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**Datasheet for the decision  
of 14 February 2008**

**Case Number:** T 0687/07 - 3.2.05

**Application Number:** 02780643.9

**Publication Number:** WO 03/042588

**IPC:** F16L 1/00

**Language of the proceedings:** EN

**Title of invention:**

Pipe insert and pipe assembly formed therewith

**Applicants:**

Topek, Philip R. and Rollins, Newell J.

**Opponent:**

-

**Headword:**

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**Relevant legal provisions:**

EPC Art. 56, 123(2)

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

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**Keyword:**

"Extension beyond the contents of the application as filed -  
main request and first auxiliary request (yes)"

"Inventive step - second auxiliary request (no)"

**Decisions cited:**

-

**Catchword:**

-



Case Number: T 0687/07 - 3.2.05

**D E C I S I O N**  
of the Technical Board of Appeal 3.2.05  
of 14 February 2008

**Appellants:**  
(Applicants)

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**Representative:**

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**Decision under appeal:**

Decision of the Examining Division of the  
European Patent Office posted 9 November 2006  
refusing European application No. 02780643.9  
pursuant to Article 97(1) EPC 1973.

**Composition of the Board:**

**Chairman:** W. Zellhuber  
**Members:** H. Schram  
C. Rennie-Smith

## Summary of Facts and Submissions

- I. The appeal is against the decision of the Examining Division dated 9 November 2006 refusing European patent application No. 02 780 643.9 (publication No. WO 03/042588) on the ground that the subject-matter of claim 1 of the main request and of the auxiliary request of the appellants (applicants) did not involve an inventive step (Article 56 EPC).
- II. Oral proceedings were held before the Board of Appeal on 14 February 2008.
- III. The appellants requested that the decision under appeal be set aside and that a patent be granted on the basis of claims 1 to 13 of the main request or claims 1 to 13 of the first auxiliary request both filed on 14 January 2008 or claims 1 to 11 of the second auxiliary request filed during oral proceedings.
- IV. The following documents were *inter alia* referred to in the appeal proceedings:
- D1 US-A 4,836,968
- D2 FR-A 773 584
- V. Claim 1 of the main request reads as follows:
- "1. A pipe assembly comprising
- an elongated pipe (6) having a curved inner wall (7) and
  - an extruded, elongate, synthetic resin pipe insert (1),

characterized in that the pipe insert (1) has a curved cross section defining a segment of an annulus with coaxial, radially inner and outer walls (2, 3);

at least three radial walls (4) are provided extending between said radially inner and outer walls (2, 3) to form at least two linear compartments (5), and

said curved cross section defines a circular arc of from 90 degrees to 135 degrees."

Claim 1 of the first auxiliary request differs from claim 1 of the main request in that the order of the last two features of claim 1 of the main request is interchanged and in that the feature "*each defining a circular arc of not more than 67.5 degrees*" is added at the end of the claim.

Claim 1 of the second auxiliary request reads as follows:

"1. A pipe assembly comprising

- an elongated pipe (6) having a curved inner wall (7) and
- an extruded, elongate, synthetic resin pipe insert (1),

characterized in that the pipe insert (1) has a curved cross section defining a segment of an annulus with coaxial, radially inner and outer walls (2, 3), the outer wall (3) being received against the pipe inner wall (7);

at least three radial walls (4) are provided extending between said radially inner and outer walls (2, 3) to form at least two linear compartments (5), and

said curved cross section defines a arc of from 90 degrees to 135 degrees; an inner pipe (8) having a convexly curved outer surface (9), the inner wall (2) of the pipe insert (1) having a concavely curved radially inner surface being received against the outer surface (9)."

VI. The appellants' arguments in writing and during the oral proceedings can be summarised as follows:

Claim 1 of the main request and claim 1 of the first auxiliary request were directed to a pipe assembly comprising an elongated pipe (6) and a pipe insert (1) in the form of a segment of an annulus. The two outer radial walls of said insert defined a circular sector subtending an angle, irrespective whether the inner and/or outer wall (2, 3) of the pipe insert was the arc of a circle, or a series of flattened segments defining a polygonal surface. Consequently, the feature "said curved cross section defines a circular arc of from 90 degrees to 135 degrees" in claim 1 of the main request and of the first auxiliary request was clear. It was not necessary to specify in said claims that the outer wall of the insert was received against the pipe inner wall, since that was self evident to the person skilled in the art. Claim 1 of the first auxiliary request was restricted to the embodiment in which at least two compartments of the pipe insert were of the same size, which was shown in Figures 1 to 7. This was expressed by the additional feature "each [compartment] defining a circular arc of not more than 67.5 degrees", which was a logical consequence of the requirement that the overall cross section of the pipe insert defined an arc of not more than 135 degrees. Claim 1 of the main

request and of the first auxiliary request were thus clear, Article 84 EPC, and did not extend beyond the content of the application as filed, Article 123(2) EPC.

