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**Datasheet for the decision
of 12 July 2021**

Case Number: T 1187/17 - 3.2.05

Application Number: 11804734.9

Publication Number: 2646729

IPC: F16L11/08

Language of the proceedings: EN

Title of invention:

Composite pipe

Applicant:

Magma Global Limited

Relevant legal provisions:

EPC Art. 54(1), 56, 111(1), 123(2)

RPBA 2020 Art. 11

Keyword:

Inadmissible extension (no)

Novelty (yes)

Remittal to the examining division for further prosecution
(yes)

Decisions cited:

T 0725/05, T 0726/10



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Case Number: T 1187/17 - 3.2.05

D E C I S I O N
of Technical Board of Appeal 3.2.05
of 12 July 2021

Appellant: Magma Global Limited
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Decision under appeal: **Decision of the Examining Division of the
European Patent Office posted on 3 February 2017
refusing European patent application No.
11804734.9 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman P. Lanz
Members: O. Randl
T. Karamanli

Summary of Facts and Submissions

- I. The applicant filed an appeal against the decision of the examining division refusing European patent application No. 11 804 734.9.
- II. The examining division held that the subject-matter of claims 1 and 13 of the main request and the auxiliary request then on file did not comply with the requirements of Article 123(2) EPC and also lacked novelty and inventive step.

The decision under appeal refers to the following documents:

D5: US 5,638,870
D16: US 2009/014081 A1
D17: US 5,469,916

Document D17 is cited in the context of an *obiter dictum* annexed to the decision under appeal. Its existence and potential relevance were mentioned for the first time in an email sent to the applicant by the first examiner on Thursday 8 December 2016, i.e. two working days before the scheduled date of the oral proceedings before the examining division (Monday 12 December 2016).

- III. The appellant requested that the decision under appeal be set aside and a patent be granted on the basis of the claims of the main request or of one of auxiliary requests 1, 2A and 2B filed with the statement of grounds of appeal.

IV. On 27 January 2021, the board issued a communication pursuant to Rule 100(2) EPC.

V. The independent claims of the main request read (for claim 1, the feature references used by the board are indicated in square brackets):

"1. [1] A composite pipe [2] configured for use in extracting hydrocarbons from subsea reservoirs [3] having a pipe wall [4] comprising a composite material formed of at least a matrix and a plurality of reinforcing fibres embedded within the matrix, wherein [5] the pipe wall comprises a local variation in construction in at least one longitudinal section [5b] such that the fibre construction in one longitudinal section of the pipe wall is different from the fibre construction of the composite material in a different longitudinal section, wherein [6] at least one longitudinal portion comprises a local variation in the distribution density of the reinforcing fibres within the matrix material, and wherein [7] the matrix material comprises a polyether ether ketone."

"13. A method of manufacturing a composite pipe configured for use in extracting hydrocarbons from subsea reservoirs, comprising:
forming a pipe wall with a composite material comprising a matrix and a plurality of reinforcing fibres embedded within the matrix; and
varying the fibre construction of the composite material in at least one longitudinal portion of the pipe wall such that the fibre construction in one longitudinal portion differs from the fibre construction in a different longitudinal portion wherein at least one longitudinal portion comprises a local variation in the distribution density of the

reinforcing fibres within the matrix material, and wherein the matrix material comprises a polyether ether ketone."

VI. The appellant argued as follows.

(a) Compliance of claim 1 of the main request with the requirements of Article 123(2) EPC

Amended claim 1 is based on claim 1 as originally filed, with the addition of the following features:

- Qualification of the word "pipe" by the word "composite". This amendment has a basis throughout the application (for example page 1, line 4). The exact wording of feature 2 is not disclosed in the application, but the narrow linguistic assessment conducted by the examining division is not appropriate. The focus should be on what is really disclosed to the skilled person (see Guidelines H-IV, 2.2, especially the final paragraph). In accordance with original claim 34, the pipe (of any preceding claim) is "configured for use subsea". Furthermore, page 31, lines 29 to 32, states: "The pipe may be configured for use in transporting product associated with the extraction of hydrocarbons from subsea reservoirs, including accommodating the flow of hydrocarbons, carbon dioxide, water, other chemicals, solid matter, fluid and gas mixes and the like." (emphasis added). The pipe is configured for use subsea and accommodates the flow of hydrocarbons extracted from a subsea reservoir. The words "associated with" are unfortunate, but they would not have obscured the intended meaning to the skilled person. Extraction from a subsea

reservoir is also supported by other passages in the description (see Background of the Invention and the first paragraph on page 32).

