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Datasheet for the decision of 16 November 2021

Case Number: T 1658/17 - 3.4.02

Application Number: 12161078.6

Publication Number: 2503320

IPC: G01N21/64, C12M1/34

Language of the proceedings: EN

Title of invention:
Composite sensor assemblies for single-use bioreactors

Patent Proprietor:
Finesse Solutions, Inc.

Opponent:
SARTORIUS STEDIM BIOTECH GMBH

Relevant legal provisions:
EPC Art. 56, 100(a), 100(c)
RPBA Art. 12(4), 13(1)
RPBA 2020 Art. 13(1)

Keyword:
Subject-matter extending beyond the content of the application as originally filed (no)
Admission of documents (yes)
Inventive step (yes)

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Beschwerdekammern

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Case Number: T 1658/17 - 3.4.02

D E C I S I O N
of Technical Board of Appeal 3.4.02
of 16 November 2021

Appellant: (Opponent)	SARTORIUS STEDIM BIOTECH GMBH August-Spindler-Straße 11 37079 Göttingen (DE)
Representative:	Müller-Boré & Partner Patentanwälte PartG mbB Friedenheimer Brücke 21 80639 München (DE)
Respondent: (Patent Proprietor)	Finesse Solutions, Inc. 3501 Leonard Ct. Santa Clara, CA 95054 (US)
Representative:	J A Kemp LLP 80 Turnmill Street London EC1M 5QU (GB)
Decision under appeal:	**Decision of the Opposition Division of the European Patent Office posted on 30 May 2017 rejecting the opposition filed against European patent No. 2503320 pursuant to Article 101(2) EPC.**

Composition of the Board:

Chairman	R. Bekkering
Members:	F. J. Narganes-Quijano
	B. Müller

Summary of Facts and Submissions

I. The appellant (opponent) lodged an appeal against the decision of the opposition division rejecting the opposition filed against the European patent No. 2503320.

The opposition filed by the appellant against the patent as a whole was based on the grounds for opposition of added subject-matter (Article 100(c) EPC) and of lack of novelty and of inventive step (Article 100(a), together with Articles 52(1), 54(1) and 56 EPC).

II. During the appeal proceedings the parties referred, among other documents, to the following documents already considered during the first-instance opposition proceedings:

E1: US 2008 0171383 A1
E2: US 2008 0032389 A1
E4: EP 1 952 971 A1
E5: US 2002 0038925 A1
E6: "Modifizierung von Kunststoffoberflächen durch Niederdruckplasmabehandlung zur Verbesserung der Adhäsionseigenschaften", M. Rasche; Adhäsion, Vol. 3 (1986), pages 25 to 28
E9: "McGraw-Hill Dictionary of Scientific and Technical Terms", S. P. Parker; McGraw-Hill Book Company, 3rd edition, 1984; bibliographic pages and page 202
X1: Expert declaration of M. Selker dated 22 March 2016, together with Annexes A, B, C, D1, D2, E, F, G and H, filed by letter dated 1 April 2016.

III. In the decision under appeal the opposition division

- decided not to admit document E9 into the proceedings (Article 114(2) EPC),

- found that the subject-matter of claim 1 as granted did not extend beyond the content of the application as originally filed (Article 100(c) EPC), and

- held that the invention defined in the claims as granted involved an inventive step over the closest state of the art represented by document E1 or document E2 (Article 100(a) together with Article 56 EPC).

IV. With the statement setting out the grounds of appeal the appellant submitted document

E9': "McGraw-Hill Dictionary of Scientific and Technical Terms", S. P. Parker; McGraw-Hill Book Company, 3rd edition, 1984; page 305.

V. In reply to the statement of grounds of appeal the respondent (patent proprietor), by letter dated 1 February 2018, submitted claims amended according to a first to a twenty-first auxiliary request and document

E10: "The Chambers Dictionary"; Chambers Harrap Publishers Ltd, Reprinted 1994; bibliographic pages and pages 188 and 189.

VI. In reply to the summons to oral proceedings the appellant, in its letter dated 8 April 2020, referred to the following book:

E11: "Joining of Plastics - Handbook for Designers and Engineers", J. Rotheiser; unmodified reprint

(2010) of the 3rd edition of 2009, Carl Hanser Verlag, Munich,

and filed a copy of the bibliographic pages and of pages 204 to 207 of the book. Subsequently, with the letter dated 24 July 2020, the appellant filed two copies of the mentioned book.

