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**Datasheet for the decision
of 19 October 2021**

Case Number: T 1136/17 - 3.2.03

Application Number: 05855438.7

Publication Number: 1834063

IPC: E21B17/042, F16L15/06

Language of the proceedings: EN

Title of invention:
THREADS WITH PERTURBATIONS

Patent Proprietor:
Hydril Company

Opponent:
VALLOUREC OIL AND GAS FRANCE

Headword:

Relevant legal provisions:
EPC Art. 83, 84, 123(2), 123(3)
RPBA Art. 12(4)
RPBA 2020 Art. 11, 13(2), 25

Keyword:

Sufficiency of disclosure - (yes)
Claims - clarity in opposition appeal proceedings -
interpretation of ambiguous terms
Late-filed request - submitted with the statement of grounds
of appeal - request could have been filed in first instance
proceedings (no)
Remittal - (yes) - special reasons for remittal
Amendment after summons - exceptional circumstances (yes) -
taken into account (yes)

Decisions cited:

T 0667/08, G 0003/14

Catchword:



Beschwerdekammern
Boards of Appeal
Chambres de recours

Boards of Appeal of the
European Patent Office
Richard-Reitzner-Allee 8
85540 Haar
GERMANY
Tel. +49 (0)89 2399-0
Fax +49 (0)89 2399-4465

Case Number: T 1136/17 - 3.2.03

D E C I S I O N
of Technical Board of Appeal 3.2.03
of 19 October 2021

Appellant: Hydril Company
(Patent Proprietor) 2200 West Loop South, Suite 800
Houston, TX 77027 (US)

Representative: EP&C
P.O. Box 3241
2280 GE Rijswijk (NL)

Respondent: VALLOUREC OIL AND GAS FRANCE
(Opponent) 54, rue Anatole France
59620 Aulnoye-Aymeries (FR)

Representative: Marsolais, Richard
Vallourec & Mannesmann Tubes
Département Propriété Industrielle
27, avenue du Général Leclerc
92100 Boulogne-Billancourt (FR)

Decision under appeal: **Decision of the Opposition Division of the
European Patent Office posted on 17 March 2017
revoking European patent No. 1834063 pursuant to
Article 101(3) (b) EPC.**

Composition of the Board:

Chairman C. Herberhold
Members: R. Baltanás y Jorge
D. Prietzel-Funk

Summary of Facts and Submissions

- I. European patent No. 1 834 063 (hereinafter: "the patent") relates to threads with perturbations.
- II. An opposition was filed against the patent, which was based on Article 100(a) EPC together with Articles 54 and 56 EPC, Article 100(b) EPC and Article 100(c) EPC.
- III. The appeal lies from the opposition division's decision to revoke the patent.

The opposition division considered that the invention was sufficiently disclosed, but that the main request and auxiliary requests 1 to 14 contained subject-matter which extended beyond the original disclosure.

- IV. The patent proprietor (hereinafter: the "appellant") filed an appeal against the above-mentioned decision by the opposition division.
- V. Oral proceedings were held by videoconference, following an announcement by the Board to this effect, which was not contested by any of the parties.
- VI. Requests

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

The appellant requested that the decision under appeal be set aside and that the patent be maintained in amended form on the basis of the main request submitted with the statement setting out the grounds of appeal and a description submitted with the letter dated

13 August 2020, or on the basis of auxiliary requests 1 to 4 submitted with the letter dated 13 August 2020, or on the basis of only the device claims of auxiliary requests 1 to 4 ("type I requests", announced with the letter dated 13 August 2020, not explicitly filed), or on the basis of only the method claim of auxiliary requests 1 to 4 ("type II requests", announced with the letter dated 13 August 2020, not explicitly filed), or on the basis of auxiliary requests 3, 4A, 4B, 5A, 5B, 6A, 6B, 10, 11A, 11B, 12A, 12B, 13A, 13B, 14 and 15, all submitted with the statement setting out the grounds of appeal. For the discussion of novelty and inventive step it was requested that the case be remitted to the opposition division.

The respondent requested that the appeal be dismissed as inadmissible or unallowable and that the main request and all the auxiliary requests filed during the appeal proceedings not be admitted into the proceedings.