- Feature 6, which has a basis in original claim 11.
- Feature 7, which has a basis on page 31, lines 3 and 4, of the original disclosure.

(b) Novelty over document D5

The subject-matter of claim 1 is new over document D5 for the following reasons:

- The device of document D5 is not suitable for extracting hydrocarbons from a subsea reservoir. In accordance with col. 1, line 9, and col. 10, line 10, it is intended to form part of a fishing rod, a golf club, a tennis racket or a handlebar. Such tubes are not configured to withstand the high pressures and temperatures or aggressive (acidic) environment typical in the extraction of hydrocarbons. The examining division did not provide any support for the assertion that a fishing rod would be able to transport methane (point 19.1 of the decision under appeal).
- Document D5 does not teach a local variation in the distribution density of the reinforcing fibres within the matrix material. The examining division has not provided any support for its assertion that this feature is taught (point 19.2). In point 2.2 of the annex to the summons to oral proceedings, the examining division argued that, depending on the longitudinal location of a transverse section, the fibres of the textile layer (Fig. 5) would be oriented mainly circumferentially or mainly longitudinally. This academic perspective takes no account of the intended technical meaning of this

feature for a person skilled in the art. Fig. 5 of document D5 illustrates a homogenous weave with a uniform fibre distribution density. A "smooth" surface is "rough" at a sufficient level of magnification. Such terms always have a context, and in this specific context the examining division's argument is inappropriate.

- Using the teaching of document D5, selections from three lists are needed to arrive at (i) a device comprising piled portions containing resin, (ii) a resin comprising PEEK and (iii) a resin comprising reinforcing fibres. As taught in col. 8, lines 3 to 16, the piled pieces may comprise a natural material such as cork, so a first selection is required for them to have any resin at all. Furthermore, having selected resin, it is taught that the piled portion may comprise only the resin, in which case there is no fibre construction in one longitudinal section of the pipe wall that is different from the fibre construction of the composite material in a different longitudinal section, since there are no fibres at all in the piled portions. Lastly, PEEK is just one material which must be selected from a list (see col. 4, lines 49 to 53). There is no incentive to make such a selection from the three above-mentioned lists. The examining division has not explained why there would be only one single list (point 19.3 of the decision).

(c) Novelty over document D17

The written reasoning provided in the decision under appeal in relation to document D17 is erroneous: it repeats *verbatim* wording used in point 19 of the

decision in relation to document D5 and does not apply to document D17.

The subject-matter of claim 1 is new over document D17, as the latter does not disclose features 5b and 6. The examining division asserts that indicia 13 or 54 compress the composite to alter the fibre distribution density, prestress and mechanical properties, but it did not point to any part of document D17 which explicitly teaches that the indicia compress the composite material to give rise to a different fibre construction. Such a fibre construction is not inherently disclosed either, for the following reasons:

- The function of indicia is not to compress the matrix, but simply to remain in place to provide detectable elements which make it possible to establish how much pipe has been fed into a downhole (see Background of the Invention). As a result, elements such as 54, 64 and 74 are taught to be narrow and thin (see for example col. 5, lines 21 to 22). There is no evidence that any pressure is applied to the underlying composite material by the indicia which is sufficient to compress it and give rise to a different fibre construction.
- Even if some small amount of compression of the composite did take place, the thermoplastic matrix of a composite material of this type is compressible and would absorb the additional pressure without displacing the fibres. This would not result in a difference in fibre construction or variation in fibre distribution density.