The subject-matter of claim 1 of the second auxiliary request involved an inventive step. This claim was directed to a pipe assembly comprising an elongated (outer) pipe (6), an inner pipe (8), and a pipe insert (1) in the form of a segment of an annulus with inner and outer walls, which were received against the surfaces of the outer and inner pipes (6, 8), respectively. Document D2 was the closest prior art. This document showed in Figure 17 an inner pipe  $f'$  and four pipe inserts  $e$  in the form of a segment of an annulus having a circular arc of 90 degrees. The four pipe inserts together defined an annulus having a circular arc of 360 degrees, i.e. a full circle, there was no annular space left between the inner pipe  $f'$  and the tubular body  $c$  ("enveloppe tubulaire"). The tubular body  $c$  was merely used to wrap tightly and fixedly hold the inner pipe  $f'$  and pipe inserts  $e$  together (see page 2, lines 5 to 26), it was not an outer pipe in the sense of the invention. The pipe inserts  $e$  shown in Figure 17 were single channel pipe inserts comprising only one compartment. In contrast, the pipe insert according to the invention was a multi-channel insert having "at least three radial walls". The provision of a pipe insert in the form of a segment of an annulus with a subtending angle in the claimed range having at least three radial walls improved the mechanical stability of the pipe assembly. The person skilled in the art, starting out from the pipe assembly of document D2 and seeking to improve the mechanical

stability thereof, had many possibilities other than the one proposed by the invention to solve this problem. For example, in document D2 itself it is pointed out that a metal can be used as material for the tubular body *c* (see page 2, lines 27 to 33). The person skilled in the art could have envisaged increasing the thickness of the two radial walls of the pipe inserts shown in Figure 17 of document D2, or filling the inner pipe with a fluid. Or he or she could have chosen pipe inserts having a cross section in the form of a circular sector (see e.g. Figure 16 of document D2), whereby the radial walls of opposite pipe inserts directly support one another like spokes in a wheel. There is no hint or suggestion in document D2 to provide one or more inner radial walls in the single channel pipe inserts known from that document. The argument that to do so was obvious to the person skilled in the art was therefore based on an ex post facto appraisal, i.e. based on the knowledge of the invention. The multi-channel pipe insert as claimed in claim 1 of the second auxiliary request was also not known from any other document cited in the proceedings. Whilst document D1 disclosed a multi-chambered pipe insert (see Figures 2 and 5) having two compartments 12, 13, the wall between the compartments 12, 13 consisted of two abutting walls 16, 21 joined together by a hinged portion 24 rather than a single wall (see column 2, line 60, to column 3, line 25) with a view to improve the cooling of the wall portions 16, 21. It also followed that a combination of documents D2 and D1 would not have led the person skilled in the art to the invention.

## Reasons for the Decision

### MAIN REQUEST AND FIRST AUXILIARY REQUEST

1. *Admissibility of the amendments, Article 123(2) EPC*

Claim 1 of the main request and claim 1 of the first auxiliary request completely leave open how the pipe insert is positioned inside the elongated pipe 6.

A pipe assembly whereby a pipe insert is inserted within an outer pipe 6 is shown in Figures 3 and 6, of the application as filed. On page 4, lines 22 and 23, of the application as filed (published version) it is stated: *Pipe 6 has a curved inner surface 7 which mates with the convexly curved outer surface 3 of pipe insert 1* (emphasis added by the Board). The embodiment shown in Figure 6 is the same as that shown in Figure 3, except that in the former the pipe insert is provided with five radial walls whereas in the latter it is provided with three radial walls. The only independent claim directed to a pipe assembly in the application as filed is claim 10, which reads as follows: *A pipe assembly comprising an elongate pipe having a curved inner wall and a synthetic resin pipe insert having a curved cross section defining a segment of an annulus with a radially inner wall and a convexly curved radially, outer wall received against the pipe inner wall* (emphasis added by the Board).

