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Case Number: T 1389/12 - 3.2.06

Application Number: 02748226.4

Publication Number: 1420885

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Language of the proceedings: EN

Title of invention:
Thermally Efficient Micromachined Device

Applicant:
MASSACHUSETTS INSTITUTE OF TECHNOLOGY

Headword:
-

Relevant legal provisions:
EPC Art. 84, 123(2)
RPBA Art. 13(1)

Keyword:
"Clarity - main request first to fourth variants (no)"
"Added subject-matter - sixth and eighth variants (yes), ninth auxiliary request (yes)"

Decisions cited:
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Catchword:
-

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Case Number: T 1389/12 **-** 3.2.06

D E C I S I O N
of the Technical Board of Appeal 3.2.06
of 30 October 2012

Appellant: (Applicant)
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Decision under appeal:
Decision of the Examining Division of the European Patent Office posted 13 March 2012 refusing European patent application No. 02748226.4 pursuant to Article 97(2) EPC.

Composition of the Board:

Chairman: M. Harrison
Members: M. Hannam
W. Sekretaruk

Summary of Facts and Submissions

I. The appellant (applicant) filed an appeal against the decision of the examining division refusing European patent application No. 02748226.4. In its decision the examining division found that the subject matter of claim 1 of the main request and of a first and second auxiliary request failed to meet the requirement of Article 123(2) EPC.

II. In its grounds of appeal, the appellant requested that the decision under appeal be set aside and that a patent be granted based on a main request comprising first to fourth "variants" of claim 1, and auxiliarily on the basis of first or second auxiliary requests, whereby the auxiliary requests each included, in addition to dependent claims, a further feature to be added to an "allowable variant" of claim 1.

III. The Board issued a summons to oral proceedings including a communication containing its provisional opinion regarding the main request, including objections under Article 84 EPC 1973 and Article 123(2) EPC. It was also clarified by the Board that the series of "variants" formed four individual requests.

IV. During a telephone conversation requested by the appellant on 22 August 2012, the rapporteur discussed certain issues raised in the Board's provisional opinion with the appellant.

V. In its letter dated 24 August 2012, the appellant filed first to fourth "replacement variants" of claim 1.

VI. During a further telephone conversation requested by the appellant on 17 September 2012, the rapporteur stated that each of the four "variants" still appeared not to meet the requirements of Articles 84 EPC 1973 and 123(2) EPC. It was also pointed out to the appellant that a decision can only be taken on requests actually filed. Indications of a readiness to amend requests on file, should they be found not to be allowable, did not constitute requests.

VII. In a further letter dated 18 September 2012, the appellant filed fifth to eighth "variants" of claim 1 along with further arguments.

VIII. Oral proceedings were held before the Board on 30 October 2012, during which the appellant withdrew the fifth and seventh "variants" and filed a ninth auxiliary request.

The appellant requested that the decision under appeal be set aside and that a patent be granted on the basis of one of first to fourth "variants", filed with the letter of 24 August 2012, or on the basis of a sixth or eighth "variant", filed with the letter of 18 September 2012, or on the basis of the ninth auxiliary request, filed during oral proceedings.

IX. Claim 1 according to the first "variant" reads:
"A micromachined device for thermal processing at least one fluid stream, the micromachined device comprising:
a thermally conductive region (2); and
at least one fluid conducting tube (5,6), the fluid conducting tube having an inlet portion (5b,6b), an outlet portion (5a,6a) and an intermediate portion

(5c,6c) intermediate the inlet portion and the outlet portion, the intermediate portion disposed within the thermally conductive processing region (2), wherein at least a region of the fluid conducting tube has a wall thickness of less than 50µm, thereby reducing thermal conduction along the fluid conduction tube."

Claim 1 of each of the second to fourth "variants" correspond to claim 1 of the first "variant" with the following amendments in the respective "variants":
Second "variant":
The wording "a region" has been replaced by "one of the inlet and outlet portions".
Third "variant":
The feature "the inlet and outlet portions in thermal communication with the thermally conductive processing region (2)" has been added.
Fourth variant:
The wording "a region" has been replaced by "one of the inlet and outlet portions" and the feature "the inlet and outlet portions in thermal communication with the thermally conductive processing region (2)" has been added.