(d) Inventive step in view of document D16

The examining division offered no analysis of the features which it considered document D16 to disclose, for the purpose of assessing inventive step using the problem/solution approach. It simply asserted that document D16 discloses (Figs. 1 to 8, pages 1 to 3) all the features of both claims except PEEK material. On the contrary, claim 1 is new over document D16 for the following reasons:

- The device of document D16 is not suitable for extracting hydrocarbons from a subsea reservoir. It relates to air conditioning piping for aircraft (paragraph [0002]) and is not configured to withstand the high pressures and temperatures or aggressive (acidic) environment typical in the extraction of hydrocarbons. The examining division did not explain where document D16 disclosed this feature.
- There is no mention of polyether ether ketone (PEEK) as the matrix material (phenolic and epoxy resins are mentioned instead in paragraph [0022]). This has been accepted by the examining division (see paragraph 20.1 of the decision under appeal).
- Features 5b and 6 are not disclosed. There is no explicit teaching of these features, and it is not apparent why they should be inherent either.

(e) Inventive step in view of document D17

The invention is intended for extracting hydrocarbons from subsea reservoirs. To this end, a thermoplastic, PEEK polymer matrix is used, which may withstand high pressures and especially high temperatures (PEEK melts

at around 343°C) but is also flexible, so pipes made of PEEK can be spooled (for example for use as a subsea riser or jumper, see original application, page 1, Background of the Invention). Document D17 is the closest prior art because it relates to hydrocarbon extraction and so has the most similar purpose to the invention (see Guidelines G-VII, 5.1). However, document D17 does not disclose features 5b and 6. These features address the problem of providing regions of modified properties, such as strength, to meet specific needs (see originally filed patent application, page 2, lines 14 to 21) in pipes for subsea hydrocarbon extraction. None of the documents cited by the examining division teaches how to solve this technical problem or, more importantly, provides features 5b and 6 to solve the problem. The examining division considered the disclosure of this feature to be implicit but did not provide any reasoned justification for this finding. If necessary, a technical expert from the applicant can be presented to further explain why this finding is not correct.

Combination with document D5

Document D5 provides no teaching in relation to pipes that would be suitable for subsea hydrocarbon extraction. Instead, it concerns the unrelated technical fields of fishing rods, golf clubs, tennis rackets and handlebars (see document D5, col. 1, line 9, and col. 10, line 10). In consequence, a skilled person starting from document D17 and wishing to modify a pipe suitable for subsea hydrocarbon extraction would have had no cause to consider document D5. In the unlikely event that a skilled person in the technical area under consideration would nevertheless have considered document D5, they would have found no

explicit teaching in it to vary the local fibre distribution density in the composite material forming the pipe wall to provide regions of modified properties. Indeed, there is no mention at all in document D5 of the fibre distribution density. Further, there is no implicit teaching in document D5 to vary the fibre distribution density either. It is not correct that in sections II, III and IV in Fig. 9, the inner fibres are surrounded by a varying thickness of piled part 115 which may not contain any fibres, thereby reducing the fibre distribution density in those portions, as asserted in point 19, subparagraph 1, of the decision under appeal.

The skilled person starting from document D17 would not have extracted information from document D5 to vary the fibre distribution density in a composite material for the following reasons:

- Claim 1 relates to "a composite pipe ...". If there were no fibres in piled part 115, then it would not be made of composite material and the pipe would not be a composite pipe. A skilled person starting from document D17 and seeking to make a composite pipe would have had no incentive to extract information relating to a layer which is not made of composite material.
- Moreover, a selection must be made from within document D5 for there to be resin but no reinforcing fibres in piled part 115. The alternatives are (see col. 8, lines 3 to 12) reinforcing fibre + resin, resin only or natural material such as cork (in which case there is no resin or reinforcing fibre present). Importantly, there is no discussion of the role of the reinforcing fibre distribution density, and since

the piled parts 115 may be made of cork, the presence of either reinforcing fibres or resin in piled pieces 115a and 117a is entirely optional. Far from pointing to the fact that the distribution density of reinforcing fibres in the resin is important, it would have been evident to a skilled person that document D5 considered them to be an unimportant aspect. The skilled person starting from document D17 would not have extracted any information from document D5 relating to the advantage of having a local fibre distribution density within the composite material.