There is no disclosure in the application as filed that the pipe insert can be anywhere inside the elongated pipe 6.



Consequently, claim 1 of the main request and claim 1 of the first auxiliary request extend beyond the contents of the application as filed, Article 123(2) EPC.

The main request and the first auxiliary request are thus not allowable.

In view of the above, there is no need to examine whether claim 1 of the main request and claim 1 of the first auxiliary request meet the requirements of Article 84 EPC.

SECOND AUXILIARY REQUEST

2. *Lack of inventive step, Article 56 EPC*

- 2.1 Document D2 represents the closest state of the art. This document discloses (see Figure 17) a pipe assembly comprising (i) an elongated pipe *c* having a curved inner wall, (ii) four elongate, synthetic resin pipe inserts *e* having a curved cross section and each defining a 90° segment of an annulus with coaxial, radially inner and outer walls, the inner wall having a concavely curved radially inner surface, and (iii) an inner pipe *f'* having a convexly curved outer surface, whereby (iv) the outer walls pipe inserts *e* being matingly received against the inner wall of pipe *c* and whereby (v) the inner walls pipe inserts *e* being matingly received against the outer wall of pipe *f'*.

In the judgement of the Board, the tubular body without a weld seam ("enveloppe tubulaire *c* sans soudure"), which is shrunk on the pipe inserts *e* and inner pipe

*f'*, or wherein the pipe inserts *e* and inner pipe *f'* are forced under pressure into the tubular body, see page 1, lines 9 to 14, constitute a pipe assembly in the sense of claim 1.

The subject-matter of claim 1 of the second auxiliary request differs from the pipe assembly known from document D2 in that

- (i) the pipe insert is extruded, and
- (ii) at least three radial walls are provided to form at least two compartments within the pipe insert.

Since it was already known in the art to manufacture an elongate, synthetic resin pipe insert by extrusion (see document D1, column 2, lines 15 to 17), using this process to manufacture the pipe insert known from document D2 was obvious to the person skilled in the art.

The distinguishing feature (ii) requires that the pipe insert according to the invention is a multi-channel insert, whereby adjacent compartments share a common radial inner wall (rather than a single-compartment pipe insert as known from document D2). In other words, the pipe insert claimed in claim 1 of the second auxiliary request differs from the single-compartment pipe insert known from document D2 in that the latter is compartmentalized in at least two compartments.

Figures 4 and 5 of document D2 show multi-compartment pipes having an inner compartment, and four and two outer compartments, respectively, in the form of a

segment of an annulus. A comparison between the two figures shows that a way of increasing the number of compartments in a multi-compartment pipe is simply to increase the number of radial walls. Providing more radial walls in a compartment in the form of a segment of an annulus has, *ceteris paribus*, two effects: the number of compartments increases and the mechanical stability increases. These effects cannot be separated. The objective problem that is solved by the distinguishing feature (ii) vis-à-vis the pipe assembly known from Figure 17 of document D2 can thus be formulated as "to increase the number of compartments" rather than "to increase the mechanical stability of the pipe assembly".

It is true that in order to, for example, double the number of compartments in the embodiment shown in Figure 17 of document D2 (in the annular ring between the inner pipe *f'* and pipe *c*) the number of single-compartment pipe inserts *e* can be doubled, i.e. using eight single-compartment pipe inserts having a curved cross section defining a 45° segment of an annulus, or, for example, the number of compartments in each pipe insert can be doubled, i.e. using four double-compartment pipe inserts having a curved cross section defining a 90° segment of an annulus. In the former case the number of radial walls is doubled, in the latter the number of radial walls is increased by 50%.

Whilst document D2 only explicitly teaches the use of single-compartment *pipe inserts*, this does not mean that this document teaches away from using multi-compartment pipe inserts. For example, document D2 discloses multi-compartment *pipes* in Figures 1 to 9).

Multi-compartment pipe inserts are known per se from the prior art, as document D1 shows (see Figure 2).

In the judgement of the Board, the person skilled in the art would, as a normal design option without exercising inventive skills, consider compartmentalizing the single-compartment pipe inserts known from document D2 with a view to creating more compartments in the same space.

The subject-matter of claim 1 of the second auxiliary request therefore does not involve an inventive step (Article 56 EPC).

## **Order**

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

The appeal is dismissed.

The Registrar:

The Chairman:

D. Meyfarth

W. Zellhuber