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**Datasheet for the decision  
of 1 December 2021**

**Case Number:** T 1254/17 - 3.2.03

**Application Number:** 09785490.5

**Publication Number:** 2337923

**IPC:** E21B19/00, F16L11/08,  
F16L11/133, E21B17/01

**Language of the proceedings:** EN

**Title of invention:**

FLEXIBLE PIPE

**Patent Proprietor:**

GE Oil & Gas UK Limited

**Opponent:**

Technip France

**Headword:**

**Relevant legal provisions:**

EPC Art. 84

**Keyword:**

Claims - clarity (no) - unclear characterization by parameters  
General principles - prohibition of reformatio in peius

**Decisions cited:**

G 0009/92, G 0001/99

**Catchword:**



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Case Number: T 1254/17 - 3.2.03

**D E C I S I O N**  
**of Technical Board of Appeal 3.2.03**  
**of 1 December 2021**

**Appellant:** GE Oil & Gas UK Limited  
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**Decision under appeal:** **Interlocutory decision of the Opposition  
Division of the European Patent Office posted on  
21 March 2017 concerning maintenance of the  
European Patent No. 2337923 in amended form.**

**Composition of the Board:**

**Chairman** C. Herberhold  
**Members:** V. Bouyssy  
E. Kossonakou

## **Summary of Facts and Submissions**

I. By decision posted on 21 March 2017 the opposition division decided that European patent No. 2337923 as per auxiliary request 2dD then on file, and the invention to which it related, met the requirements of the EPC.

II. The opponent (appellant) lodged an appeal against that decision in the prescribed form and within the prescribed time limit.

The patent proprietor (respondent) that had initially also lodged an appeal against said decision withdrew its appeal by letter dated 22 April 2021.

III. Oral proceedings before the Board were held on 1 December 2021.

As announced by letter dated 17 November 2021 the respondent did not attend these oral proceedings, despite being duly summoned. In accordance with the provisions of Rule 115(2) EPC and Article 15(3) RPBA, the proceedings were continued without it.

For further details of this, in particular the issues discussed with the party present and the parties' initial requests, reference is made to the minutes of the oral proceedings.

IV. At the end of the oral proceedings the parties' requests were as follows:

- (a) The appellant requested that the decision under appeal be set aside and that European patent No. 2337923 be revoked.
- (b) The respondent requested that the patent be maintained "on the basis of the claims filed with the written submissions" (letter of 17 November 2021).

As summarised in the Board's communication dated 22 February 2021 (point 4), the requests filed in writing were as follows:

that the decision under appeal be set aside and that the patent be maintained on the basis of the main request, or alternatively on the basis of one of auxiliary requests 1 to 4, 4' and 5 to 11 or 1A to 4A, 4A' and 5 to 11A, all filed by letter of 14 December 2017.

V. The relevant claims

The relevant claims of the requests on file are set out below in the order that they are dealt with in the decision; specifically, auxiliary request 11 (which corresponds to auxiliary request 2dD, on the basis of which the opposition division maintained the patent) is quoted first, followed by the remaining requests on file.

The method claims of all the requests have not played a role in the present decision.

VI. Auxiliary request 11

Claim 1 of auxiliary request 11 reads as follows (amendments compared with claim 1 as granted have been

underlined, omissions have been indicated by strike-through, and the feature that is relevant for the clarity objection has been marked in bold and italics):

"A riser ~~or jumper~~ assembly for transporting production, exportation or injection fluids from a source location to a target location, comprising: a first segment of flexible pipe comprising a portion of flexible pipe body (46) and a first and second end fitting (45,48); a further segment of flexible pipe comprising a portion of flexible pipe body (57) and a first and second end fitting (56, 58); **characterised by:** an intermediate segment of flexible pipe comprising a portion of flexible pipe body and a first and second end fitting (50, 52) and at least one buoyancy element (55) the first and second end fittings terminating respective first and second ends of the portion of flexible pipe body of the intermediate segment and a first and second bend stiffener each secured to a respective end fitting of the intermediate segment and wherein each of the first, further and intermediate segments of flexible pipe has an innermost carcass layer (11) which provides an interlocked metallic construction, internal pressure sheath (12) which acts as a fluid retaining layer and comprises a polymer layer that ensures internal fluid integrity, a pressure armour layer (13) formed over the internal pressure sheath and is a structural layer with **a layup angle close to 90°** that increases the resistance of the flexible pipe to internal and external pressure and mechanical crushing loads, an outer sheath (17) which comprises a polymer layer used to protect the pipe against penetration of seawater, corrosion, abrasion and mechanical damage and wherein the at least one buoyancy element is confined on the intermediate

segment between the bend stiffeners which provide buoyancy stoppers in the event of buoyancy clamp failure."