VII. Oral proceedings before the board were held on 16 November 2021.

During the oral proceedings the appellant referred to the following document already considered during the first-instance proceedings:

E3: WO 2010 010313 A2.

The appellant requested that the decision under appeal be set aside and the patent be revoked.

The respondent requested that the appeal be dismissed (i.e. that the patent be maintained as granted) or that the decision under appeal be set aside and the patent be maintained in amended form on the basis of the claims of one of the first to the twenty-first auxiliary requests, all filed with the reply to the statement of grounds of appeal dated 1 February 2018.

At the end of the oral proceedings the chairman announced the decision of the board.

VIII. Claim 1 of the patent as granted reads as follows:

"A composite sensor assembly for use with a polymeric bioprocess vessel (93), said sensor assembly comprising:

i) a port member having a hollow portion and a base plate portion (92);

ii) a polymeric monitoring sensor unit (82) including at least one electrical and/or chemical and/or optical measurement component, said sensor unit including a base portion and being generally dish shaped and sized to fit inside the bore of the hollow portion of said port member, said port member providing the monitoring sensor unit measurement component or components with access to the contents of said bioreactor vessel, which component or components include means for providing incoming optical and/or electrical signals and means for collecting and transmitting measurement signals emitted by the components; wherein:

the port member comprises a high surface tension thermoplastic;

at least said base plate portion comprises a polymer fusibly sealable to the bioprocess vessel at a hole in the wall thereof;

the sensor unit is adhesively retained in the bore of the hollow portion of said port member; and

at least one of the interfacing surfaces of said port member and said sensor unit have been subjected to plasma, UV, Ozone or chemical surface preparation prior to being adhered together."

The main request also includes claims 2 to 14 referring back to claim 1.

Reasons for the Decision

1. The appeal is admissible

2. *Patent as granted - Article 100(c) EPC*

2.1 The ground for opposition under Article 100(c) EPC was raised by the appellant in respect of the feature of claim 1 as granted "a port member having a hollow portion and a base plate portion [...], wherein: the port member comprises a high surface tension thermoplastic".

2.2 With the statement of grounds of appeal the appellant contested the opposition division's finding that the mentioned feature of claim 1 as granted did not extend beyond the content of the application as originally filed, and in particular beyond what the person skilled in the art would understand from a contextual reading of the corresponding feature of claim 1 as originally filed: "a port comprising a high surface tension thermoplastic having a hollow portion and a base plate portion".

2.2.1 The board notes that, as submitted by the appellant, the feature of claim 1 as originally filed reading "a port comprising a high surface tension thermoplastic having a hollow portion and a base plate portion" allows, from the point of view of the linguistic structure of the feature, two different interpretations depending on whether the expression "having a hollow portion and a base plate portion" is attributed to the thermoplastic or to the port. However, while the expression "comprising a high surface tension thermoplastic" relates to the material composition of a physical entity, the expression "having a hollow portion and a base plate portion" relates - as submitted by the respondent - to a different category of attribute, namely to the structural features of a

physical entity. For this reason, the board is of the opinion that the skilled person would understand the mentioned feature as requiring, on the one hand, that the port has a high surface tension thermoplastic and, on the other hand, that the port has a hollow portion and a base plate portion. This interpretation of the feature of claim 1 as originally filed is based on the claim itself and, in addition, contrary to the appellant's submissions, is not at variance with the remaining disclosure of the application as originally filed. In particular, the board sees no relevance in paragraphs [0019] and [0030] of the patent specification cited by the appellant to the issue of the interpretation of the disclosure of the application as originally filed because the corresponding passages of the description of the application as originally filed (page 12, lines 1 to 12, and page 16, lines 14 to 34) relate to the use of LDPE or EVA as a high surface tension thermoplastic for the port and they are consistent with the interpretation by the skilled person of the feature of claim 1 as originally filed mentioned above.

2.2.2 The mentioned interpretation of claim 1 as originally filed corresponds to the literal formulation of the feature of claim 1 as granted objected to by the appellant and, as a consequence, the mentioned feature is in the board's view directly and unambiguously derivable from the content of the application as originally filed (Article 100(c) EPC).