Claim 1 of the sixth "variant" reads:
"A micromachined device for thermal processing at least one fluid stream, the micromachined device comprising:
a thermally conductive region (2); and
at least one fluid conducting tube (5,6), the fluid conducting tube having an inlet portion (5b,6b), an outlet portion (5a,6a) and an intermediate portion (5c,6c) intermediate the inlet portion and the outlet portion, the intermediate portion disposed within the thermally conductive region (2), wherein at least one

of the inlet and outlet portions of the fluid conducting tube has a wall thickness of less than 50µm."

Claim 1 of the eighth "variant" reads:
"A micromachined device for thermal processing at least one fluid stream, the micromachined device comprising:
a thermally conductive region (2); and
at least one fluid conducting tube (5,6), the fluid conducting tube having an inlet portion (5b,6b), an outlet portion (5a,6a) and an intermediate portion (5c,6c) intermediate the inlet portion and the outlet portion, the intermediate portion disposed within the thermally conductive region (2), the inlet and outlet portions in thermal communication with the thermally conductive region (2), wherein at least one of the inlet and outlet portions of the fluid conducting tube has a wall thickness of less than 50µm."

Claim 1 according to the ninth auxiliary request reads:
"A micromachined device for thermal processing at least one fluid stream, the micromachined device comprising:
a thermally conductive region (2); and
at least one fluid conducting tube (5,6), the fluid conducting tube having an inlet portion (5b,6b), an outlet portion (5a,6a) and an intermediate portion (5c,6c) intermediate the inlet portion and the outlet portion, the intermediate portion disposed within the thermally conductive region (2), wherein at least one of the inlet and outlet portions of the fluid conducting tube has a wall thickness of less than 50µm, and
at least one thermally conductive structure (7) in thermal communication with the inlet portion (5b) of

the fluid conducting tube (5) and the outlet portion (5a) of the fluid conducting tube (5)."

X. The arguments of the appellant, may be summarised as follows:

(a) Article 84 EPC 1973 - first to fourth "variants"

With reference to page 9, lines 10-13, the "reduction" in thermal conduction along the fluid conduction tube, as defined by the last feature of claim 1, had implicitly to be understood as being relative to the thermal conduction of a tube with a wall thickness greater than 50µm because this was the case in certain prior art devices. Further, the final feature of claim 1 was clear since the use of the word "thereby" indicated that the reduction in thermal conduction along the fluid conduction tube was due to the wall thickness of a region of the tube being less than 50µm. It was simply a functional explanation of the resulting effect, such as defining a three-wheeled vehicle thereby continuously contacting the ground as it moved over it. Functional features were also allowed. This expression was furthermore clear in the sense that it distinguished the claimed device from prior art devices in particular by excluding some obscure interpretations of the claims.

(b) Article 123(2) EPC - sixth and eighth "variants", ninth auxiliary request

From a single reading of the application it was possible to derive the essential features of the invention. The inclusion of only these essential

features in the independent claim of each variant was thus a clear and unambiguous disclosure of this subject-matter to the skilled person. For example, when considering Figures 1(a) to 1(c), the skilled person would select the essential features of that embodiment once he had read the complete application and understood how the device worked. Other features shown in the embodiment of Figures 1(a) to (c) were merely preferred features, as could be seen due to the fact that some of these features were only in the dependent claims as filed and some were even mentioned in the description as not required.

Sixth "variant"
A "thermally conductive region (2)" was included in every embodiment of the invention found in the description, and could therefore be combined with the features of claims 1 and 2 as originally filed. The feature of "processing" in this region had been removed from other variants, so that Article 123(2) was not contravened. No "cherry picking" from the disclosure had occurred, but merely taking those features which were necessary to define the invention. Moreover, it was nowhere stated that other features were in any way essential.

The disclosure of "intermediate portion disposed within the thermally conductive region (2)" was derivable from page 4, lines 25-27 and page 14, lines 11-14. Although page 4 referred to "at least a portion", the skilled person would be able to derive from e.g. page 14, lines 11 to 26, that this portion would then be the "intermediate portion".