- If there were no reinforcing fibres in piled piece 115a, then the only composite material would result, post-melting (see col. 7, lines 41 to 49), from prepreg sheet 123 and woven fabric 131. There is no teaching of a local fibre distribution density variation in melted layers 123 and 131. Layer 115 in the finished article would not be a composite material if there were no fibres, so there could be no variation in fibre distribution density there either. Lastly, there is no teaching in document D5 which supports the assertion that the skilled person would have considered the combination of layers 123+115+117+131 to be a unitary composite material, even if 115 and 117 did not comprise composite material (because there were no reinforcing fibres). On the contrary, document D5 would in that case teach providing a sandwich of non-composite material between layers of composite material. Consequently, the skilled person starting from document D17 would not have extracted any teaching from the disclosure of document D5 to create a local variation in fibre distribution density within the composite material.

Thus, the subject-matter of claim 1 is not obvious in view of the disclosure of documents D17 and D5.

Combination with document D16

Document D16 provides no teaching in relation to pipes that would be suitable for subsea hydrocarbon extraction. It relates to air conditioning piping for aircraft (paragraph [0002]). In the unlikely event that a skilled person in the technical area under consideration would nevertheless have considered document D16, there is no explicit teaching in document D16 to vary the local fibre density in the composite material forming the pipe wall to provide regions of modified properties. Indeed, there is no mention at all in document D16 of the fibre distribution density. Further, there is no implicit teaching in document D16 to vary the fibre distribution density. The examining division argued that, with reference to Fig. 4, there would automatically be a higher fibre distribution density in the parts where reinforcing means 2 are present than in sections where they are not present (see point 20.5 of the decision under appeal).

However, the technical teaching of document D16 is insufficient to make any such determination, so that assertion goes beyond what may be derived from document D16, which discloses fabrics impregnated with resin:

- It is not stated in document D16 that the reinforcing means 2 compress the structural plies 5 (which are the composite plies in question) in a way that is sufficient to cause any changes in the fibre distribution density. In fact, no information is provided about the degree of compression.

- The resin may be thermoplastic or thermoset (see paragraphs [0002] and [0005]), although the exemplified materials (phenolic resin and epoxy resin) are both thermoset materials, which are known to be rigid, brittle and relatively incompressible. There is insufficient information in document D16 to determine whether any compression of thermoset materials would occur, let alone a degree of compression sufficient to "provide regions of modified properties, such as strength, to meet specific needs in pipes for subsea hydrocarbon extraction". Also, since the claims relate to a thermoplastic (PEEK) matrix, there would have been no reason for a skilled person to seek information from document D16 on how thermoset materials might perform under compression.
- Moreover, even if the resin were thermoplastic, a thermoplastic matrix of a composite material of this type would be capable of absorbing some additional pressure without displacing the fibres (see also point 2.2.3(b) of the statement of grounds of appeal). However, there is insufficient information in document D16 to determine whether any sufficient compression of such thermoplastic materials would occur. Consequently, it cannot be assumed that a variation in fibre distribution density would result from the arrangement of document D16.

Thus, the subject-matter of claim 1 is not obvious in view of the disclosure of documents D17 and D16.

Other combinations

Since neither document D5 nor document D16 discloses feature 6, a combination of document D17 with documents D5 and D16 cannot render the claimed invention obvious either. Moreover, a skilled person would have had no incentive to combine a document relating to the manufacture of fishing rods (D5) and a document relating to air conditioning piping (D16) with a document in the technical field under consideration.