2.3 During the oral proceedings the appellant also submitted that, while according to the feature "a port comprising a high surface tension thermoplastic having a hollow portion and a base plate portion" of claim 1 as originally filed and also according to the passages

on page 14, lines 19 to 27, and page 16, last paragraph, of the application as originally filed implied that the hollow portion comprised a high surface tension thermoplastic, the mentioned feature of claim 1 as granted under consideration (*cf*. point 2.1 above) did not require that the hollow portion comprised a high surface tension thermoplastic, and that therefore the claimed subject-matter extended beyond the content of the application as filed.

The board, however, is not convinced by this argument of the appellant because, as submitted by the respondent, the feature of claim 1 as originally filed: "a port comprising a high surface tension thermoplastic having a hollow portion and a base plate portion", when construed as already mentioned in point 2.2.1 above, third paragraph, does not require either that the hollow portion is at least partially made of the high surface tension thermoplastic. In addition, the absence of this requirement in claim 1 as granted is - as also submitted by the respondent - consistent, with the description of the application as filed (see, for instance, page 12, lines 1 to 6, together with lines 19 to 21; page 15, lines 30 to 34; page 17, lines 1 to 11; and page 20, lines 29 and 30).

2.4 The board concludes that the subject-matter of claim 1 as granted does not extend beyond the content of the application as filed and that, therefore, the ground for opposition under Article 100(c) EPC does not prejudice the maintenance of the patent as granted.

3. *Patent as granted - Novelty*

Although the box corresponding to the ground for opposition of lack of novelty was crossed in Form

2300.2 annexed to the notice of opposition, this ground for opposition - unlike the ground for opposition of lack of inventive step - was neither substantiated in the notice of opposition nor addressed as such during the first-instance proceedings. In addition, the appellant's case on appeal was silent as to this ground for opposition. Therefore, there is no reason for considering the ground for opposition of lack of novelty for the patent as granted in the present proceedings.

4. *Documents E9, E9', E10 and E11 - Admittance*

4.1 Document E9 was submitted by the appellant during the first-instance oral proceedings and the opposition division did not admit this document for being filed late and for being incomplete and inconsistent (Article 114(2) EPC).

4.1.1 The appellant contested the way the opposition division exercised its discretion in its decision not to admit document E9 into the proceedings. The appellant submitted that the document was highly relevant as it was filed in reply to the broad interpretation by the opposition division of the term "bonded" used in document E2 (paragraph [0028], last sentence), and the document supported a more limited technical meaning of the mentioned term.

4.1.2 On the one hand, in the board's view none of the appellant's arguments would allow the conclusion that the opposition division, in deciding not to admit document E9 into the proceedings, exercised its discretion under Article 114(2) EPC according to the wrong principles, or without taking into account the right principles, or in an unreasonable way. Therefore,

the board sees no reason for overturning the opposition division's decision in this respect.

On the other hand, according to Article 12(4) RPBA 2007 (which applies in the present case, see Article 25(2) RPBA 2020) it is within the discretion of the board to take into consideration on appeal evidence which was not admitted in the first-instance proceedings. Moreover, one of the relevant substantive issues addressed on appeal relates to the technical meaning of the term "bonded" used in document E2 and, in addition, document E9 is an extract of a dictionary containing a definition of the term "bonding". In these circumstances, the board considered appropriate to exercise its discretion under Article 12(4) RPBA 2007 in favour of the appellant and decided that document E9 was to be considered in the appeal proceedings.

4.2 Document E9' is an extract (of one page) of the same dictionary as document E9 and was filed by the appellant with the statement of grounds of appeal in reply to the view expressed by the opposition division in its decision that document E9 was inconsistent (see point 4.1 above, first paragraph).

Since document E9' was filed with the statement of grounds of appeal and could not have been presented during the first-instance proceedings, document E9' is to be considered in the appeal proceedings (Article 12(4) RPBA 2007).

4.3 Document E10 was submitted by the respondent with its reply to the statement of grounds of appeal in support of the technical meaning of the term "bonded". The respondent requested the admission of document E10 into

the proceedings in the event that the board decided to admit document E9 into the proceedings.