VII. Claim 1 of the main request (amendments compared with the version as granted are marked in bold), including the feature numbering as proposed by the appellant, reads as follows:

M1 *A threaded connection comprising:*

M2 *a pin member (101) comprising a pin **wedge** thread having a pin thread crest (222), a pin thread root (221), a pin load flank (225), and a pin stab flank (232);*

M3 *a box member (102) comprising a box **wedge** thread having a box thread crest (291), a box thread root (292), a box load flank (226), and a box stab flank (231), characterized in that:*

- M4 - at least one of the pin thread crest (222), the pin thread root (221) the pin load flank (225), the pin stab flank (232), the box thread crest (291), the box thread root (292), the box load flank (226), and the box stab flank (231) has at least one deviation in an original path made over at least a portion of **a the wedge** thread;
- M5 - after the deviation, being referred to as perturbation, the path returns at least partially towards the original path prior to the deviation, thus a bump is formed on the corresponding flank or root or crest of the pin or the box;
- M6 - the perturbation is between 0,0005 inch (0.0127mm) and 0,005 inch (0,127mm) in size;
- M7 - wherein upon a selected make-up of the pin member (101) with the box member (102), a sharply increased contact pressure exists between mating flanks and/or mating crests/roots, at the location of the perturbation, resulting in a thread seal capable of achieving higher sealing pressure.

VIII. Claim 6 of the main request (amendments compared with the version of the corresponding claim 8 as granted are marked in bold), including the feature numbering as proposed by the appellant, reads as follows:

- P1 A method of forming a thread seal on a connection comprising a pin member (101) and a box member (102),
- P2 wherein the pin member comprises a pin **wedge** thread having a pin thread crest (222), a pin thread root (221), a pin load flank (225), and a pin stab flank (232) and
- P3 the box member comprises a box **wedge** thread having a box thread crest (291), a box thread root (292),

a box load flank (226), and a box stab flank (231), the method being characterized by:

- P4 forming at least one perturbation on at least one of the pin thread crest (222), the pin thread root (221), the pin load flank (225), the pin stab flank (232), the box thread crest (291), the box thread root (292), the box load flank (226), and the box stab flank (231);
- P5 such perturbation being limited to at least a portion of the **wedge** thread,
- P6 and being between about 0,0005 inch (0,0127mm) and about 0,005 inch (0,127mm) in size,
- P7 achieving in this way, upon a selected make-up of the pin member with the box member, a sharply increased contact pressure between mating flanks and/or mating crests/roots, at the location of the perturbation.

IX. Claim 1 of auxiliary request 1 is a combination of claims 1 and 2 as granted and reads as follows (amendments compared with the main request are marked in bold / strikethrough):

- M1 A threaded connection comprising:
- M2 a pin member (101) comprising a pin ~~wedge~~ thread having a pin thread crest (222), a pin thread root (221), a pin load flank (225), and a pin stab flank (232);
- M3 a box member (102) comprising a box ~~wedge~~ thread having a box thread crest (291), a box thread root (292), a box load flank (226), and a box stab flank (231), characterized in that:
- M4 - at least one of the pin thread crest (222), the pin thread root (221) the pin load flank (225), the pin stab flank (232), the box thread crest (291),

the box thread root (292), the box load flank (226), and the box stab flank (231) has at least one deviation in an original path made over at least a portion of a ~~the wedge~~ thread;

...

M6 - the perturbation is between 0,0005 inch (0,0127mm) and 0,005 inch (0,127mm) in size;

M6' - **the pin thread and the box thread are wedge threads,**

...

X. Claim 6 of auxiliary request 1 is a combination of claims 8 and 2 as granted and reads as follows (amendments compared with the main request are marked in bold):

P1 A method of forming a thread seal on a connection comprising a pin member (101) and a box member (102),

P2 wherein the pin member comprises a pin ~~wedge~~ thread having a pin thread crest (222), a pin thread root (221), a pin load flank (225), and a pin stab flank (232) and

P3 the box member comprises a box ~~wedge~~ thread having a box thread crest (291), a box thread root (292), a box load flank (226), and a box stab flank (231), the method being characterized by:

...

P5 such perturbation being limited to at least a portion of the ~~wedge~~ thread,

P6 and being between about 0,0005 inch (0,0127mm) and about 0,005 inch (0,127mm) in size,

P6' **the pin thread and the box thread being wedge threads,**

...