Reasons for the Decision

1. Claim interpretation

1.1 "section" vs "portion"

Claim 1 refers to both "longitudinal sections" (features 5 and 5b) and a "longitudinal portion" (feature 6) of the claimed pipe. The board notes that the two terms "section" and "portion", when referring to parts of the pipe, are used interchangeably in the application (see e.g. page 25, lines 1 and 2, or the paragraph bridging pages 47 and 48 where the same element is referred to as "longitudinal section 292" (page 47, line 32) and "longitudinal portion 292" (page 48, lines 1 and 6)). Therefore, the terms are considered to be synonymous in the present context.

1.2 "fibre construction"

Feature 5 requires that the pipe wall comprise a local "variation in construction" in at least one

longitudinal section. Feature 5b further defines this variation. The variation has to be such that the "fibre construction" in one longitudinal section of the pipe wall is different from the "fibre construction of the composite material" in a different longitudinal section. There is no definition of the expression "fibre construction" (which is already present in original claim 1) in the application. However, the skilled person trying to understand the claim would have understood it as referring to constructional aspects of the pipe relating to the fibre. Thus, according to the application, the relevant variations in construction encompass:

- Variations in the distribution density of the fibres (see page 3, lines 27 to 32).
- Variations in the type of fibre (see page 3, line 33 to page 4, line 7).
- Variations in the fibre alignment angle (see page 4, lines 8 to 23).
- Variations in fibre prestress (see page 4, line 24, to page 5, line 3).

Mere variations in, for example, the type of the matrix material do not qualify as variations in the fibre construction, because they are unrelated to the fibre itself. The application expressly distinguishes constructional variations in the matrix material and in the fibres (see page 3, lines 21 to 23). Feature 5b serves to delimit the claimed subject-matter to variations in constructional aspects relating to the fibres.

1.3 "distribution density"

Feature 6 requires that at least one longitudinal portion comprise a local variation in the "distribution density" of the reinforcing fibres within the matrix material. The expression is not defined in the application, but there is no doubt that it refers to the number of fibres per unit volume of the composite material (matrix + fibres). On page 3, lines 27 to 32, of the original application the following statement is found:

"At least one circumferential segment may comprise a local variation in the distribution density of the reinforcing fibres within the matrix material. For example, the reinforcing fibres may be more densely packed together in at least a portion of one circumferential segment of the pipe wall than another circumferential segment. In such an arrangement the region of increased fibre packing density may define a region of modified stiffness, such as increased stiffness."

A similar statement is found on page 20, lines 21 to 27, of the original application.

1.4 Relationship between features 5, 5b and 6

The language of feature 6 is such that it does not have to be a mere limitation of features 5 and 5b, meaning that the variation in fibre construction of feature 5b has to be a variation in the distribution density. In principle, it is possible (but in no way necessary) that the longitudinal section of feature 5b corresponds to a part of the pipe different from the longitudinal

portion of feature 6. Regardless, feature 6 ensures that there is at least a local variation in the distribution density of the reinforcing fibres in the matrix material, which may be the only local variation in construction of the pipe of claim 1.

2. Compliance with Article 123(2) EPC

The main request before the board is identical to the main request before the examining division. The examining division found this request to be unallowable because claims 1 and 13 did not comply with the requirements of Article 123(2) EPC (see point 18 of the decision under appeal). As is explained in paragraph 18.1 of the decision under appeal, the examining division found the expression "configured for use in extracting hydrocarbons from subsea reservoirs" used in the preamble of claim 1 not to have a proper basis in the original application.

The exact wording of the expression is not disclosed in the original application. The appellant argued that it is nevertheless disclosed to the skilled person by means of original claim 34:

"34. The pipe according to any preceding claim, configured for use in providing a conduit associated with the extraction of hydrocarbons from subsea reservoirs."

and the passage on page 31, lines 29 to 32, of the original application, which reads:

"The pipe may be configured for use in transporting product associated with the extraction of hydrocarbons from subsea reservoirs, including

accommodating the flow of hydrocarbons, carbon dioxide, water, other chemicals, solid matter, fluid and gas mixes and the like."