Since document E9 is to be considered in the appeal proceedings and document E10 was filed with the reply to the statement of grounds of appeal - in particular, in reaction to a possible admission of document E9 into the proceedings - and could not have been presented during the first-instance proceedings, document E10 is also to be considered in the appeal proceedings (Article 12(4) RPBA 2007).

4.4 Document E11 was submitted by the appellant in reply to the preliminary opinion expressed by the board in the communication annexed to the summons to oral proceedings, and in particular in reaction to the board's preliminary opinion that none of documents E4, E5 and E6 would appear to constitute evidence of common general knowledge in a technical field pertinent to the substantive issues addressed in appeal.

The board notes that documents E4, E5 and E6 were filed with the notice of opposition as evidence of common general knowledge and that in its decision the opposition division addressed the issue of inventive step in respect of documents E4, E5 and E6, without however clearly specifying whether these documents, in their view, represented evidence of common general knowledge and/or were considered on their own (see, in particular, the formulation "none of the documents E4-E6 can be combined with document E2 [...]" in point 17.8 of the reasons of the contested decision).

In these circumstances the board considers that, as submitted by the appellant, the fact that the board in its communication expressed doubts as to whether

documents E4, E5 and E6 constituted evidence of common general knowledge justified, in reaction thereto, filing document E11 as evidence of such common general knowledge. In addition, document E11 was filed well in advance of the oral proceedings before the board, it did not introduce complex issues in view of the previous parties' submissions on the common general knowledge, and its consideration was not detrimental to procedural economy. For these reasons the board, in the exercise of its discretion under Article 13(1) RPBA 2007 and/or Article 13(1) RPBA 2020 (both of which apply in the present case, see Articles 25(1) and 25(3) RPBA 2020), decided to admit document E11 into the proceedings.

5. *Claim 1 of the patent as granted - Inventive step - Document E2 as closest state of the art*

5.1 Distinguishing features

5.1.1 In its decision the opposition division held that the sensor assembly defined in claim 1 as granted differed from the sensor assembly disclosed in document E2 in the two following features:

a) the sensor unit is adhesively retained in the bore of the hollow portion of the port member, and

b) at least one of the interfacing surfaces of the port member and the sensor unit have been subjected to plasma, UV, ozone or chemical surface preparation prior to being adhered together.

The appellant did not dispute that feature b) was not disclosed in document E2, but submitted that feature a) was anticipated by the disclosure of document E2 relating to the sensor unit being "bonded or permanently affixed to the port" (E2, paragraph [0028],

last sentence). More particularly, the appellant submitted that "bonding" was disclosed in document E2 as an alternative to "permanently affixed" and to the mechanical fixing methods disclosed in the previous sentences of the same paragraph [0028], and that, contrary to the opposition division's view, the term "bonded" was to be interpreted in the context of document E2 and also in view of the common general knowledge as illustrated by the definition "1." of the term "bonding" in document E9 ("1. The fastening together of two components of a device by means of adhesives ...") as relating to adhesively bonding.

The respondent essentially submitted that the term "bonded" used in document E2 was not limited to only meaning adhesively bonding because, as shown in document E10 (first of the entries "bond"), the term encompassed a variety of different bonding techniques for attaching components to each other. In particular, the skilled person would understand "bonded" in document E2 as encompassing different bonding techniques (over-moulding, hot melt, etc.), and as encompassing in particular alternative welding methods not including the RF and the heat welding methods mentioned in paragraph [0028] of document E2.

5.1.2 In the board's opinion the term "bonded" is broad and the skilled person would understand this term in the context of document E2 ("[...] depending on the material system chosen, the disposable insert can be bonded or permanently affixed to the port" in paragraph [0028], last sentence) as covering, but not as synonymous with, adhering or adhesively bonding because "bonded" covers other possibilities. More particularly, the fact that in paragraph [0028] of document E2 reference is made to "bonding" and to other techniques

for permanently affixing other components such as RF and heat welding (E2, paragraph [0028], lines 15 to 18, and last sentence) does not necessarily limit "bonding" to adhesively bonding.

