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**D E C I S I O N**  
**of 30 September 2002**

**Case Number:** T 1073/99 - 3.2.3  
**Application Number:** 96480055.1  
**Publication Number:** 0747141  
**IPC:** B08B 7/00, H01L 21/00

**Language of the proceedings:** EN

**Title of invention:**

Eliminating a film by chemical transformation and removing the converted film by means of aerosol cleaning

**Applicant:**

International Business Machines Corporation

**Opponent:**

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**Headword:**

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**Relevant legal provisions:**

EPC Art. 56

**Keyword:**

"Inventive step - no"

**Decisions cited:**

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**Catchword:**

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Case Number: T 1073/99 - 3.2.3

**D E C I S I O N**  
of the Technical Board of Appeal 3.2.3  
of 30 September 2002

**Appellant:** International Business Machines Corporation  
Old Orchard Road  
Armonk, N.Y. 10504 (US)

**Representative:** Klein, Daniel Jacques Henri  
Compagnie IBM France  
Département de Propriété Intellectuelle  
F-06610 La Gaude (FR)

**Decision under appeal:** Decision of the Examining Division 2.3.09.113 of  
the European Patent Office posted 8 July 1999  
refusing European patent application  
No. 96 480 055.1 pursuant to Article 97(1) EPC.

**Composition of the Board:**

**Chairman:** C. T. Wilson  
**Members:** K. Brösamle  
J. P. Seitz

## Summary of Facts and Submissions

I. With decision of 8 July 1999 the examining division refused European patent application No. 96 480 055.1 in the light of

(D1)US-A-5 209 028

for reasons of Article 56 EPC.

II. Claim 1 underlying the decision reads as follows:

"1. A method for removing a film (12) formed onto a substrate (10) which is not susceptible to aerosol cleaning, comprising the steps of:

converting the film to a converted film susceptible to aerosol cleaning including providing a supply of reactant and allowing the reactant to react therewith to form the converted film; and,

removing the converted film and any contaminants on the surface with an aerosol jet (20)."

III. Against the above decision of the examining division the applicant - appellant in the following - lodged an appeal on 23 July 1999 paying the fee on the same day and filing the statement of grounds of appeal on 16 November 1999.

IV. In his statement of grounds of appeal the appellant essentially argued as follows:

- according to (D1) a spray of frozen cryogen (such as argon) removes any contaminating particles from

a solid surface within a housing by displacing these particles, which are then evacuated from the housing;

- according to the invention as claimed a film layer with contaminating particles lodged therein is firstly converted into a film/layer susceptible to aerosol cleaning by an adequate chemical treatment thereof and then the converted film/layer is removed by an aerosol jet;
- (D1) describing a cleaning process without affecting the article's surface is different from the subject-matter of claim 1 being an etching process carried out in the above two steps;
- not knowing the claimed invention a skilled person would not normally be in a position to find the elements of the first step of the claimed method which is a significant departure from prior reference teachings;
- only by hindsight is (D1) a relevant document.

V. The board's Communication pursuant to Article 11(2) RPBA in which the board gave its provisional opinion of the case, was attached as annex to the summons to oral proceedings fixed for 30 September 2002. These were carried out without the appellant who informed the board that he would not be represented, Rule 71(2) EPC. At the end of the oral proceedings, the board's Chairman announced the board's decision.

VI. Based on the arguments according to above remark IV the appellant requested to set aside the decision under

appeal and (by implication) to grant the patent on the basis of the claims underlying the decision of the examining division.

### **Reasons for the Decision**

1. The appeal is admissible.
2. In the absence of any observations from the side of the appellant with respect to the board's Communication pursuant to Article 11(2) RPBA the board bases its following chain of arguments narrowly on its observations communicated to the appellant in its above Communication pursuant to Article 11(2) RPBA and comes to the following findings:

The teaching of claim 1 can be summarized as follows:

- a substrate (10) is covered by a film (12) which cannot be removed by aerosol cleaning;
  - a reactant is supplied to the film (12) to convert it into a film susceptible to aerosol cleaning;
  - an aerosol jet (20) removes the converted film and any contaminants from the surface (of the substrate).
3. Claim 1 does not specify in detail the substrate, the reactant or the aerosol jet so that the teaching of claim 1 is very general.
  4. From the application, see EP-A2-0 747 141, column 5, line 39 to column 6, line 2, it can be seen that the

reactants can be HF, HF and ammonia, ozone, oxygen atoms, chlorine, halogens or a fluorocarbon according to originally filed claim 15.

The substrate can be a silicon chip (wafer), medical apparatus, metal part or parts to be combined by fluxless soldering.

The aerosol jet can be nitrogen, carbon dioxide, argon or mixtures thereof, see originally filed claim 17.

5. From (D1) - US-A-5 209 028, "Background of the prior art", see column 1, line 42 to column 2, line 8, prior art is referred to which includes the chemical treatment of contaminant films and also spray treatment by nitrogen or carbon dioxide. It is known to use chlorofluoro carbon (FREON TE) or ozone, and nitrogen or carbon dioxide as gas or liquid jets for spray cleaning.

Since identical technical features according to claim 1 and (D1) must produce identical technical effects it must follow that the reactants would **convert** the non specified film according to claim 1 into a **converted film** which would be susceptible to aerosol cleaning for instance with carbon dioxide as in (D1), column 1, line 67 to column 2, line 8.

6. In (D1) and its discussion of the prior art, see column 1 "Background of the prior art", in particular lines 26/27, reference is also made to combining the chemical treatment with megasonic or ultrasonic cleaners or in other words to combine **chemical** treatment with a **mechanical** treatment. Under these circumstances - contrary to appellant's findings - a

**two step** treatment of the surface of any substrate is known so that appellant's further argument that the claimed invention is an "etching process" - in contrast to (D1) - is also not justified since the first step of (D1) in form of a chemical treatment can be seen as an "etching process".

7. It is true that the teachings of the invention claimed in (D1) is different from the technical disclosure in the opening of its description, see for instance column 1, line 19 to column 2, line 8, without, however, restricting the teaching of (D1) to its claimed invention. Again contrary to appellant's findings it is not necessary to know the subject-matter of the present invention for a skilled person to derive from D1 a **two step** cleaning process being "a method for removing a film formed onto a substrate" within the meaning of claim 1, see the introductory clause thereof. It is therefore also not justified to interpret the subject-matter of claim 1 as a significant departure from prior reference teachings since the facts do not allow such a conclusion.
8. Given an indication in(D1) to combine chemical treatment with a mechanical treatment, the board cannot see an inventive step in combining a known chemical treatment with a known spray treatment to arrive at the subject-matter of the present claim 1, particularly given the fact that the materials being used, even though not specified in claim 1 are apparently also anticipated by (D1). As a consequence the subject-matter of claim 1 is not inventive and claim 1 not allowable.
9. The independent claim not being allowable there is no

basis to grant a patent so that appellant's request cannot be followed by the board.

**Order**

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

The appeal is dismissed.

The Registrar:

The Chairman:

A. Counillon

C. T. Wilson