The "inlet and outlet portions" having the wall thickness of less than 50µm, rather than "a region" of the fluid conducting tube, was disclosed on page 4, lines 29-32, which described thermally insulating inlet and outlet portions, in combination with page 9, lines 10-13 which described thermal insulation being achievable through tubes with walls preferably less than 50µm in thickness.

The subject matter of claims 1 and 2 as originally filed in combination with the above passages from the description, when viewed together as a teaching, would enable the skilled person to clearly and unambiguously derive the subject matter of claim 1.

Also, the embodiment on page 14, lines 9-26 provided an inlet, outlet and intermediate portion of the fluid conducting tube in which the inlet and outlet portion had a wall thickness less than 50µm. When these features were combined with either claims 1 and 2 or claims 38 and 44 as originally filed, a full disclosure of the subject matter of claim 1 resulted. There was obviously no need to define in claim 1 that both the inlet and outlet portions had a wall thickness of less than 50µm, since some of the advantages of the invention were already obtained with only one having this thickness. Notably, claim 1 as filed did not require this limitation, whereby the wording "at least one of the inlet and outlet portions....has a wall thickness of less than 50µm" in this request should not be open to objection.

Eighth "variant"

The same arguments applied as for claim 1 of the sixth "variant" with specific reference to page 4, lines 23-27, page 9, lines 10-14, page 14, lines 23-26 and the subject matter of claims 1 and 2 as originally filed.

Ninth auxiliary request
Claim 1 of this request was based on claim 1 of the sixth "variant" with the additional features taken from claim 24 as originally filed. From page 14, lines 21-26, the inlet and outlet portions of the fluid conductance tube being thermally insulating portions of that same tube was clearly disclosed.

(c) General arguments

On several occasions during the oral proceedings the appellant argued that it was unable to determine which features needed to be included in the claim to meet the requirement of Article 123(2) EPC and the Board had not informed it either. The appellant had also been unable to understand why the claims previously put forward in the first instance were not acceptable. There were many independent and dependent claims in the application as filed which allowed many possibilities. The appellant furthermore argued that certain objections under Article 123(2) EPC were being raised for the first time during oral proceedings, and that it had not understood that the amended "variants" filed would be problematic.

Reasons for the Decision

1. *First "variant"*

1.1 Article 84 EPC 1973 states that "The claims shall define the matter for which protection is sought. They shall be clear and concise and be supported by the description." From the first sentence of Article 84 EPC 1973 it can be understood that the claims must be clear by themselves without recourse having to be made to the description to interpret the claim. With this in mind, the Board finds that claim 1 lacks clarity due to the feature "wherein at least a region of the fluid conducting tube has a wall thickness of less than 50µm, thereby reducing thermal conduction along the fluid conduction tube", specifically due to the terminology "thereby reducing thermal conduction along the fluid conduction tube", since it is neither stated, nor is it implicit from the claim, compared to what the thermal conduction along the fluid conduction tube is "reduced". The claim itself includes no reference point relative to which such a reduction occurs.

1.2 With reference to page 9, lines 10-13, the appellant in one line of argument alleged that the reduction would implicitly be understood as being relative to the thermal conduction in a tube with a wall thickness greater than 50µm or even to other parts of the same tube with higher thickness. Whilst this may indeed have been the appellant's intention, the Board notes that this qualification is not to be found in the wording of claim 1. In particular, the wall thickness of any other part or parts of the same tube or even other tubes is not anywhere stated in the claim, let alone the

material or materials from which various portions of the tube might be constructed (this being of relevance when recognising the evident effects that such would have on heat conduction). That other parts of the tube (or even other tubes used for a comparison) would implicitly have a greater thickness is simply not derivable from claim 1 of the first "variant".

