to Article 15(3) RPBA cited in T 1704/06, not published in OJ EPO; see also the Case Law of the Boards of Appeal, 6<sup>th</sup> edition 2006, VI.B.3 to VI.B.3.2).

The subject-matter of claim 1 of the new single request dated 16 November 2011, which was filed less than one week before the date of the oral proceedings before the Board, is identical with the subject-matter of claim 1 as originally filed (see point VIII above) which had



been considered by the Board as claim 1 of the main request in its communication annexed to the summons to oral proceedings (see points I and IV above). Taking account of the fact that clarity objections had been raised with respect to that claim 1 (see e.g. point 6.1 of the communication) the appellants could expect in the light of the prevailing legal and factual situation that the examination of the clarity requirement would be an issue at the oral proceedings before the Board.

That the appellants actually had the opportunity in the written proceedings to submit comments with respect to the clarity objections raised by the Board concerning claim 1 of the main request, i.e. claim 1 as originally filed is evident from their submissions of 20 October 2011 (see point IX above).

2. *Clarity of claim 1 (Article 84)*

Article 84 EPC defines: "The claims shall define the matter for which protection is sought. They shall be clear and concise and be supported by the description".

- 2.1 According to the established case law of the boards of appeal Article 84 EPC has to be interpreted as meaning not only that a claim must be comprehensible from a technical point of view, but also that it must define the object of the invention clearly. That is to say to indicate all the essential features, i.e. all features which are necessary for solving the technical problem with which the application is concerned have to be regarded as essential features. The indication thereof is seen in part as necessary to meeting the clarity requirement, and in part as a prerequisite for the

support function laid down in the second sentence of Article 84 EPC (see the Case Law of the Boards of Appeal, 6<sup>th</sup> edition 2006, II.B.1.1.4).

- 2.2 The description of the present application as originally filed reveals under the heading "Background of the Invention" that vacuum coating of glass or other substrates has been done by sputtering conductive and dielectric material from rotating magnetrons by direct current (DC) for several years and that recently magnetrons driven by **high-voltage alternating current (AC)** have been introduced which are advantageous but have been plagued by reliability problems and high expense caused by the unique properties of a high-power AC system (see paragraphs [0003] to [0005]).

These high-power AC systems generate heat through a process known as inductive heating which causes conventional bearings and seals in the vacuum-coating system to fail (see paragraph [0006]). It further mentions that inductive heating arises when an **alternating current** flows through a conductive material such as metal and the current generates an electromagnetic field that affects nearby and adjacent materials in two ways. First, magnetisable materials develop a magnetic resistance to the fluctuating electromagnetic field which causes the material to heat up. Second, this field causes electron flows (current) within conductive materials and the internal resistance to these current flows also generates heat whereas non-conductive materials do not heat up (see paragraph [0007]).

In the subsequent paragraphs [0008] and [0009] of the description two documents of the prior art are identified and described (the second one thereof is D6) which relate to **AC sputter systems** using **rotatable target tubes**. Then it is stated "it is an aim of the present invention to arrange a power coupling **such that no current flows** through bearings" and that this is achieved by the subjects of the independent claims (see paragraphs [0010] and [0011]). Finally, it is mentioned in this part of the description that "engineers have developed several designs to minimize the impact of inductive heating in high-power, AC-coating systems. These designs, however, have proven to be difficult to service and expensive to implement. Accordingly, a system and method are needed to address this and other shortfalls of present technology and to provide other new and innovative features" (see paragraph [0012]).

- 2.3 Taking account of this technical background it is evident that the technical problem underlying the present application and as characterised by the claimed requirement "to thereby limit the current that flows through the bearing" is based on **high-power AC rotating magnetron sputter systems** only. The described problems with the **bearings** and the **seals** - which are due to the effects of the applied high AC current which is responsible for the heating up of magnetisable materials and the induced eddy currents - are linked with the use of **rotating target tubes, which are driven by a drive system**, in combination with **AC high-power** for the **magnetron sputtering** of the coating in a vacuum chamber. It is clear that the described problems do not exist when high-power DC sputter systems are used.

