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**D E C I S I O N**  
**of 29 August 2005**

**Case Number:** T 0638/03 - 3.3.05

**Application Number:** 96940755.0

**Publication Number:** 0862493

**IPC:** B01J 19/00

**Language of the proceedings:** EN

**Title of invention:**

Microcomponent chemical process sheet architecture

**Applicant:**

Battelle Memorial Institute

**Opponent:**

-

**Headword:**

Microcomponent/BATTELLE

**Relevant legal provisions:**

EPC Art. 111(1), 84, 54

EPC R. 68(2)

**Keyword:**

"Clarity"

"Main request - novelty of apparatus features (yes)"

"Substantial procedural violation (no), remittal"

**Decisions cited:**

-

**Catchword:**

-



Case Number: T 0638/03 - 3.3.05

**D E C I S I O N**  
of the Technical Board of Appeal 3.3.05  
of 29 August 2005

**Appellant:**

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**Representative:**

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**Decision under appeal:**

Decision of the Examining Division of the  
European Patent Office posted 22 November 2002  
refusing European application No. 96940755.0  
pursuant to Article 97(1) EPC.

**Composition of the Board:**

**Chairman:** M. M. Eberhard  
**Members:** J.-M. Schwaller  
H. Preglau

## Summary of Facts and Submissions

- I. This appeal lies from the decision of the examining division refusing European patent application No. 96940755.0 under Article 97(1) EPC.
- II. The complete grounds for the decision read: "In the communication(s) dated 03.08.2000, 26.06.2001, 05.08.2002 the applicant was informed that the application does not meet the requirements of the European Patent Convention. The applicant was also informed of the reasons therein. The applicant filed no comments or amendments in reply to the latest communication but requested a decision according to the state of the file by a letter received in due time on 08.11.2002. The application must therefore be refused."
- III. In the communication of 3 August 2000, the examining division raised an objection of lack of clarity against the terms or expressions "microcomponents", "one chemical process unit operation" and "chemical reactant" used in the claims. The subject-matter of claims 1 to 8, 10, 12 to 15 and 19 to 29 on file at that time was objected to under lack of novelty over each of the following documents:
- D1 (WO 94/21372)
- D2 (DE-A-3926466)
- D3 (US-A-3797202)

In the second communication dated 26 June 2001 and based on amended claims, an objection was raised under

Article 84 EPC due to the presence of two independent claims of the same category in the set of claims. Considering that, amended claim 1 did not define explicitly the "very general term "microcomponent" and interpreting this term on the basis of dependent claims, the examining division further disputed the novelty of the subject-matter of amended claim 1 over D1.

In the annex to the summons to oral proceedings sent on 8 August 2002, the examining division explained that it would appear necessary to discuss the points already raised during the written procedure, in particular whether the subject-matter of claim 1 was new, and whether the terms used in claim 1 were clear and were terms of the art.

- IV. With the statement of grounds of appeal, the appellant filed two sets of amended claims as main and auxiliary requests, respectively.
  
- V. In a communication the board questioned the clarity of the terms "microcomponent" and "system operation" and invited the appellant to clarify the location of the second microcomponent defined in claim 1 and to identify the category of claim 1. The board furthermore cited WO 96/04516 (D4) as new prior art, and while making assumptions as to the meaning of the unclear terms, cited the content of D4 against the novelty of the subject-matter of claim 1 of both requests. Novelty of claim 1 according to the main request was further disputed on the basis of D1 and D2.

VI. In answer to the board's communication, the appellant filed a complete replacement set of claims 1-24 as a main request and an additional claim 1 as an auxiliary request, and requested the reimbursement of the appeal fee.

VII. During the oral proceedings which took place on 29 August 2005, the appellant filed two complete sets of amended claims as new main and auxiliary request.

Claim 1 of the main request read as follows:

"1. A microcomponent chemical process assembly having a laminate architecture, comprising:

a first laminate (1) having a plurality of first microcomponents (2,4) for performing at least one chemical process unit operation which is a chemical conversion or chemical separation by receiving a chemical reactant and rejecting a product, and at least one second microcomponent provided on a second laminate, or on a second portion of the first laminate, which second microcomponent is for carrying out an additional unit operation, the chemical process unit operation and the additional unit operation producing a system operation which is a collection of unit operations,

wherein said first and second microcomponents each comprise a plurality of lands (10) and flow paths (3,5,6,8) arranged as a groove set made up of a pair of headers and a plurality of laterals, the laterals permitting fluid flow between the header pair, and wherein a coating of material is provided on a surface of said flow paths."

VIII. The appellant's arguments are summarised as follows:

1. A header is a manifold which distributes a fluid, it is defined as a single chamber or enclosure for distributing the fluid into the plurality of passages or laterals. Bearing in mind this definition, the subject-matter of claim 1 was distinguished from the prior art documents D1, D2 and D4 by the following features:

- D1 does not disclose a plurality of microcomponents comprising pairs of headers and laterals on a single laminate;
- D2 does not have plural microcomponents each comprising laterals and a pair of headers. In addition, D2 does not disclose a coating;
- D4 is silent as to any embodiment of a reactor, or as to a catalyst, membrane or adsorbent or as to a coating.