The board has no doubt that the skilled person would have understood the language of original claim 34 to mean a pipe for use in extracting hydrocarbons from subsea reservoirs. Should there be any hesitation regarding the expression "conduit associated with the extraction", it is clear from the quoted passage on page 31 that the pipe was unambiguously envisaged to be used for the extraction of hydrocarbons.

Therefore, the objection under Article 123(2) EPC raised by the examining division in paragraph 18 of the decision under appeal is unfounded.

3. Novelty of the subject-matter of claims 1 and 13

3.1 Over document D5

In paragraph 19 of the decision under appeal, the examining division found the subject-matter of claims 1 and 13 to lack novelty over the disclosure of document D5.

Document D5 discloses fibre-reinforced tubular bodies made from a thermoplastic resin to be used as fishing rods, golf clubs, tennis rackets or handlebars (see col. 10, line 10). It also discloses manufacturing methods for such tubular bodies. No other use appears to have been envisaged in document D5. Consequently, document D5 cannot anticipate a composite pipe configured for use in extracting hydrocarbons from subsea reservoirs or methods of manufacturing such pipes.

The appellant had argued that the pipe of document D5 was not suitable for extracting hydrocarbons from a subsea reservoir. The examining division dismissed this argument as follows:

"The examining division cannot follow this argumentation since a hydrocarbon may be for example methane gas at room temperature and pressure, the pipe of D5 may be made of reinforced polyether ether ketone, and would be able to withstand a subsea environment (salt water, immersion at a certain depth, some internal or external pressure). Most importantly, the pipe of D5 is suitable for the use described on p 31, l. 29-32 of the present patent application, as e.g. transporting water." (paragraph 19.1 of the decision under appeal)

The board cannot endorse this argument, which is far-fetched and does not consider what is actually claimed. In view of the wording of the claims, the skilled reader would have understood that the extraction of hydrocarbons from subsea reservoirs involves working conditions which tubes for fishing rods or the like would not normally be able to support. The examining division has not provided any plausible argument or evidence that the pipe of document D5 could withstand the typical pressures, the chemical environment, etc. involved in hydrocarbon extraction from subsea reservoirs.

Thus, document D5 has not been shown to disclose a composite pipe configured for use in extracting hydrocarbons from subsea reservoirs. The objection of lack of novelty based on document D5 has to fail.

Document D5 belongs to an entirely different technical field from that of the invention and cannot constitute a reasonable starting point for the examination of inventive step. Therefore, it is not necessary to examine whether there are other distinguishing features.

3.2 Over document D17

- 3.2.1 In an *obiter dictum* (point V. of the decision under appeal) the examining division stated that the subject-matter of claims 1 and 13 lacked novelty over the disclosure of document D17 (point 23 of the decision under appeal), a prior-art document which it had mentioned to the appellant for the first time two working days before the scheduled date of the oral proceedings. Document D17 belongs to the field of pipes for use in oil wells. Consequently, it is more relevant than document D5.

The examining division raised the only objection of lack of novelty that is based on a *prima facie* relevant document (i.e. document D17) in an *obiter dictum*. An *obiter dictum* is a voluntary piece of information provided by the examining division and does not form part of the grounds for the decision to refuse the application. Therefore, a party's right to be heard is not violated if the party did not have the opportunity to comment on observations in an *obiter dictum* beforehand (see for example decisions T 725/05 and T 726/10). The contested decision is therefore not inadequately reasoned, even if, as submitted by the appellant, the reasoning in the *obiter dictum* contained manifest errors and appeared, at least partially, as a *verbatim* repetition ("cut-and-paste") of wordings

provided in paragraph 19 of the decision in relation to document D5.

From a legal perspective, there is no objection to introducing document D17 at a late stage of the first-instance proceedings and dealing with it in an *obiter dictum*. However, for procedural reasons, it would have been preferable if the *prima facie* relevant document D17 had been introduced by the examining division at an earlier stage in the first-instance proceedings.