XI. The appellant's arguments can be summarised as follows.

(a) Admissibility of the appeal

Contrary to the respondent's allegation, the requirements of Rule 99(2) EPC regarding the reasons for setting aside the impugned decision were fulfilled. The contested decision regarding the alleged extension of subject-matter was based on three arguments detailed in points 27.2, 27.3 and 27.4 of the decision. The reasoning in each point was contested in points 3.1, 3.2 and 3.3 of the statement setting out the grounds of appeal. The counter-arguments and amendments contained in this statement thus clearly and concisely set out the reasons why it is requested that the decision under appeal be reversed.

(b) Admittance of the main request

At least the reasons provided in points 27.2 and 27.3 of the contested decision were raised for the first time at the oral proceedings before the opposition division, as could be observed in the minutes. The time provided by the opposition division was insufficient for preparing a proper reply to this development in the proceedings, and the main request was consequently filed as a response to it at the earliest possible opportunity, i.e. with the statement setting out the grounds of appeal.

(c) Main request: added subject-matter

As could be ascertained from the statement setting out the grounds of appeal, the appellant's intention was to introduce the subject-matter of claim 2 as granted into

claim 1. The skilled person would have understood this when reading claims 1 and 6 in the light of their technical knowledge, and they would have interpreted this to mean that claims 1 and 6 only encompassed threaded connections in which just wedge threads were used.

Concerning the allegedly missing feature "over a short distance", paragraph [0059] as originally filed disclosed that a sharply rising contact pressure could only occur if the surface of the perturbation and the opposed thread came together over a short distance. The allegedly missing feature was thus implicit in features M7 and P7.

If the opponent's interpretation of features M7 and P7 were followed, the resulting pressure at the location of the bump-like short distanced perturbation once make-up is achieved would have substantially (i.e. sharply) increased with regard to the adjacent sections of the thread, the allegedly missing feature also being implicit in this case.

Concerning the combination of the features "sharply increased contact pressure" and "mating flanks and/or mating crests/roots, at the location of the perturbation", paragraph [0059] as originally filed provided a basis for this combination, as well as the patent application as a whole (e.g. figure 4B and its description).

As regards the different combinations of flanks, crests and roots encompassed by feature M7/P7, paragraphs [0033], [0035], [0050], [0052] or [0059] as originally filed, together with figures 8 and 9 as originally filed, provided a basis for this feature.

Incorporating the subject-matter of device claim 2 as granted in the independent method claim 6 did not contravene Article 123(2) EPC, since the application as originally filed as a whole disclosed several embodiments with the aim of providing a thread seal, including threaded connections consisting alternatively of wedge threads or free-running threads, each of those devices obviously being intended to provide a method of forming a thread seal.

(d) Admittance of auxiliary request 1

The appellant could not have foreseen that the Board would have taken the view that claim 1 of the main request did not comply with Article 123(2) EPC because it encompassed embodiments comprising other threads apart from wedge threads. Auxiliary request 1 was thus filed in response to this new finding, contained only in the Board's preliminary opinion.

(e) Auxiliary request 1: added subject-matter

The application as a whole disclosed the different embodiments corresponding to dependent claims 2 to 5 in combination with the subject-matter of claim 1. More particularly, figures 4 to 9 disclosed wedge threads as in claim 1, whereas:

the example in figures 4A and 4B, together with paragraph [0036], disclosed the at least one perturbation as being located only on one of the pin thread or the box thread as defined in claim 2;

the sinusoidal pattern in claim 3 had a basis in figures 8 and 9 in combination with paragraph [0049];

the size range in claim 4 could be found in paragraph [0038] as originally filed, in which the wedge thread from figures 4A and 4B was discussed;

paragraph [0055] as originally filed disclosed that the groove in claim 5 was a common technical feature which could be provided in wedge threads, as was the case in the patent cited in this paragraph.

(f) Auxiliary request 1: clarity

Since the features to which the respondent had raised an objection corresponded to granted subject-matter, clarity was not open to discussion following the Enlarged Board of Appeal's decision G 03/14.

(g) Auxiliary request 1: sufficiency of disclosure

The feature "sharply increased contact pressure" was brought about by the surfaces coming together at the location of the perturbation, which was the general aim of the patent. The patent thus sufficiently disclosed how to provide this feature in view of the several passages of the description in which the provision of perturbations was explained in detail (e.g. paragraphs [0040] to [0045] of the patent specification).