The embodiments disclosed in Figures 1a and 16a did no longer fall within the scope of protection of the claims.

2. The examining division's communication of 8 August 2002 simply mentioned that the issues of novelty and clarity were to be discussed at the forthcoming oral proceedings, without providing any reasoning or basis. With the letter of 17 April 2002, a response to the communication of 26 June 2001 was provided, and it was not evident to the applicant as to which extent the objections

had not been overcome in that response. In particular, the clarity issue raised in the communication of 26 June 2001 was addressed by deletion of excess independent claim 29 and of dependent claims 30 to 32. The novelty objections were answered in the letter of 17 April 2002. Accordingly, it was not possible to infer what were the outstanding objections relating to clarity and novelty mentioned in the annex to the summons under Rule 71(1) EPC. In short, insufficient and/or inadequate reasoning was given, which did not therefore satisfy the requirements of Rule 68(2) EPC and constituted a substantial procedural violation.

- IX. The appellant requested that the decision under appeal be set aside and that a patent be granted on the basis of the main request as filed during the oral proceedings or in the alternative on the basis of the auxiliary request as filed during the oral proceedings. He further requested the reimbursement of the appeal fee.

### **Reasons for the Decision**

1. The appeal is admissible.
2. Main request - Allowability of the amendments under Article 123(2) EPC

The subject-matter of claim 1 results from a combination of features disclosed in claims 1 to 6, 8 and 22; page 1, lines 10-12; page 6, lines 20-21;

page 9, lines 12-13, page 7, lines 28-30 and page 11, lines 23 to page 12, line 9 of the PCT application as published (WO 97/14497).

Dependent claims 2 to 21 correspond respectively to claims 23, 24, 25, 26, 27, 28, 3, 9, 10, 4, 7, 11, 12, 13, 14, 15, 16, 17, 18, 19 of the PCT application and dependent claims 22 and 23 are based respectively on claims 20 and 21, each taken in combination with the passage at page 20, line 25 to page 21, line 6 of the PCT application.

The requirements of Article 123(2) EPC are therefore fulfilled with respect to claims 1 to 23.

3. *Main request - Clarity of claim 1*

Although present claim 1 includes apparatus and process features, it is clear to the board, due to the use of the specific phraseology "microcomponents for performing one chemical reaction", "microcomponent for carrying out an additional operation unit", that it belongs to the category of "apparatus claim", as confirmed by the appellant during the appeal proceedings.

The "second microcomponent" being described as being provided either on a second laminate or on a second portion of the first laminate, its location is clear and the objection raised in the board's communication has been overcome.

The "microcomponents" have been specified as "each comprising a plurality of lands (10) and flow paths

(3,5,6,8) arranged as a groove set made up of a pair of headers and a plurality of laterals, the laterals permitting fluid flow between the header pair". In the board's view, the matter for which protection is sought is now clearly defined and the clarity objection raised with respect to this term has also been overcome.

The same remark applies to the expressions "one chemical process unit operation" and "system operation" which have been defined as being respectively "a chemical conversion or a chemical separation" and "a collection of unit operations". These expressions, although being broad, do not need further clarification because their meaning is clear for a person skilled in the art.

As regards the expression "chemical reactant" objected to by the examining division, the board recognizes that it is broad since it encompasses a great number of existing chemical compounds which can be chemically converted or separated. However, the fact that many possibilities are covered by the claim cannot be equated with an absence of clarity (see Case Law of the Boards of Appeal of the EPO, 4th edition 2001, II.B.113, pages 159-160). It is evident to the skilled person that very different chemical reactants may be used in the apparatus as defined in claim 1 and there is no need for the sake of clarity to indicate one or several specific reactants. As pointed out by the appellant, the meaning of the expression "chemical reactant" is well-known to the person skilled in the art.

For the above reasons, claim 1 is considered to meet the requirements of Article 84 EPC.

4. *Main request - Novelty*

D4 is an international application filed on 23 June 1995 and published on 15 February 1996, i.e. between the first and the second priority dates claimed in the present application (first priority US application SN 04/546329 filed on 20 October 1995). D4 has been published and supplied to the European Patent Office in an official language and the national fee has been paid (Article 158(2) EPC). Thus, according to Article 158(1) EPC, D4 is a prior art document as defined in Article 54(3) and (4) EPC for the subject-matter of claim 1 to the extent that said claim is entitled to the priority date of 20 October 1995 of the US application SN 04/546329. Otherwise, D4 would constitute prior art under Article 54(2) EPC. In both cases, D4 has nevertheless to be considered for the assessment of novelty.

In the board's judgment, the subject-matter claimed is novel over documents D1, D2, D3 and D4 for the following reasons:

- 4.1 D4 (see in particular Figures 1, 2a and 2b; page 1, lines 6-8; page 6, lines 21-24; page 8, line 25 to page 9, line 12; claims 1 and 12) discloses a microcomponent chemical process assembly having a laminate architecture comprising a first laminate with a plurality of first microcomponents and at least one second microcomponent which are identical to those defined in claim 1, in particular wherein each

microcomponent comprises a plurality of lands and flow paths arranged as a groove set made up of a pair of headers and a plurality of laterals permitting fluid flow between the headers pair; D4 does not however disclose **a coating of material on a surface of the flow paths**. Therefore claim 1 is novel over D4.