VII. Further requests (main request, auxiliary requests 1 to 4, 4' and 5 to 10, and the respective "A" requests, including auxiliary request 11A)

(a) Claim 1 of the main request (corresponding to claim 1 as granted) reads as follows:

"A riser or jumper assembly for transporting production, exportation or injection fluids from a source location to a target location, comprising:

a first segment of flexible pipe comprising a portion of flexible pipe body (46) and a first and second end fitting (45,48);

a further segment of flexible pipe comprising a portion of flexible pipe body (57) and a first and second end fitting (56,58), characterised by:

an intermediate segment of flexible pipe comprising a portion of flexible pipe body and a first and second end fitting (50,52) and at least one buoyancy element (55)."

(b) Auxiliary request 1

Claim 1 of auxiliary request 1 corresponds to claim 1 as granted, with the following amendment (underlined):

"... and wherein the at least one buoyancy element is confined on the intermediate segment between end fittings which provide buoyancy stoppers in the event of buoyancy clamp failure."

(c) Auxiliary request 2

Claim 1 of auxiliary request 2 corresponds to claim 1 of auxiliary request 1, with the "jumper alternative" having been removed from the beginning of the claim:

"A riser ~~or jumper~~ assembly for transporting production, ..."

(d) Auxiliary request 3

Claim 1 of auxiliary request 3 corresponds to claim 1 as granted, with the following amendment (underlined):

"... wherein each of the first, further and intermediate segments of flexible pipe has an optional innermost carcass layer (11), internal pressure sheath (12), a pressure armour layer (13), an outer sheath (17) and wherein the at least one buoyancy element is confined on the intermediate segment between end fittings which provide buoyancy stoppers in the event of buoyancy clamp failure."

(e) Auxiliary request 4

Claim 1 of auxiliary request 4 corresponds to claim 1 as granted, with the following amendment (underlined):

"... wherein each of the first, further and intermediate segments of flexible pipe has an optional innermost carcass layer (11) which provides an interlocked metallic construction, internal pressure sheath (12) which acts as a fluid retaining layer and typically comprises a polymer layer that ensures internal fluid integrity, a pressure armour layer (13) formed over the internal pressure sheath and is a



structural layer with a **layup angle close to 90°** that increases the resistance of the flexible pipe to internal and external pressure and mechanical crushing loads, an outer sheath (17) which comprises a polymer layer used to protect the pipe against the penetration of seawater, corrosion, abrasion and mechanical damage and wherein the at least one buoyancy element is confined on the intermediate segment between end fittings which provide buoyancy stoppers in the event of buoyancy clamp failure."

(f) Auxiliary request 4'

Claim 1 of auxiliary request 4' differs from claim 1 of auxiliary request 4 in that

(i) the "jumper alternative" is deleted

"A riser ~~or jumper~~ assembly for transporting production, ..."

(ii) the terms "... optional innermost carcass layer (11) ..." and "... typically comprises a polymer layer ..." have been replaced with "... ~~optional~~ innermost carcass layer (11) ..." and "... ~~typically~~ comprises a polymer layer ...", respectively.

(g) Auxiliary request 5

Claim 1 of auxiliary request 5 corresponds to claim 1 as granted, with the following amendment (underlined):

"... and wherein the first and second end fittings terminate respective first and second ends of the

portion of the intermediate segment and a first and second bend stiffener each secured to a respective end fitting of the intermediate segment."

(h) Auxiliary request 6

Claim 1 of auxiliary request 6 corresponds to claim 1 of auxiliary request 5, with the "jumper alternative" being removed from the beginning of the claim:

"A riser ~~or jumper~~ assembly for transporting production, ..."

(i) Auxiliary request 7

Claim 1 of auxiliary request 7 corresponds to claim 1 of auxiliary request 5, with the following amendment (the amendment compared with claim 1 of auxiliary request 5 is underlined):

"... and wherein the first and second end fittings terminate respective first and second ends of the portion of the intermediate segment and a first and second bend stiffener each secured to a respective end fitting of the intermediate segment and the at least one buoyancy element is secured at a respective location between the first and second bend stiffeners of the intermediate segment."