(h) Remittal

Since novelty and inventive step had not been dealt with in the opposition division's decision, the case was to be remitted for this purpose.

XII. The respondent's arguments can be summarised as follows.

(a) Admissibility of the appeal

The appellant had not indicated the reasons for setting aside the impugned decision in its statement setting out the grounds of appeal, contrary to the requirements of Rule 99(2) EPC. Instead, the appellant had simply filed a new main request which did not correspond to any of the requests dealt with by the opposition division in the contested decision, which actually amounted to accepting the reasons with regard to the requests then on file and not defending them any further. This behaviour was contradictory to the primary object of the appeal proceedings to review the impugned decision in a judicial manner. The appeal was thus to be held inadmissible.

(b) Admittance of the main request

The appellant was not taken by surprise during the oral proceedings before the opposition division, since all objections on which the contested decision was based were known to it beforehand. More particularly:

- the objection concerning the missing feature "over a short distance" was put forward in the notice of opposition (page 8), in which the objection was that the feature "sharply" was isolated from the context of paragraph [0059] as originally filed, which disclosed the feature "over a short distance" as being linked to "sharply";
- the letters from the then opponent dated 16 July 2014 (point I.A.1, page 2) and 4 November 2016 (point 2.2, page 6) also deal with the isolation of the feature "sharply" from the

rest of paragraph [0059] as originally filed, including the missing feature "over a short distance";

- the objection concerning the combination of features "sharply increased contact pressure" and "mating flanks and/or mating crests/roots, at the location of the perturbation" was put forward in point V.3 of the notice of opposition, and was discussed again in points 2.1 and 2.2 of the letter from the then opponent dated 4 November 2016;
- the patent proprietor even dealt with these objections in points 1.b), 1.c) and 1.d) of its letter dated 2 January 2014.

Even if the same words as in the contested decision had not been used in the arguments during the written phase of the opposition proceedings, it should have been evident to a professional representative that the objections ultimately taken up by the opposition division could have arisen.

In any case, the patent proprietor had been given an opportunity to respond appropriately during the oral proceedings, since it was given a break for preparing its case in view of the opposition division's conclusions concerning the inadmissible extension of the subject-matter of the main request. The current main request thus could and should have already been filed during the opposition proceedings.

(c) Main request: added subject-matter

Claim 1 was not limited to thread connections comprising exclusively wedge threads, as was the case in claim 2 as originally filed. The wording of claim 1 encompassed embodiments combining wedge threads and other threads, a possibility which had no basis in the original disclosure.

Feature M7/P7 could not be interpreted as a process feature. The feature did not comprise the wording "sharply **rising** contact pressure" as in paragraph [0059] as originally filed, but "sharply **increased** contact pressure". The change in the verbal form indicated that what was claimed was indeed the condition after the selected make-up had been carried out. The feature "upon" must therefore be understood as "after".

Since feature M7 and P7 concerned a final condition of the contact pressure after the selected make-up had been carried out, and since "sharply" introduced a meaning which was different from that of the merely "increased contact pressure", paragraph [0059] as originally filed could not provide a basis for this feature. This paragraph only concerned the process of carrying out the selected make-up and what happened during this process, but did not disclose that a "sharply increased contact pressure" existed **after** this process had taken place, as was claimed in claims 1 and 6. Consequently, there was no basis in the application as filed for the term "sharply" in the context claimed.

Moreover, the combination of the features "sharply increased contact pressure" and "mating flanks and/or mating crests/roots, at the location of the

perturbation" was not originally disclosed. More particularly, the embodiment in which only the mating crests and roots were combined with the "sharply increased contact pressure" had no basis in the patent application, since this was only disclosed in the context of free-running threads (paragraph [0008] as originally filed), but not of wedge threads. Paragraphs [0050] and [0053] as originally filed did not disclose the feature "sharply", whereas paragraph [0059], which was the only paragraph in which the word "sharply" was disclosed at all, only concerned a combination of mating flanks **and** mating roots and crests.

Paragraph [0033] as originally filed and figure 8B could not provide a basis for feature M7/P7 either, since the feature "sharply" was missing as well.