1.3 The appellant stated in a further line of argument that the final feature of claim 1 was also clear since the use of the word "thereby" indicated that the reduction in thermal conduction along the fluid conduction tube was due to the wall thickness of a region of the tube being less than 50µm and that this was simply functional language which was allowed. During the oral proceedings, as a comparative analogy, the appellant asked the Board to consider a vehicle consisting of three wheels, which would "thereby" have three wheels achieving continuous contact with the ground. The use of the word "thereby" clearly linked the functional feature of three wheels achieving continuous contact with the ground to the physical feature of the vehicle having only three wheels. The appellant suggested that if the presented analogy could be clearly understood, the final feature of claim 1 ought equally to be clear.

The Board concurs with the appellant regarding the function of the word "thereby" in linking the functional feature of reducing the thermal conduction to the physical feature of the wall thickness of less than 50µm. The Board also sees no problem in the present case of using functional language ***per se*** in a claim. This, however, does not address the problem identified by the Board causing the objection under

Article 84 EPC 1973 as to relative to what the thermal conduction along the fluid conduction tube is reduced. This reference point is simply undefined. The Board also notes that the analogy presented by the appellant in no sense supports the appellant's argument that claim 1 is clear. In particular the three-wheeled vehicle analogy does not involve a reduction of some functional feature (e.g. time for at least one wheel to not contact the ground) relative to a datum (e.g. a four wheeled vehicle), as is however the case in claim 1 of this "variant". Instead, the analogy simply defines a functional feature (continuous wheel contact) as a direct consequence of a physical feature (three wheels). The appellant's attempted analogy thus fails entirely.

In a still further line of argument, the appellant argued that the reduced thermal conduction should be considered clear because it defined a comparison to - and a clear differentiation over - the prior art. However, the appellant's argument again fails. First, the Board notes that an alleged distinction of the claimed subject matter from "the prior art" is not a measure relevant to achieving a claim which is clear under Article 84 EPC 1973. Moreover, the prior art of reference from which a distinction is allegedly being made, or indeed any specific features thereof which might be relevant, are not in any way inherent in the claim, let alone defined in a manner such that a clear distinction to some particular prior art might be understood. Only with hindsight knowledge as to which specific structure of which specific piece(s) of prior art might be meant (and this is unknown) would it even be possible to extrapolate where a reduction in thermal

conduction compared to the prior art was being made. Notwithstanding the fact that no clear indication of such specifics was present, such a subjective and hindsight analysis however has no relevance to the present case when considering clarity of claim 1.

1.4 For these reasons the Board finds that the requirements of Article 84 EPC 1973 are not met by claim 1 of the first "variant". The request containing the first "variant" is therefore not allowable.

2. *Second, third and fourth "variants"*

Claim 1 of each of these "variants" includes the feature found to lack clarity in claim 1 of the first "variant". Since the terminology added in each of these "variants" compared to the first "variant" does not alter the finding of lack of clarity with respect to claim 1 of the first "variant", nor indeed did the appellant even suggest that it should do, the Board concludes that the requirements of Article 84 EPC 1973 are not met by claim 1 of each of the second, third and fourth "variants" for the same reasons as apply to claim 1 of the first "variant".

Consequently none of the requests containing the second to fourth "variants" is allowable.

3. *Sixth "variant"*

3.1 The claims of the sixth "variant" were filed by the appellant after the Board's preliminary opinion which accompanied the invitation to oral proceedings. According to Article 13(1) of the Rules of Procedure of

the Boards of Appeal (RPBA), it is at the Board's discretion whether amendments to a party's case are admitted after the grounds of appeal have been filed. This was also, albeit not required, mentioned in the communication sent before oral proceedings. In exercising its discretion, the Board (in accordance with established practice) should consider ***inter alia*** whether the amendments made to the requests in the case ***prima facie*** overcome the objections to the requests on file as communicated to the appellant and do not give rise to any further objections.

3.2 However, in this case, no clear and unambiguous disclosure of the combination of features making up the subject matter of claim 1 in the application documents as originally filed is present. The subject matter of claim 1 thus extends beyond the content of the application as filed, contrary to the requirement of Article 123(2) EPC.

Specifically, claim 1 is a combination of the features of claims 1 and 2 as originally filed, together with the following features:
a thermally conductive region (2);
the intermediate portion disposed within the thermally conductive region; and
one of the inlet and outlet portions, replacing "a region" in claim 1 of the application as originally filed.