(j) Auxiliary request 8

Claim 1 of auxiliary request 8 corresponds to claim 1 of auxiliary request 7, with the "jumper alternative" having been removed from the beginning of the claim:

"A riser ~~or jumper~~ assembly for transporting production, ..."

(k) Auxiliary request 9

Claim 1 of auxiliary request 9 corresponds to claim 1 of the main request, with the following amendment at the end (underlined):

"... wherein the first and second end fittings terminate respective first and second ends of the intermediate segment and a first and second bend stiffener each secured to a respective end fitting of the intermediate segment, and wherein each of the first, further and intermediate segments of flexible pipe has an optional innermost carcass layer (11), internal pressure sheath (12), a pressure armour layer formed over the internal pressure sheath and is a structural layer with a **layup angle close to 90°** (13), an outer sheath (17) which comprises a polymer layer used to protect the pipe against penetration of seawater, corrosion, abrasion and mechanical damage, and wherein the at least one buoyancy element is confined on the intermediate segment between the first and second bend stiffeners which provide buoyancy stoppers in the event of buoyancy clamp failure."

(l) Auxiliary request 10

Claim 1 of auxiliary request 10 corresponds to claim 1 of the main request, with the following amendment at the end (underlined):

"...wherein the first and second end fittings terminate respective first and second ends of the intermediate segment and a first and second bend stiffener each

secured to a respective end fitting of the intermediate segment, and wherein each of the first, further and intermediate segments of flexible pipe has an optional innermost carcass layer (11) which provides an interlocked metallic construction, internal pressure sheath (12) which acts as a fluid retaining layer and typically comprises a polymer layer that ensures internal fluid integrity, a pressure armour layer (13) formed over the internal pressure sheath and is a structural layer with a **layup angle close to 90°** that increases the resistance of the flexible pipe to internal and external pressure and mechanical crushing loads, an outer sheath (17) which comprises a polymer layer used to protect the pipe against penetration of seawater, corrosion, abrasion and mechanical damage, and wherein the at least one buoyancy element is confined on the intermediate segment between the bend stiffeners which provide buoyancy stoppers in the event of buoyancy clamp failure."

(m) The "A requests" (1A to 4A, 4A' and 5A to 11A)

In each case, the "A request" removes the dependent claim defining the "required buoyancy length" (claim 7 of the main request or its equivalent, which have been renumbered in each case), so as to address the objection of insufficiency of disclosure with respect to that term.

VIII. The appellant's essential arguments can be summarised as follows:

As the proprietor had withdrawn its appeal, the opponent was the only appellant. In such a situation the principle of prohibition of reformatio in peius applied, i.e. the proprietor was restricted to

defending the patent in the version as granted by the opposition division. Therefore, only auxiliary request 11 was to be considered by the Board.

Claim 1 of auxiliary request 11, and auxiliary request 11A, should this request be considered, had been amended by taking a passage from the description. According to G3/14 these amended features had to be examined for clarity. The amendment defined the assembly as comprising an intermediate segment of flexible pipe comprising a pressure armour layer (13) formed over the internal pressure sheath and as being "a structural layer with **a layup angle close to 90°** that increases the resistance of the flexible pipe to internal and external pressure and mechanical crushing loads...". The term "**layup angle close to 90°**" did not satisfy the requirements of Article 84 EPC in that the definition was a relative one, without an established meaning in the art. It was thus impossible to know whether or not an assembly having a pressure armour layer exhibiting a layup angle of 75°, 80° or 85° was to be considered part of the claimed subject-matter. While it was true that API specification 17J for unbonded flexible pipes (D13) used identical wording in point 3.1.32 for the definition of pressure armour layers, this did not imply that the term was clear.

As the unclear relative term was found in claim 1 of auxiliary request 11, and auxiliary request 11A, neither request was allowable.

With all the other requests being in violation of the principle of prohibition of reformatio in peius, there was no allowable request, meaning that the patent was to be revoked.

IX. The respondent's essential arguments can be summarised as follows:

The term "layup angle close to 90°" was clear. D13, which, even according to the appellant, represented common general knowledge, used exactly the same language in point 3.1.32 as was used in the claims of the requests. It thus had to be the case that the skilled person was able to interpret this phrase in light of the common general knowledge and apply a technically sound interpretation. Accordingly, there was no lack of clarity.

The respondent did not put forward any reasoning regarding the principle of prohibition of reformatio in peius.