- 4.2 As regards D1, D2 or D3, none of these documents disclose a single laminate having a **plurality** of microcomponents **each** comprising a plurality of lands and flow paths arranged as a groove set made up of a pair of headers and a plurality of laterals permitting fluid flow between the header pair.

The examining division argued in its communication of 26 June 2001 that Figure 7 of D1, which "shows two distribution manifolds comprising a common chamber and branch passages", disclosed a plurality of first microcomponents. In the board's view, this argument no longer applies to amended claim 1 which now requires that at least two pairs of headers must be present on a laminate, whereas in Figure 7 of D1 only one pair of headers is disclosed on a single laminate. The catalytic reactor shown in Figure 16 of D1 also comprises only one pair of headers 90C1' and 90C2', respectively supplying and collecting the fluid to and from the reactor channels 90-1' to 90-8', and thus D1 does not destroy the novelty of the claimed assembly.

Therefore claim 1 is novel over each of D1, D2 and D3.

- 4.3 Claims 2-23 being dependent on claim 1, their subject-matter is therefore also novel and the application meets the requirements of Article 54 EPC.

5. *Remittal*

Inventive step of the subject-matter as claimed in the main request was neither discussed during the procedure before the examining division nor considered at all in the decision under appeal. The board, in the exercise of its discretionary power pursuant to Article 111(1) EPC, finds it therefore appropriate to remit the case to the examining division for further prosecution.

6. *Reimbursement of the appeal fee*

6.1 In support of the request for reimbursement of the appeal fee, the appellant submitted that the decision violated the principle enshrined in Rule 68(2) EPC that decisions of the European Patent Office shall be reasoned. He argued in particular that it was not possible to infer what the outstanding objections were relating to clarity and novelty mentioned in the annex to the summons under Rule 71(1) EPC.

6.2 The board notes that the grounds for refusal, although lacking detail and in a standard form, referred to the communications issued earlier by the examining division, as provided for by the Guidelines for Examination in the European Patent Office E-X, 4.4 (version October 2001), when an applicant requests a decision on the basis of the written submissions. However, the requirements of Rule 68(2) EPC must always be complied with.

In the present case, the board could however not recognise in the handling of the case by the examining

division any substantial procedural violation which could justify reimbursement of the appeal fee for the following reasons.

- 6.3 In the annex to the summons it is stated that the points already raised during the written procedure will be discussed at the oral proceedings, in particular the questions whether the subject-matter of claim 1 was novel and whether the terms used in claim 1 were clear. This annex and the appealed decision were both based on a set of claims including the same claims 1-28 as the set of claims on which the second communication (dated 26 June 2001) was based (only claims 29-32 were deleted in response to said second communication).

In the second communication, the examining division explained that the term "microcomponent" was very general and not explicitly defined in claim 1, and that the arrangement shown in D1 could thus well be considered as a plurality of first microcomponents. The examining division further made reference to "Figure 7 which shows two distribution manifolds comprising a common chamber and branch passages", a "configuration which corresponds also to the definition of the first and second microcomponents given in dependent claims 6 and 8 where the two microcomponents actually comprise the same architecture" and concluded that amended claim 1 was therefore not novel over D1. It was further indicated that the same consideration applied to documents D2 and D3.

Since the reasoning concerning the lack of novelty of the subject-matter of claim 1 was already mentioned in the second communication, it could be clearly

understood that the applicant's arguments in reply thereto had not convinced the examining division and that the objection of lack of novelty with respect to D1, D2 and D3 raised in the second communication as well as the reasons given therein were maintained.

Regarding the clarity issue, it is immediately apparent from the annex to the summons to oral proceedings that claim 1 contained terms which the examining division considered as unclear in the previous communications. As, on the one hand, the term "microcomponent" was already objected to in the first communication (30 August 2000) as being vague and, on the other hand, it was still considered as not being explicitly defined in the second communication and was then construed on the basis of dependent claims 6 and 8 to substantiate the novelty objection, it could be understood that at least this term was still regarded as being unclear.

The board further observes that in the statement of grounds of appeal, the appellant discussed both the clarity of the term "microcomponent" and the novelty with respect to documents D1, D2 and D3 and furthermore with the grounds of appeal filed new claims (as a main request) in which the term "microcomponent" was defined more precisely. Thus it appears that it had been possible for the appellant to infer from the decision and the communications referred to therein what were the grounds of the refusal and the reasons underlying the objections of lack of clarity and lack of novelty.

It follows from the above that the decision was sufficiently reasoned, so that no substantial procedural violation occurred. Reimbursement of the appeal fee is therefore refused.

## **Order**

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

1. The decision under appeal is set aside.
2. The case is remitted to the first instance for further prosecution on the basis of the main request filed during the oral proceedings.
3. The reimbursement of the appeal fee is refused.

The Registrar:

The Chairman:

A. Wallrodt

M. Eberhard