The first feature "a thermally conductive region" is disclosed in numerous different contexts in the description. In the portion of the description with the title "Summary of the invention" the feature is

disclosed in a broad embodiment in conjunction only with at least one fluid conducting tube having at least one thermally insulating portion, a portion of which is disposed within the thermally conductive region (page 4, lines 22-27). Similarly broad embodiments comprising the thermally conductive region in combination with only selected features from claim 1 are disclosed in embodiments on pages 11, 13, 14, 15 and 18. The detailed embodiment starting on page 19, line 22 also includes the thermally conductive region, yet in the specific context of a gas-phase chemical reactor. Finally, the examples 1-4, 7 and 9 on pages 28-32 include the thermally conductive region, yet each again in very specific applications such as an ammonia cracker, a gas-phase reactor, a power generator or a test device.
The second feature "the intermediate portion disposed within the thermally conductive region" is disclosed only in the specific embodiment on page 14 in which the intermediate portion of the fluid conducting tube is disclosed as being "located in" (regarded as equivalent to the wording "disposed in") a thermally conductive region. All other disclosures of the intermediate portion in relation to the thermally conductive region describe it as being "encased in" the thermally conductive region, which is clearly a more restrictive disclosure than the wording "disposed within".
The final feature is to be explicitly found nowhere in the originally filed application.

A combination of these features with the other features defined in claims 1 and 2 as originally filed is thus not present.

3.3 In its arguments in support of the disclosure of the subject-matter of claim 1, the appellant stated that all essential features of the claim could be understood by the skilled person from a single reading of the application.

For subject-matter to be disclosed in the application as filed and thus meet the requirement of Article 123(2) EPC, this is not a mere matter of selection of features which the appellant alleges to be essential for the invention as it wishes the invention to be understood, but must be considered in the context of which any such features are disclosed. Whilst the appellant stated that claims 1 and 2 were very broad and that there were many dependent claims containing preferred features, this does not constitute a legally sound basis on which to determine whether the requirement of Article 123(2) EPC is met or not. Merely because an originally filed independent claim may be broad, does not by itself allow features to be selected out of their specific context in the description or Figures and simply added to the disclosure, irrespective of whether many dependent claims are present or not.

3.4 Considering specifically the feature in claim 1 that "at least one of the inlet and outlet portions of the fluid conducting tube has a wall thickness of less than 50µm", the appellant refers first to page 4, lines 29-32 as the source of this amendment. This passage concerns a disclosure of one method in which the problem being addressed by the invention, at least that problem present upon filing the application, is solved. The Board can accept that, from this passage in

combination with the teaching on page 9, lines 10-13, it may be extracted that an inlet and outlet of the fluid conducting tube, in order to be "thermally insulating", may have a wall thickness of less than 50µm. Yet, the disclosure in the passage on page 4 makes no mention of several other features included in the subject matter of claim 1, for example neither that concerning an intermediate portion of the fluid conducting tube, nor that of the disposal of this portion within the thermally conductive region of the device. The passage also gives no indication that it discloses a general teaching which can be applied to any of the other embodiments included in the application documents. The referenced passages on pages 4 and 9 therefore do not provide a basis for the clear and unambiguous disclosure of the combination of features included in the subject matter of claim 1.

3.5 In a further line of argument, the appellant considered that a basis for the disclosure for claim 1 could instead be found in the combination of claims 38 and 44 as originally filed, arguing that it would not be logical from a technical teaching standpoint for the intermediate portion of the fluid conducting tube to possess the wall thickness of less than 50µm. The appellant concluded that therefore the "region" of the tube having the specified wall thickness could only be the remaining portions of the fluid conducting tube i.e. the inlet and outlet portions.

The Board notes that, relative to the subject matter of claim 1, a combination of claims 38 and 44 as originally filed lacks any mention of an inlet, outlet or intermediate portion of the fluid conducting tube.