### **Reasons for the Decision**

1. Requests to be considered

1.1 With its decision posted on 21 March 2017 the opposition division had maintained the patent based on auxiliary request 2dD then on file. After the proprietor's appeal was withdrawn (letter dated 22 April 2021), the opponent was the only appellant.

1.2 According to G9/92 (headnote 3), "if the opponent is the sole appellant against an interlocutory decision maintaining a patent in amended form, the patent proprietor is primarily restricted during the appeal proceedings to defending the patent in the form in which it was maintained by the Opposition Division in its interlocutory decision. Amendments proposed by the patent proprietor as a party to the proceedings under

Article 107, second sentence, EPC, may be rejected as inadmissible by the Board of Appeal if they are neither appropriate nor necessary".

- 1.3 As claim 1 of the main request and of each of auxiliary requests 1-4, 4' and 5-10 (including the respective "A requests") is broader than the subject-matter of claim 1 of auxiliary request 11, which is identical to auxiliary request 2dD, on the basis of which the opposition division decided to maintain the patent, these requests are neither appropriate nor necessary in the sense of the aforementioned decision by the Enlarged Board of Appeal. Only auxiliary request 11A, which, by deleting a dependent claim objected to as insufficiently disclosed, is occasioned by the appeal, can be considered to fulfil the criteria of G9/92.
- 1.4 The Board thus concludes that, following the principle of prohibition of *reformatio in peius* (G2/92, *op. cit.*), all the requests except for auxiliary requests 11 and 11A would be inadmissible, unless an exception to the principle of prohibition of *reformatio in peius* were found to be applicable (G1/99, headnote).
- 1.5 G1/99 (headnote, second sentence) allows for such an exception to the principle of prohibition of *reformatio in peius* in order to meet an objection put forward by the opponent/appellant or the Board during the appeal proceedings, in circumstances where the patent as maintained in amended form would otherwise have to be revoked as a direct consequence of an inadmissible amendment held allowable by the opposition division in its interlocutory decision.
- 1.6 In light of the above observations, the allowability of auxiliary requests 11 and 11A, which are clearly

admissible in application of G9/92, is examined in a first step (point 2 below). Then, in a second step (point 3 below), the further requests (see list in point 1.3 above) are examined to determine whether one of them may exceptionally be allowed to be filed in order to overcome the deficiency in application of decision G1/99.

1.7 In this context it is noted that, although, according to G1/99, the respondent could have been allowed to file (additional) requests in order to overcome the deficiency, it did not file a reply to the appellant's letter dated 29 October 2021 and it was not present at the oral proceedings either, thus having chosen not to respond in any way to the possible implications of the principle of prohibition of reformatio in peius invoked by the appellant (*op. cit.*, point (A), pages 1 and 2).

2. Auxiliary requests 11 and 11A - Article 84 EPC

During the opposition proceedings, the assembly defined in claim 1 as granted has been amended to comprise an intermediate segment of flexible pipe comprising a pressure armour layer (13) formed over the internal pressure sheath and being "a structural layer with a **layup angle close to 90°** that increases the resistance of the flexible pipe to internal and external pressure and mechanical crushing loads...".

This amendment is based on the description (page 4, fourth paragraph of the original application; see also paragraph [0018] of the patent specification). In accordance with G3/14, claim 1 as amended in auxiliary requests 11 and 11A may thus be examined for compliance with the requirements of Article 84 EPC to the extent



that the amendment introduces non-compliance with Article 84 EPC.

- 2.1 The appellant argued that the term "layup angle close to 90°" was a relative definition which did not make it possible to discern what fell under the definition of the subject-matter and what did not.

According to established case law, claims must be clear for the sake of legal certainty, as their purpose is to enable the protection conferred by the patent to be determined (Case Law of the Boards of Appeal, 9th edition 2019, II, A.1.1). Claims lack clarity if the exact distinctions which delimit the scope of protection cannot be learnt from them.

The Board agrees with the appellant that the term "close to 90°" in the present context does not make it possible to determine upwards of which angle a structural layer layup angle could be considered to be "close to 90°". The term is vague and does not have an unequivocal, generally accepted meaning in the relevant art. It thus follows from the requirement of legal certainty that the definition in claim 1 of auxiliary requests 11 and 11A is not clear.