As regards document E9, the board notes that the mere fact that a specific technical dictionary, i.e. document E9, unlike other dictionaries (see, for instance, the variety of meanings that can be derived from document E10 consisting of an extract of a general dictionary), gives a restrictive meaning ("fastening [...] by means of adhesives") to the term "bonding" does not necessarily confine the meaning of the term "bonded" used in document E2 to the mentioned restrictive meaning. In particular, as noted by the respondent, document E9 itself also defines "bonding" as meaning "cladding" (E9, entry "bonding", definition "2. *See* cladding."), and the same dictionary (see document E9') defines "cladding" as a "Process of covering one material with another and bonding them together under high pressure and temperature. Also known as bonding.", i.e. as a process not necessarily involving adhesion.

The appellant also submitted that the description of the patent itself referred to "bonded" and "bonding" when referring to the feature of the invention under consideration, i.e. to the feature "adhesively retaining" of claim 1 as granted (column 6, lines 29 to 33; column 12, lines 47 to 54; and paragraph [0030], first sentence), and that the skilled person would understand the term "bonded" used in the two alternatives of document E2 "bonded or permanently affixed" as referring to adhesively bonding.

The board, however, is not persuaded by this argument

because, as submitted by the respondent by reference to document X1 and the corresponding annexes, bonding encompasses adhesion bonding but also various other possibilities not involving adhesion, and the mere fact that the patent specification refers to bonding by adhesion does not mean that the broad term "bonding" is used as exclusively meaning adhesively bonding, let alone that the term is synonymous with adhering or adhesively bonding.

5.1.3 Consequently, the claimed feature "adhesively retained" of feature a) is not directly and unambiguously derivable from the disclosure of document E2 relating to the disposable insert being "bonded" to the port (paragraph [0028], last sentence).

The board concludes that the sensor assembly defined in claim 1 as granted differs from the assembly disclosed in document E2 in feature a) and (undisputed) feature b).

5.2 Objective problem

5.2.1 The parties expressed different views as regards the objective technical problem solved by the assembly of claim 1, and in particular by the distinguishing features a) and b) mentioned in point 5.1 above, over the assembly disclosed in document E2.

During the oral proceedings before the board the appellant referred to the last sentence of paragraph [0028] and to the technical considerations discussed in paragraph [0027] of the patent specification, and submitted that the objective problem was to be formulated in terms of improving in the sensor assembly of document E2 the connection between the sensor unit

and the bore of the hollow portion of the port member that could not be otherwise bonded to each other.

The respondent submitted that, in view of the technical effects disclosed in paragraph [0030] of the patent specification, the technical effect resided in the fact that the sensor unit could be fixed to the port member, which could then be welded to a bioprocess vessel without compromising on the optical materials for each component, thus providing greater design freedom in the design of sensor units that could be sealed into bioprocess vessels. Consequently, the objective problem was to be formulated in terms of how to provide a more convenient composite sensor assembly for use with a polymeric bioprocess vessel that allowed for greater design freedom of the assembly components without compromising on the optical materials of the components of the assembly.

5.2.2 The board notes that the objective problems formulated by the parties are not completely equivalent to each other, but both are suitable for the assessment of inventive step according to the problem-solution approach. Therefore, in the following both formulations of the technical objective problem will be considered in parallel with each other.

5.3 Document E2 in combination with common general knowledge exemplified by document E6, or in combination with document E6 on its own

5.3.1 The appellant submitted that according to document E2 "depending on the material system chosen" either bonding or permanently affixing could be used (paragraph [0028], last sentence), and that therefore the document encouraged the skilled person to use other

methods. In addition, document E6 was published in the scientific journal "Adhäsion" and already the name of the journal suggested a solution to the objective problem. More particularly, document E6 (see title, abstract and the table on the first page) disclosed that many plastics, among them polyethylene used in document E2, had a poor adhesion and that their adhesion properties could be improved by appropriately treating their surface, in particular by using plasma treatment as required by feature b) of claim 1 (document E6, Table 1 on page 25, and the last paragraph on page 26). Document E6 consisted of a scientific article, but the title and the abstract referred to the poor adhesion of many plastics and to the treatment of their surfaces for the purpose of improving their adhesion properties as being already known in the prior art, and therefore this part of the disclosure of the document constituted evidence of the common general knowledge at the publication date (1986) of the document. Thus, the claimed sensor assembly was rendered obvious by document E2 in combination with the common general knowledge exemplified by document E6. Alternatively, it was rendered obvious by document E2 in combination with document E6 as such because document E6 pertained to a close or general technical field and the skilled person would consult this technical field in order to solve the objective problem.