These features are also not to be found in combination with the further features of claim 1 in any single embodiment of the description. The appellant's argument, that the only technically logical interpretation of the features of claims 38 and 44 is for the inlet and outlet portions of the tube to possess the wall thickness of less than 50µm, is not persuasive. In particular, the Board notes that the fluid conducting tube may have many portions/regions e.g. an inlet/outlet portion, an intermediate portion as well as a region between the inlet/outlet and the intermediate portion. The appellant's argument that the inlet/outlet portions must be thermally insulating (and thus have the wall thickness which is less than 50µm) since the intermediate portion would not be thermally insulating, ignores the fact that other portions/regions of the fluid conducting tube exist which could equally well, when understood from a technical point of view by a skilled person, be portions or regions possessing the "thermally insulating" properties. A combination of the features of claims 38 and 44 therefore does not provide the skilled person with a clear and unambiguous disclosure of the subject matter of claim 1.

3.6 The appellant further argued that the disclosure on page 14, lines 9-26 provided an inlet, outlet and intermediate portion of the fluid conducting tube in which the inlet and outlet portion had a wall thickness less than 50µm. When these features were combined with either claims 1 and 2 or claims 38 and 44 as originally filed, a full disclosure of the subject matter of claim 1 allegedly resulted. The Board, however, notes that page 14, lines 9-26 refers, yet again, to a

specific embodiment of the invention. This specific embodiment discloses the device in combination with further features, which are however not included in claim 1, such as for example that not only "at least one of" as defined in claim 1 of this request, but that both the inlet and the outlet portion of the fluid conducting tube should provide a thermally insulating portion and have the specified wall thickness. Furthermore, thermally conductive structures are present in the specific embodiment which contact the inlet and outlet portions, these features not being found at all in claim 1. This extraction of isolated features from a set of features which were originally disclosed in combination for a particular embodiment and combining these with other more general features (i.e. those taken from claims 1 and 2 as filed) does not result in subject-matter which is disclosed in the application as filed, let alone directly and unambiguously. Although the appellant argued further that these conductive structures were described as optional elsewhere in the application, this entirely ignores the fact that the basis from which the appellant is attempting to draw its amendment is an embodiment where these conductive structures are present and structurally and functionally of relevance in that context. The appellant's argument that this passage on page 14 should provide a disclosure of the features added to claim 1, without any other features being required therefrom, entirely ignores the actual disclosure which is presented to a skilled person.

3.7 The appellant argued that this was not problematic, because from the representative's single reading of the application documents, it was allegedly possible to see

which features were essential to the invention and that therefore these features must be regarded as clearly disclosed when combined together in claim 1 and any other features could be left out. Based on this reading, the essential features from Figures 1(a) to 1(c) were thus – allegedly - included in claim 1. The Board cannot concur with the appellant's argument. The description in the application under consideration does not present an unrestricted resource from which features for combination with originally filed claims may simply be extracted as desired merely because broad independent claims were present in the application as originally filed, under which all features of the embodiments might be encompassed. The individual embodiments in the description of this application can only be regarded as specific teachings of how the invention may be implemented and thus present a clearly delimited disclosure of the features necessary for that particular embodiment. Unless stated or directly and unambiguously derivable otherwise, the particular embodiments therefore disclose no fewer and no more features than those specifically mentioned as comprised in the embodiment. Although the appellant alleged that in any particular embodiment it was able itself to identify and select which features were essential and which were not, this is entirely subjective and not based on the disclosure in the originally filed application when read by a skilled person. For example, although the disclosure on page 14, lines 11 to 26 is directed to a specific embodiment, it is not until line 26 that further, preferable, features are described. No basis for regarding the other features as merely preferable in the specific embodiment are present. To do so would be ignoring what is plainly stated. Thus,

although it was argued that there had been no "cherry picking" of features from the application as originally filed, it is precisely this which has been done when considering the features defined in claim 1 of the sixth variant.

It may also be noted that, whilst the appellant argued that it could be established which particular features were essential in any embodiment in the application as filed, no basis was given upon which such a conclusion was to be drawn. In this regard also, the argument that the independent claims as filed were broad and that there were many dependent claims, misses the point entirely; it is the combination of the features in the claim under consideration (here, claim 1 before the Board) which defines the subject-matter to be considered, not the breadth of an independent claim in the application as filed and which features the applicant, at that time, chose to include in an independent claim and which features to include in dependent claims, or likewise the description.