There was no basis for the amendments in method claim 6 of the main request, since none of the method claims as originally filed included a wedge thread. Furthermore, paragraphs [0015] and [0016] of the description as originally filed, which concerned the method of forming a thread seal, did not disclose this feature either.

(d) Main request: Extension of protection conferred by the patent

Claims 1 and 6 extended the protection conferred by the patent, since they encompassed embodiments which were not covered by the claims as granted, namely pin and box threads comprising a wedge thread and a free-running thread. Claims 2 and 4 as granted only defined threads which were exclusively wedge threads or free-running threads, respectively.

(e) Main request: Lack of disclosure

In view of the natural variations due to tolerances of the machinery used to produce a thread, the skilled person would not be able to reproduce the claimed invention.

(f) Admittance of auxiliary request 1

Article 13(2) RPBA 2020 required exceptional circumstances to exist in order to take into account amendments to a party's case after a communication from the Board had been issued. This was not the case here, since the appellant had been aware of the problems surrounding the added feature "wedge thread" since receiving the respondent's reply to the grounds of appeal. Instead of responding to this objection at the earliest possible opportunity, the appellant had consciously decided to wait for the Board's preliminary opinion, and only then had filed an amended auxiliary request 1. The fact that the Board raised an objection under Article 123(2) EPC instead of Article 123(3) EPC, as in the fifth and sixth paragraphs of point 4.1 of the respondent's reply, was not an exceptional circumstance. Furthermore, the seventh paragraph of the same point raised the objection in question under Article 123(2) EPC.

(g) Auxiliary request 1: added subject-matter

The respective objections to the main request concerning claims 1 and 6 were also applicable to claims 1 and 6 of auxiliary request 1.

Furthermore, since claims 3, 6, 8 and 9 as originally filed were only dependent on claim 1, the combination

of the current claim 1 (including the features of claim 2 as originally filed) with dependent claims 2 to 5 (corresponding to claims 3, 6, 8 and 9 as originally filed) did not have a basis in the original disclosure. Moreover, no passages of the application as originally filed disclosed the combination of the features in question with the features "sharply" or "wedge thread".

(h) Auxiliary request 1: clarity

The combination of claims 1 and 4 lacked clarity due to the contradiction between the size ranges defined in each of these claims. It was allowable to examine the clarity of these claims, since this concerned a combination of features which had been produced by the amendments made to the claims as granted.

(i) Auxiliary request 1: sufficiency of disclosure

The skilled person did not find any information which might have enabled them to put the feature "sharply increased contact pressure" into practice. Paragraph [0059] as originally filed, which was the only passage that disclosed this wording, introduced unclear limitations like "over a short distance", and lacked any instructions or steps which might have informed the skilled person of how to reproduce the feature in question.

(j) Remittal

At the end of the oral proceedings before the Board, the respondent agreed that the case was to be remitted for further prosecution.

Reasons for the Decision

1. Admissibility of the appeal (Rule 99(2) EPC and Article 12(2) RPBA 2020)

The Board does not share the respondent's view concerning the alleged implication of non-admissibility of the appeal due to the appellant filing a new main request instead of defending its requests on file before the opposition division for the following reasons:

The opposition division's decision only concerned Article 123(2) EPC and was based on three arguments, which were developed in points 27.2, 27.3 and 27.4 of the decision.

In points 3.1, 3.2 and 3.3 of the statement of the grounds of appeal, the appellant provided either explanations of how the amendments made to claim 1 of the new main request addressed these reasons or counter-arguments for the same.

The statement setting out the grounds of appeal thus explained the reasons why the objection under Article 123(2) EPC was to be considered to have been overcome by claim 1 of the main request, meaning that the decision was to be set aside, in line with the requirements of Rule 99(2) EPC and Article 12(2) RPBA 2020.

Therefore, the appeal is admissible.

2. Main request
 - 2.1 Admittance (Article 12(4) RPBA 2007)

- 2.1.1 The opposition division based its decision concerning extension of subject-matter beyond the original disclosure on four specific objections.
- 2.1.2 Objection in point 27.2 ("over a short distance")

The opposition division considered that the feature "over a short distance" was inextricably linked to the feature "sharply rising contact pressure" in claim 1, such that the omission of the former from the subject-matter of claim 1 resulted in an unallowable extension. According to the respondent, this course of events had been foreseeable and a relevant auxiliary request overcoming the objection could and should have already been filed before the opposition division.