5.3.2 The board, however, notes that document E6 pertains to the specific technical field of adhesion of plastics, and the board is of the opinion that this technical field is, contrary to the appellant's submissions, neither a neighbouring nor a broader technical field of the specific technical field to which both the patent in suit and document E2 pertain, i.e. to the technical

field of bioreactor vessels (claim 1 of the patent, and title of document E2) comprising a port, in particular of polyethylene, welded to a bag (see claim 1 of the patent, together with paragraph [0030], first sentence, and document E2, Fig. 2, together with paragraph [0028], lines 14 to 23) and in which, as submitted by the respondent, a number of problems arise (paragraph [0004] of the patent specification) and, in addition, predetermined requirements - in particular, of cleaning and sterilization procedures and of biocompatibility, see patent specification, sentence bridging columns 12 and 13, and document E2, paragraph [0010], together with page 4, left column, lines 2 to 6, and right column, last complete sentence - should particularly be complied with. In addition, document E6 addresses the problem of adhesion of plastics and analyses different adhesion-improving treatment methods, but the document is silent as to the conditions of applicability of these methods and, more specifically, as to the requirements to be fulfilled in the context of document E2.

For these reasons, the board can identify no motivation for the skilled person to consult the specific technical field to which document E6 pertains, i.e. the technical field of adhesion of plastics, and, more specifically, to consult document E6. In addition, the appellant's submission that the skilled person would have considered document E6 or the specific technical field to which it pertains amounts to the assumption that the skilled person would first have considered adhesively retaining the sensor unit to the bore of the hollow portion, i.e. distinguishing feature a), and this assumption amounts, as submitted by the respondent, to an inappropriate hindsight analysis of inventive step. More particularly, the appellant's

submission that document E2 already taught taking into consideration the materials of the components when joining them (paragraph [0028], last sentence) does not suggest on its own searching for solutions in the specific technical field of adhesion of plastics, at least not considering document E6 which is silent as to the specific field of application and, more particularly, silent as to the requirements to be fulfilled by the materials in the context of document E2.

Therefore, the board is of the opinion that, as submitted by the respondent, the skilled person confronted with the objective problem - in any of the formulations proposed by the appellant and by the respondent, see point 5.2 above - in the specific technical context of document E2 could have considered document E6, but there is no reason to assume or conclude that they would have done so. The board concludes that, irrespective of whether document E6 exemplifies - as submitted by the appellant - common general knowledge in the field to which it pertains or is taken on its own, the subject-matter of claim 1 as granted does not result in an obvious way from document E2 in view of document E6 (Article 56 EPC).

5.3.3 It is noted that document E3 considered during the first-instance proceedings was referred to by the appellant for the first time on appeal during the oral proceedings before the board merely in reply to an argument of the respondent according to which there was no document on file disclosing the use of adhesives in the context of a biosensor. Since the board's conclusion in point 5.3.2 above is not based on this argument, there is no need to address the counter-argument of the appellant based on document E3 and,

therefore, there is also no need to address the contents of document E3, not even its admission into the appeal proceedings.

5.4 Document E2 in combination with common general knowledge exemplified by document E5, or in combination with document E5 on its own

5.4.1 The appellant submitted that the claimed sensor assembly was obvious in view of document E2 in combination with the common general knowledge exemplified by document E5, or in combination with document E5 on its own, and referred to the abstract, to paragraphs [0002], [0005] to [0007], [0012], [0018], [0023], [0024], [0078] and [0081], and to claim 97 of document E5.

5.4.2 The board first notes that document E5 is a patent document, i.e. it does not constitute a textbook, a monograph, a reference book, or the like, that could, as a rule, constitute evidence of common general knowledge (see "Case Law of the Boards of Appeal", EPO, 9th edition 2019, section I.C.2.8). For this reason, the appellant's submissions that document E5 exemplified common general knowledge which, in combination with document E2, would render obvious the claimed subject-matter cannot be followed by the board.