3.8 It thus follows that, at least ***prima facie***, the subject matter of claim 1 does not fulfil the requirement of Article 123(2) EPC and is therefore clearly not allowable. The Board thus exercised its discretion not to admit the request containing the sixth "variant" into proceedings (Article 13(1) RPBA).

4. *Eighth "variant"*

4.1 This request also fails, at least ***prima facie***, to meet the requirement of Article 123(2) EPC, not least

because the claim is a combination of claim 1 of the sixth "variant" with the additional feature:
the inlet and outlet portions in thermal communication with the thermally conductive region (2).

4.2 In support of this variant, the appellant essentially argued as for claim 1 of the sixth variant with specific reference to page 4, lines 23-27, page 9, lines 10-14, page 14, lines 23-26 and the subject matter of claims 1 and 2 as originally filed.

The Board notes that, particularly for the feature added over claim 1 of the sixth variant, no clear and unambiguous disclosure was presented by the appellant. Indeed, in the originally filed application documents, the Board can find no recitation of the inlet and outlet portions being in thermal communication with the thermally conductive region (2). Nor did the applicant indicate any specific basis in its written submissions or during the oral proceedings. Moreover, the Board notes that a primary object of the invention (see page 3, lines 26-29) is to isolate the high temperature reaction zone (i.e. the thermally conductive region) from its environment. Providing inlet and outlet portions in thermal communication with this high temperature zone has the exact opposite effect to that sought by the invention, namely of thermally isolating the high temperature zone. It is furthermore noted that the description repeatedly mentions a thermally conductive structure being in thermal communication with the inlet and outlet portions of the fluid conducting tube (see, for example, page 4, lines 29-32), yet the thermally conducting structure is consistently described as having a function of conducting thermal

energy between the inlet and outlets portions of the tube (see, for example, page 5, lines 2-4). The thermally conductive structure is thus described as distinct from the thermally conductive region, the former being in thermal communication with the inlet and outlet portions of the fluid conducting tube, the latter not being in thermal communication with the inlet and outlet portions.

4.3 It thus follows that, even when considering this reason alone, ***prima facie*** the subject matter of claim 1 extends beyond the content of the application as filed, contrary to the requirement of Article 123(2) EPC.

4.4 The Board thus exercised its discretion not to admit the request constituting the eighth "variant" into proceedings (Article 13(1) RPBA).

5. Ninth auxiliary request

5.1 The so-called first and second auxiliary requests filed with grounds of appeal included the features in claim 1 that should be included with an "allowable variant". These requests were thus, in as far as they are clear at all, inherently not allowable (not least since no "allowable variant" of claim 1 existed from any of the "variants"), not withstanding the fact that any further features in those claims would have to have been considered in their combination with the feature of any "variant" for compliance with Article 123(2) EPC.

However, during the oral proceedings, the Board gave the appellant the opportunity to file a further request

to replace the clearly unallowable so-called first and second auxiliary requests.

5.2 The ninth auxiliary request however also fails, at least *prima facie*, to meet the requirement of Article 123(2) EPC, not least because claim 1 of this request is a combination of claim 1 of the sixth "variant" with the additional feature:
"at least one thermally conductive structure (7) in thermal communication with the inlet portion (5b) of the fluid conducting tube (5) and the outlet portion (5a) of the fluid conducting tube (5)".

5.3 The appellant argued that claim 1 of this request was based on claim 1 of the sixth variant with the additional features taken from claim 24 as originally filed. From page 14, lines 21-26, the inlet and outlet portions of the fluid conducting tube being thermally insulating portions of that same tube was also allegedly clearly disclosed.

5.4 The Board cannot concur with the arguments of the appellant, not least since claim 1 of the sixth "variant" is, as argued by the appellant itself, essentially based on a combination of claims 1 and 2 and 24 as originally filed. Since claim 24 as originally filed is an independent claim, there is no clear link between this claim and the subject matter of claims 1 and 2 allowing them to be combined and viewed as a single disclosure of features. Nor indeed did the appellant provide any indication of why such a combination would be permissible, beyond merely asserting that the independent claims as filed were broad and only essential features which were allegedly

apparent to a skilled person had been included, which arguments the Board has already dealt with *supra*. The combination of claims 1, 2 and 24 as originally filed therefore does not provide a clear and unambiguous basis for the subject matter of claim 1.