- 3.2.2 Document D17 discloses a system for determining the position and depth of downhole equipment in a wellbore, including an elongate spoolable composite coiled tubing for running the downhole equipment into the wellbore (see Fig. 1).

The system comprises:

- A composite coiled tubing string 12 with adjacent layers of fibres arranged in a generally cylindrical shape (see Figs. 3 to 5). Each layer has fibres arranged in a predetermined orientation to form a composite coiled tubing string with sufficient strength to be pushed into and pulled out of the borehole.
- Detectable indicia 13 overlaying at least one of the layers of fibres. The indicia are integral to the composite coiled tubing string 12 and spaced apart along its length (see Fig. 2).
- A resin uniformly distributed throughout all the fibre layers and consolidated to form a matrix for fixing all the layers of fibres and the indicia 13 together in their predetermined orientation.

- Means 30 for detecting the presence of the indicia while the tubing is raised and lowered in the wellbore.
- Means for determining the composite coiled tubing behaviour in relation to load.
- Means for spooling and unspooling the composite coiled tubing string and the downhole equipment from the surface into and out of the wellbore (see Fig. 1).

The appellant argued that document D17 did not disclose features 5b and 6.

The examining division found feature 5b to be disclosed because

"... (fiber construction differs between the following longitudinal portions or sections: middle of the pipe and right near the end of the pipe where fibre retention, prestress and mechanical properties are different; portion containing indicia 13 or 54 and portion free of indicia 13 or 54) ...".

The examining division did not provide any reasons for its opinion that feature 6 was disclosed in document D17. The corresponding part of the *obiter dictum* of paragraph 23 of the decision under appeal appears to be an unfortunate "cut-and-paste" of the reasons in respect of document D5 (paragraph 19 of the decision).

The board notes that the words "middle of the pipe and right near the end of the pipe where fibre retention, prestress and mechanical properties are different" are also taken *verbatim* from the discussion of the disclosure of document D5 (paragraph 19 of the decision

under appeal) and that document D17 does not explicitly refer to fibre retention, prestress and mechanical properties. Therefore, the specific objection based on the disclosure of document D17 appears to boil down to the difference between portion containing indicia 13 (see Fig. 2) or 54 (see Fig. 3, where the metal wire 54 constitutes the detectable indicia, and col. 4, lines 38 to 41) and portion free of such indicia 13.

This raises the question whether the presence of the detectable indicia necessarily results in a local variation in the distribution density of the reinforcing fibres in the matrix material.

Fig. 2 shows the indicia 13 in a very schematic way.

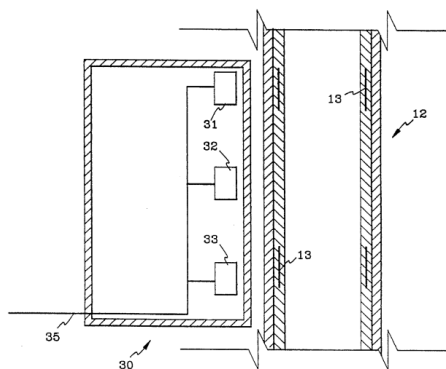


Fig. 2

The corresponding part of the description states the following:

"The detectable indicia 13 may be comprised of a variety of materials such as metallic or magnetic sections, radioactive materials, optical devices, specifically encoded sections or a combination of any of these materials. In the embodiment shown in FIG. 2, the indicia are shown as metallic

sections 13." (col. 2, last line, to col. 3, line 5)

It is not apparent to the board why the presence of the indicia 13 as such would entail a local variation in the distribution density of the reinforcing fibres in the matrix material.

Fig. 3 shows an embodiment of the composite coiled tubing in greater detail.