5.4.3 As regards the combination of document E2 with document E5 on its own, the board notes that document E5 is directed to the surface modification of substrates (title), and more specifically to the treatment of polymeric materials with electromagnetic energy, optionally with electro-ionization, for enhancing their adhesion properties (paragraph [0002]). In addition, document E5 discloses the application of the adhesion-

enhancement treatment methods in a variety of different technical fields such as the manufacture of shoes and the aircraft or space vehicle and automobile manufacture, and also in the field of biochemical analysis (paragraphs [0018] and [0086]). More particularly, the document discloses enhancing the adhesion properties of "substrates used in biochemical analysis, for example, plastic well-plates" (paragraph [0018] and claim 97), in particular for the "deposition of biochemical samples onto microarray well-plates" (abstract). Furthermore, according to the document, the modified plastic substrate can be coated with materials to be adhered to it, including, among other materials, "bio-organic compounds such as DNA" and the like (paragraphs [0023] and [0085]).

The appellant submitted that document E5 pertained to the same technical field as document E2, that document E5 also disclosed the treatment of materials considered in document E2 (in particular polyethylene or EVA (ethylene vinyl acetate), see E5, paragraph [0078]) and that the skilled person would apply the adhesion-enhancing treatment methods disclosed in document E5 to solve the objective problem under consideration.

However, while the objective technical problem under consideration - in any of the formulations submitted by the parties, see point 5.2 above - refers to joining two structural component parts having a specific shape, and in particular the sensor unit and the bore of the hollow portion of the port member of a biosensor assembly, document E5 only discloses - as submitted by the respondent - enhancing the adherence properties of a substrate made of a polymeric material to different types of materials, and in particular to coating materials (paragraphs [0018], [0023] and [0024]) and,

in the specific case of bio-applications, to predetermined bio-molecules to be immobilized on the substrate (paragraphs [0023] and [0085]). In particular, document E5 addresses the deposition of biochemical samples onto microarray well-plates made of plastics (abstract, and paragraph [0018]) and also - as submitted by the appellant - bonding materials (paragraph [0081]), in particular in the fabrication of shoes (paragraphs [0086]), but the document is silent as to the problem of joining structural parts of a biosensor assembly of the type disclosed in document E2 and the specific requirements associated therewith (see point 5.3.2 above, first paragraph).

For these reasons, in the board's opinion the skilled person would not consider document E5 in their search for a solution to the objective problem under consideration - in both the appellant's and the respondent's formulations - and, therefore, would not consider the combination of document E2 with document E5.

5.4.4 The board concludes that the subject-matter of claim 1 as granted does not result in an obvious way from document E2 in view of document E5 (Article 56 EPC).

5.5 Document E2 in combination with common general knowledge exemplified by document E11

5.5.1 The appellant submitted that the claimed sensor assembly resulted in an obvious way from document E2 and the common general knowledge disclosed in sections 7.4.3 and 7.4.3.1 of document E11 for reasons analogous to those submitted in respect of the combination of document E2 with the common general knowledge exemplified by document E6. The respondent contested

this view and submitted that only hindsight would suggest following this approach.

The board notes that, as shown by the title of the book, document E11 is a general manual in the field of joining plastics directed to designers and engineers, and therefore constitutes evidence of the common general knowledge in the mentioned technical field. In addition, both document E2 and the objective problem - in both the appellant's and the respondent's formulations, see point 5 above - relate to joining plastic components, and the skilled person confronted with the objective problem would consider consulting document E11 in order to solve it. However, as submitted by the respondent by reference to the general index of the book, document E11 discloses a large number of different techniques and of different methods for joining plastics. The document also specifically discloses, as submitted by the appellant, that some plastics, such as polyethylene considered in document E2, require improvement in surface energy by chemical, corona, plasma or flame surface treatment (section 7.4.3 on page 205), and that a chemical treatment significantly improves the receptivity of plastic surfaces to adhesion (section 7.4.3.1 on page 205, second paragraph). However, as submitted by the respondent, the appellant has not identified in document E11 any disclosure that would have suggested the skilled person to solve the objective problem by considering this specific technique among the large number of different techniques disclosed in document E11. In particular, sections 7.4.3 and 7.4.3.1 of document E11 disclose in general the improvement of the surface of a plastic to adhesion by chemical treatment, but these sections are silent as to any possible advantage of the use of this technique in a particular

technical context, and in particular in the technical context in which the objective problem is to be solved, i.e. in that of document E2 (see point 5.3.2 above, first paragraph).