The opposition division argued that "close to 90°" would be interpreted by the skilled person with respect to the function of the pressure armour layer and, due to this, the angle would be defined as closely as technically possible to 90°; however, the wording "close to 90°" is different from "as closely as technically possible to 90°". While an angle of 90° might be optimal for the function of the pressure armour, there is no indication in the patent or anywhere else in the file that "as closely as

technically possible to 90°" was indeed meant. Contrary to expressions like "about", "approximately" or "substantially", which in certain circumstances have an established meaning in claim drafting (see e.g. the Guidelines for Examination 2020, F-IV, 4.7.1), the wording "close to 90°" is vague and undefined and does not allow the invention to be distinguished from the prior art.

This evaluation is not changed by the fact that exactly the same language is used in point 3.1.32 of D13, API specification 17J for unbonded flexible pipes. That passage of the document defines what is to be understood as a "pressure armor layer". Therefore, the term "pressure armor layer" could be accepted as having a clear meaning to the skilled person; however, this does not imply that all the wording used in the definition of the term "pressure armor layer" likewise has to be considered clear.

As correctly argued by the appellant, a definition in a standard document did not have to fulfil the requirements of Article 84 EPC. It is rather unrealistic to assume that each and every word used in the 32-page document D13 has been chosen with the diligence required for clear claim drafting. Moreover, even if it provided an indication that the term "pressure armor layer" itself had an established meaning in the art, this did not imply that the wording used in the definition of the term, namely the expression "close to 90°", was likewise clear.

For the purposes of the standard, the term "pressure armor layer" does indeed need to be defined. In view of all the other features, the reader knows what this term means, even if the definition of the layup angle is

relatively vague. In this context it is noted that the definition in point 3.1.32 of D13 comprises further relatively vague features such as "typically consist of" or "may be backed up".

The requirements of clarity are different for a parametric definition in a claim. Here, the purpose is to define the protection conferred. It is thus not sufficient to clearly define what can be considered a "pressure armor layer", but it needs to be clear which angles fall under the feature "close to 90°" of the parametric definition and which do not. This cannot be derived either from the patent specification or from D13. Therefore, the wording "close to 90°" is not clear in the sense of Article 84 EPC, even though it has been used in D13.

- 2.2 To conclude, auxiliary requests 11 and 11A do not fulfil the requirements of Article 84 EPC.
- 3. Admissibility of the further requests on file - G1/99
  - 3.1 Auxiliary requests 4, 4', 9 and 10 (and the respective "A requests") comprise the same unclear feature as auxiliary request 11/11A. They are thus not appropriate for defending the patent and therefore cannot justify an exception under G1/99, as they would clearly be unallowable.
  - 3.2 Requests reintroducing the "jumper alternative", which is not part of claim 1 of auxiliary request 11/11A, put the respondent in a worse situation than if it had not appealed. They are not appropriate or necessary for defending the patent in the form in which it was maintained by the opposition division, as the inclusion of the jumper alternative has no causal link with the

unclear feature "layup angle close to 90°". This is the case for the main request and auxiliary requests 1, 3, 4, 5, 7, 9 and 10 (and the respective "A requests"), which are thus not admissible.

3.3 The unclear feature is not found in the remaining requests 2, 6 and 8, meaning that the clarity objection discussed above does not apply; however, together with the unclear feature, various other features have been omitted, thus putting the appellant in a worse situation than if it had not appealed, without there being a causal link between the omitted features and the deficiency to be overcome. The amendments thus exceed what can be considered an equitable effort by the non-appealing proprietor to defend the patent against the clarity objection.

3.4 It should be noted that the three options set out in G1/99 for an exceptional amendment to overcome the deficiency cannot be chosen *ad libitum*, but need to follow the particular sequence of possibilities for overcoming the deficiency. The first solution for overcoming the deficiency to be considered is to introduce one or more originally disclosed (and clear!) features which limit the scope of the patent as maintained, e.g. the layup angle being 90°. Deleting the inadmissible amendment (e.g. omitting any numerical restriction to the layup angle) would be the third and last option, which is available to the respondent only if the two previous options given in the headnote of G1/99 are not possible.

Without any reasoning from the respondent in this respect, the Board concludes that auxiliary requests 2, 6 and 8 (and the respective "A requests") are also inadmissible.

4. To conclude, all the requests on file are either inadmissible or non-allowable or both. Consequently, the patent has to be revoked.

## Order

### For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The patent is revoked.

The Registrar:

The Chairman:



C. Spira

C. Herberhold

Decision electronically authenticated