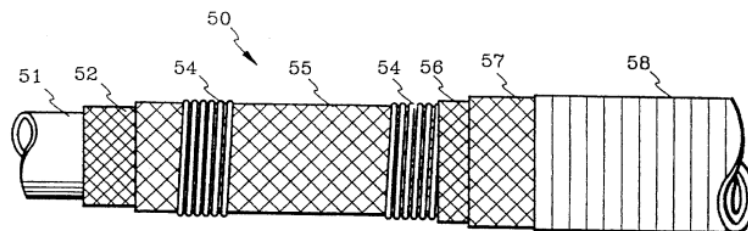


Fig. 3

The corresponding part of the description contains the following statements:

"As illustrated, in the embodiment shown in FIG. 3, the detectable indicia is a metal wire 54 which is wrapped over the second layer of fibers 55 at predetermined distances along the tubing. It is preferred that the coils of the metal wire 54 are spaced apart for reasons that will be explained below. Any suitable wire such as copper, steel, aluminum etc. may be used so long as it is detectable by the device 30 and will flex with the tubing without damage to the indicia or the tubing. A third layer of oriented fibers 56 similar to the first and second layer of fibers is wrapped over the wires 54 and the second layer of fibers 55. A fourth layer of oriented fibers 57 similar to the prior layer of fibers is wrapped over the

third layer of fibers. The fibers in the layers 52, 55, 56, and 57 are provided with a resin distributed throughout the layers. ... Preferably the fibers are surrounded with the resin so as to provide a uniform distribution throughout all the fiber layers. When the outer fiber layer 57 has been wrapped onto the tubing, the resin is cured or consolidated to form a matrix fixing the fibers in their respective orientations." (col. 4, lines 38 to 59)

Again, it is not apparent to the board why the wrapping of the coils over the second layer would result in a local variation in the distribution density of the reinforcing fibres. On the contrary, document D17 teaches that a uniform distribution throughout all the fibre layers should be sought. The presence of the wire will likely entail material movements during the curing, but the fibres and the matrix will be displaced alike. Thus, no significant change in the number of fibres per unit volume of the composite material is to be expected. Thus, document D17 does not clearly and unambiguously disclose feature 6. Consequently, the subject-matter of claims 1 and 13 is new over the disclosure of document D17.

4. Inventive step

4.1 Starting from document D16

The examining division found the subject-matter of claims 1 and 13 to lack inventive step over document D16 in combination with the skilled person's common general knowledge (see paragraph 20 of the decision under appeal).

Document D16 discloses a manufacturing process for a pipe formed of a pile of plies of thermosetting or thermoplastic material to be used in the field of piping for air conditioning.

Document D16 belongs to an entirely different technical field from that of the invention and does not constitute a reasonable starting point for the examination of inventive step. Therefore, there is no need to further examine the objection of lack of inventive-step based on document D16.

4.2 Starting from document D17

4.2.1 Differences

As mentioned above (see point 3.2), document D17 does not disclose feature 6.

4.2.2 Objective technical problem

The appellant argued that the missing feature solves the problem of providing regions of modified properties, such as strength, to meet specific needs in pipes for subsea hydrocarbon extraction, and referred to page 2, lines 14 to 21, of the original application.

4.2.3 Obviousness

The examination of whether the subject-matter of claim 1 involves an inventive step boils down to answering the question whether the skilled person wishing to provide regions of modified properties, such as strength, to meet specific needs in pipes for subsea hydrocarbon extraction would have envisaged

varying the local fibre density in the composite material forming the pipe wall.

So far the examining division has not examined this question. Thus, there are special reasons under Article 11 of the revised version of the Rules of Procedure of the Boards of Appeal (RPBA 2020, OJ EPO 2019, A63), which is applicable in the present case pursuant to Article 25(1) RPBA 2020, to remit the case to the examining division under Article 111(1) EPC to examine this matter and hear the applicant's technical expert, if need be.

When examining this question, the examining division should take account of the arguments provided by the appellant in its response to the board's communication pursuant to Rule 100(2) EPC (letter dated 19 April 2021) and the precautionary request for oral proceedings before the examining division contained in this response.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the examining division for further prosecution.

The Registrar:

The Chairman:



N. Schneider

P. Lanz

Decision electronically authenticated