The Board does not agree with the respondent's arguments as to why the appellant should have been aware of or expected this objection before the oral proceedings took place.

Page 8 of the notice of opposition deals with two specific objections concerning Article 123(2) EPC, namely:

- the replacement of the term "stress" with "pressure" compared with the claims as originally filed (point V.I);
- the addition of the feature "sharply **increased** contact pressure" to claim 1, which differs from the originally disclosed feature "sharply **rising** contact pressure" (point V.2).

Even if point V.2 quoted the last sentence of paragraph [0059] as originally filed, which contains the expression "over a short distance", an objection was not raised in connection with the omission of this particular feature. The objection in point V.2 was only based on the **different meaning** of "increased" versus "rising", stating that only the latter was originally disclosed in combination with the feature "sharply". The last paragraph of point V.2 does not add any new information in this respect either, since it merely refers to the alleged isolation of the feature "sharply" from paragraph [0059] when introducing it into claim 1 **by giving it a different meaning.**

Consequently, the content of page 8 of the notice of opposition did not render it foreseeable that an objection would be raised concerning the omission of the feature "over a short distance".

The letters from the then opponent dated 16 July 2014 and 4 November 2016 also did not hint at the objection in point 27.2 of the contested decision.

Point I.A.1 on page 2 of the first letter again concerns the replacement of the feature "stress" with "pressure" and the allegedly missing original disclosure of the feature "a sharply increased contact pressure between mating crests/roots". Point I.D.1 of the same letter repeats the quote from the same portion of paragraph [0059] as in the notice of opposition, and adds an argument as to whether the feature "a sharply increased contact pressure" was originally disclosed in **combination with the effect of the perturbations.**

Point 2.2 on page 6 of the letter dated 4 November 2016 contains an objection based on the combination of the

features "**bump**" and "sharply increased contact pressure", which allegedly lack any basis in the original disclosure. An objection is not raised in connection with the absence of the feature "over a short distance", and the last paragraph of this point instead acknowledges that a bump in the context of claim 1 implies a strong variation within a short distance.

In view of the above, the appellant could not infer from any of the written submissions cited by the respondent that at least the objection dealt with in point 27.2 of the contested decision was to be put forward at the oral proceedings.

- 2.1.3 The question of whether or not the objections in point 27.3 of the decision were foreseeable can thus be left open.
- 2.1.4 Since at least the objection in point 27.2 was only raised during the oral proceedings, the case was changed at the last possible moment in a way which could not have been foreseen by the patent proprietor. Even if it had been given a break in order to respond to this course of events, the patent proprietor could not have been expected to immediately consider all possible fall-back positions. Filing a new request with the statement setting out the grounds of appeal in an attempt to overcome that objection was thus indeed a timely and appropriate response.
- 2.1.5 In view of the above, the Board sees no reason to exercise its discretion under Article 12(4) RPBA 2007 not to take into account the main request filed with the statement setting out the grounds of appeal.

2.2 Added subject-matter (Articles 100(c) and 123(2) EPC)

2.2.1 Features M2, M3, P2 and P3 ("comprising a pin/box wedge thread")

Point 2.0 of the statement setting out the grounds of appeal states that the main request corresponds to a combination of claims 1 and 8 as granted with claim 2 such "*that the threads on the pin member and the box member are wedge threads*" (underlined in the original).

However, it is not the appellant's declared intention that has to be taken into account when analysing whether an amendment complies with Article 123(2) EPC, but the objective content of the request.

Claim 2 as originally filed (and granted) reads "*wherein the pin thread and the box thread **are** wedge threads*" (emphasis added), i.e. the pin thread and the box thread cannot comprise any thread portion which is not a wedge thread. This has not been contested by the appellant.

In contrast to this, claims 1 and 6 of the main request claim a pin member **comprising** a pin wedge thread (feature M2, P2), and a box member **comprising** a box wedge thread (feature M3, P3), i.e. the literal meaning implies that the pin thread and the box thread may include thread portions which are not wedge threads.

Since no basis has been indicated by the appellant for a thread connection as defined in claims 1 and 6 comprising wedge threads and other types of thread, it must be concluded that the subject-matter of claims 1

and 6 extends beyond the original disclosure in an unallowable manner (Article 123(2) EPC).