For these reasons the board is of the opinion that the skilled person could, but would not have considered in an obvious way applying, among the numerous techniques and methods disclosed in document E11, the specific technique disclosed in sections 7.4.3 and 7.4.3.1 of document E11 to document E2 in order to solve the objective problem under consideration, especially as a consideration of sections 7.4.3 and 7.4.3.1 of document E11 would presuppose that the skilled person would previously have considered adhesively retaining the sensor unit to the bore of the hollow portion of the port member, and document E11 does not contain any indication that would have suggested to the skilled person adopting this specific technique to solve the objective problem (see also in this respect the comments in point 5.3.2 above, second paragraph).

5.5.2 The board concludes that the subject-matter of claim 1 as granted does not result in an obvious way from document E2 under consideration of document E11 (Article 56 EPC).

5.6 Document E2 in combination with common general knowledge exemplified by document E4, or in combination with document E4 on its own

5.6.1 The appellant submitted that the claimed sensor assembly was obvious in view of document E2 in combination with the common general knowledge exemplified by document E4, or in combination with document E4 on its own (see paragraphs [0008], [0025]

and [0026]), for reasons analogous to those submitted in respect of document E2 under consideration of E6.

However, document E4 is a patent document, i.e. it does not relate to a textbook, a monograph, a reference book, or the like, that could, as a rule, constitute evidence of common general knowledge (*cf*. point 5.4.2 above). For this reason, the appellant's submissions that document E4 exemplified common general knowledge which, in combination with document E2, would render obvious the claimed subject-matter cannot be followed by the board.

In addition, document E4 pertains to the technical field of the aeronautical industry (paragraph [0002]), i.e. it does not relate to a technical field pertinent to the issues under consideration, and in particular to the technical field of document E2 (see point 5.3.2 above, first paragraph) - and, more specifically, to the technical field to which the objective problem pertains - or to a neighbouring or broader technical field. Already for this reason the board is unable to see why the skilled person would have considered document E4 when confronted with the objective problem under consideration. In addition, even if the skilled person would have considered document E4, the board is of the opinion that a combination of documents E2 and E4 would not have resulted in an obvious way in the claimed sensor assembly at least for reasons analogous to those set forth in point 5.3 above in respect of the combination of documents E2 and E6.

5.6.2 The board concludes that the subject-matter of claim 1 as granted does not result in an obvious way from document E2 under consideration of document E4 (Article 56 EPC).

6. *Claim 1 of the patent as granted – Inventive step – Document E1 as closest state of the art*

6.1.1 The parties concurred during the appeal proceedings in that the claimed composite sensor assembly differed from the assembly disclosed in document E1 in the same two features a) and b) mentioned in point 5.1 above. The appellant submitted that joining the sensor unit to the bore of the hollow portion of the port member by welding or by over-moulding was excluded in document E1, and that the claimed sensor assembly resulted in an obvious way from document E1 as closest state of the art for the same reasons as those submitted in respect of document E2 as closest state of the art.

The board notes that, as regards the issues under consideration and as it is apparent from the reasons given by the opposition division in its decision (reasons, points 18.4 and 18.5), the relevance of document E1 is not greater than that of document E2. The board is therefore of the opinion that the claimed subject-matter does not result in an obvious way from document E1 as closest state of the art under consideration of any of documents E4, E5, E6 and E11 for essentially the same reasons as those given in points 5.3 to 5.6 above in respect of document E2 as closest state of the art. In particular, the mere fact that, as submitted by the appellant, document E1 might exclude the use of over-moulding or welding techniques would not *per se* prompt the skilled person to specifically consider adhesion techniques for joining the sensor unit to the bore of the hollow portion of the port member of the sensor assembly of document E1.

6.1.2 The board concludes that the subject-matter of claim 1 as granted does not result in an obvious way from document E1 in view of any of documents E4, E5, E6 and E11 (Article 56 EPC).

7. Claims 2 to 14 of the patent as granted - Inventive step

Claims 2 to 14 as granted refer back to claim 1 and no argument was submitted by the appellant in respect of the issue of inventive step of the subject-matter of these claims.

8. In view of the above considerations, the board concludes that none of the grounds for opposition under consideration prejudices the maintenance of the patent as granted (Article 101(2) EPC).

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

L. Gabor R. Bekkering

Decision electronically authenticated