- 2.4 Since independent claim 1 neither defines a **sputtering target** nor the **rotating high-power AC magnetron sputter system including a drive system** for the rotating target it does not comply with Article 84 EPC for **not** defining all the features which are necessary for solving the technical problems underlying said high-power AC rotating magnetron sputter systems, and are therefore considered to represent essential features.
- 2.5 The above assessment and conclusion was notified by the Board to the applicants in its communication of 2 August 2011, annexed to the summons to oral proceedings, see point 6.1.
- 2.6 The appellants' subsequent arguments to the contrary cannot hold for the following reasons.
- 2.6.1 First of all, it is quite clear that it is the applicant who decides which features are incorporated into the subject-matter of an independent claim. However, it is the task of the Examining Division, and by virtue of Article 111(1) EPC the Board of Appeal in examination-appeal proceedings, to examine whether an application complies with Article 84 EPC. If not, it is up to the applicant to make it comply, if it does not wish its application to be (irrevocably) refused. As far as essential features are concerned, these are primarily determined by the technical problem underlying the application as derivable therefrom (see point 2.1 above). Insofar it is also not relevant that the features in question are not - explicitly - highlighted in the present application as being essential.

2.6.2 The article (W. Anders, GRUR 2001, 867) submitted with the final submission of the appellants (see point V above) purportedly supporting the aforementioned appellants' position primarily deals with the German patent system which is not necessarily the same in respect of the requirements of clarity and support as the European system as defined in the EPC. It comprises some remarks with respect to the corresponding articles of the EPC and quotes some decisions of the Boards of Appeal. In the context of the issue of whether or not all essential features necessary for solving the technical problem have to be comprised in the main claim the decision "Steuerschaltung/ICI", i.e. T 32/82 (OJ EPO, 1984, 354) is cited and its content is briefly discussed (see page 870, left hand column, last paragraph to right hand column, second paragraph and footnote 52). However, this content corresponds to the statement in point 2.1 above and in this respect the article cannot support the appellants' view.

Furthermore, the Board remarks in this context that the mere filing of an article cannot substitute for a missing substantive submission.

In fact, the appellants' response dated 20 October 2011 is totally silent with respect to the named specific features of the high-power AC sputtering system and does not contain any counter-argument to the objections under Article 84 EPC raised in point 6.1 of the Board's communication. These objections were based on the aforementioned technical problem underlying the present application (see point 2.3 above) and addressed each of these missing features. In the absence of contrary argumentation the Board has no reason at all to deviate

from its provisional opinion as given in that communication.

- 2.6.3 The argument based on decision G 0001/98 (OJ EPO 2000, 111, point 3.1 of the reasons) cannot hold either.

First of all, the passage quoted from point 3.1 thereof does **not** deal with the issue of clarity but only with the question what is covered by the subject-matter of a claim which comprises but does not individually claim plant varieties.

- 2.6.4 Secondly, the first part of the passage cited has been omitted which in full reads (emphasis added by the Board): "An inventor who has invented fastening means characterised in that they consist of a specific material has invented neither a nail, nor a screw, nor a bolt. Rather his invention is directed to fastening means generally. This is not a question of form but of substance: the applicant may claim his invention in the broadest possible form, ie the most general form for which **all patentability requirements are fulfilled**. If he has made an invention of general applicability, a generic claim is not the consequence of the verbal skill of the attorney, as the referring decision seems to suggest (Reasons, point 20), but of the breadth of application of the invention". From this passage it can therefore be concluded that, although the applicant may claim its invention in the broadest terms possible, the most general form of the claim has to fulfil the patentability requirements of the EPC, i.e. those of Articles 52 to 57 EPC. This decision is silent on the requirements of Article 84 EPC. Hence the cited

decision G 0001/98 is not relevant for the present case.

In respect of Article 84 EPC and the requirement that the claim should comprise the essential features, the Board wishes to make reference to G 6/88, OJ EPO 1990, 114, point 2.5 of the reasons and G 1/04, OJ EPO 2006, 334, point 6.2.4 of the reasons, which both state that the claims must recite all the essential features for clearly and completely defining the invention.

- 2.7 Consequently, claim 1 of the single request contravenes Article 84 EPC. The single request is therefore not allowable.
3. Since no formally allowable request is on file the appellants' request for remittal to the department of first instance has to be rejected.

## **Order**

### **For these reasons it is decided that:**

The appeal is dismissed.

The Registrar:

The Chairman:

K. Götz

H. Meinders