The Board further notes, as identified by the appellant, that claim 1 of this request is based on claim 1 of the sixth "variant" with the addition of further features. As claim 1 of the sixth "variant" was found not to meet the requirement of Article 123(2) EPC, it follows that the subject matter of claim 1 of this request would only meet the requirement of Article 123(2) EPC if the additional features, when combined with those features of claim 1 of the sixth "variant", were based on a direct and unambiguous disclosure of that specific combination of features which is identifiable in the description or figures (e.g. in at least one embodiment of the invention described in the application as filed).

The embodiment detailed on page 14, lines 11-26, identified by the appellant as providing the disclosure of the combination of features in claim 1, discloses a large number of the features of claim 1 yet, the Board notes, with certain important differences. For example, claim 1 includes the feature "at least one thermally conductive structure", yet the embodiment on page 14 only discloses "thermally conductive structures", i.e. at least two. There is thus no disclosure in this embodiment, or elsewhere in the application as filed in any specific relation to this embodiment, for just one such structure in the micromachined device. Furthermore, the embodiment discloses comparative dimensions between the tube wall thickness and the

dimensions of the thermally conductive structures (page 14, lines 23-26), which are disclosed as being the reason for separation of fluid flow and conductive heat flow directions (page 14, lines 17-23). Since the aim of the alleged invention concerns thermal isolation (see page 3, lines 26-29), it would be reasonable to conclude that features effecting conductive heat flow are indeed of fundamental importance to the micromachined device. When reading the embodiment on page 14, the skilled person would thus view all the heat flow related features as structurally and functionally interrelated and thus to be included in a claim based on such an embodiment, including the relative dimensions of tube wall thickness and thermally conductive structures. These features have, however, not been included in claim 1.

Also with regard to the ninth auxiliary request, the appellant argued again that only the "essential features" from the embodiment had been included, without identifying the disclosure from which it could be directly and unambiguously derived by a skilled person why only these features of the specific embodiment were "essential".

The subject matter of claim 1 thus presents only an unallowable intermediate generalisation of certain parts of the embodiment disclosed on page 14 of the description.

5.5 It thus follows that, at least ***prima facie,*** the subject matter of claim 1 extends beyond the content of the application as filed, contrary to the requirement of Article 123(2) EPC. The Board thus exercised its

discretion not to admit the ninth auxiliary request into the proceedings (Article 13(1) RPBA).

6. Regarding the appellant's argument that the Board had failed to indicate an allowable form of claim, it is to be noted that it is the applicant (in this case the appellant) who is responsible for formulating claims in order to progress the application (see also Article 113(2) EPC). Even in *ex parte* cases, the responsibility lies with the applicant to formulate the claims. The appellant was also clearly informed at the start of oral proceedings before the Board that none of its requests as filed in the written part of the procedure appeared, at least *prima facie,* to be allowable and, in relation to the requests filed, that they failed to meet the requirement of Article 84 EPC 1973 or Article 123(2) EPC, and why this was the case.

The applicant also stated that at least some of the objections to Article 123(2) EPC were raised for the first time during oral proceedings. With reference to the Board's preliminary opinion accompanying the summons to oral proceedings, it is noted that the "thermally conductive processing region" was identified as a feature for discussion under Article 123(2) EPC. Whilst the underlining of the word "processing" indeed suggests a concern with that particular word as used in the expression, deletion of a word and thus the amendment resulting therefrom, is also subject to the requirements of Article 123(2) EPC just as is the addition of a feature. The need to consider the disclosure in the originally filed documents of any amendments made, and indeed the responsibility for making any amendments, whether through addition or

deletion of features, lies as always with the appellant. The appellant's arguments in this regard have thus been considered but are non-persuasive.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar The Chairman

M. Patin M. Harrison