2.2.2 Interpretation of features M7 and P7 ("upon", "increased")

The appellant's argument concerning the character of features M7 and P7 being "process features" is not persuasive.

Features M7 and P7 start with the wording "*upon a selected make-up of the pin member with the box member*". While the term "upon" could be understood, as a rule, by the skilled person either as "during" or "after", claim 1 goes on to specify that, upon a selected make-up of the pin member with the box member, "*a sharply **increased** contact pressure exists between mating flanks and/or mating crests/roots*" (emphasis added; equivalent wording is used in claim 6).

The Board agrees with the respondent that the verbal form ("increased") clearly informs the skilled person reading the claim of a **final condition** of the contact pressure, and does not concern an ongoing process of variation of the same. This is clear from the wording of the feature and does not result in any technical contradiction. There is therefore no need to consult the description of the patent to ascertain the meaning of features M7 and P7 in this respect.

Features M7 and P7 must therefore be interpreted as defining a final condition of the contact pressure (i.e. "sharply increased") **after** a selected make-up of the pin member with the box member.

2.2.3 Feature "**sharply** increased"

- (a) The respondent argues that paragraph [0059] as originally filed cannot support the introduction of the feature "sharply" into claims 1 and 6, since this passage concerns the process of varying the contact pressure **during** make-up, but not the final condition after it.

The Board finds this consideration to be correct; see point 2.2.2 above.

However, the fact that the feature "sharply" has no basis in paragraph [0059] does not necessarily imply that the claimed subject-matter extends beyond the original disclosure, as will be explained below.

- (b) The assessment of added subject-matter must take into account the whole of the application as originally filed, a literal basis for each added feature in the text not being necessary under Article 123(2) EPC (see Case Law, ninth edition, 2019, II.E.1.3.2 and II.E.1.3.3, and in particular decision T 667/08, point 4.1.4). Instead of this, it must be assessed whether the skilled person could infer the resulting content of the amendment from the original disclosure as a whole.
- (c) Therefore, in order to analyse whether the addition of the feature "sharply" results in an unallowable extension of subject-matter, an interpretation of the feature must take place.

- (d) The term "sharply" is a relative one. When applied to a "sharply increased contact pressure", as in claims 1 and 6, it requires a reference against which an assessment can be made as to whether or not a contact pressure is "sharply increased". In the absence of such a reference, the feature is unclear.

Consulting the description of the **patent specification** does not shed any further light on this issue, since the term "sharply" is only used in the last sentence of paragraph [0060], in which the **process of varying** the contact pressure **during** make-up is discussed instead of the **final condition** of the same **after** the make-up (see point 2.2.2 above).

According to G3/14 an unclear term in a granted claim is something which needs to be lived with. In accordance with established case law such an unclear feature is to be given its broadest technically meaningful interpretation.

The patent as a whole concerns a threaded connection providing an improved thread seal for wedge threads (see last sentence of paragraph [0013]) by means of a perturbation which produces a localised increased contact pressure (see paragraphs [0014] and [0032]) with regard to the adjacent regions of the thread **after** a selected make-up. This general aim of the invention is disclosed in detail in the particular embodiments of the patent specification involving wedge threads (see column 9, lines 17 to 27; column 13, lines 14 to 27; or column 14, lines 51 to 55), in which it is also disclosed that "*the desired amount of*

contact pressure created by the perturbation may vary based on the pressure to be sealed" (see column 14, line 55 to column 15, line 2). In addition, in view of the short helical length of the "bumps" (see e.g. the drawings), the pressure at the perturbation is substantially higher than the pressure at locations at which no perturbation is present.

- (e) The skilled person reading the description in an attempt to clarify the meaning of "sharply" in the context of a "sharply increased **ed** contact pressure" for wedge threads, i.e. in the final state **after** a selected make-up, thus derives that, in the broadest technically meaningful sense, the sharply increased contact pressure must be an increased contact pressure at the location of the perturbation in order to produce the thread seal **after** a selected make-up.

- (f) In several passages (see paragraphs [0013], [0014], [0031], [0035], [0037], [0043], [0048], [0049] and [0054] as originally filed), in particular in the context of wedge-threaded connections as defined in claims 1 and 6, the application as originally filed discloses the need for a substantially increased / greater contact pressure at the location of the perturbation in order to produce the thread seal **after** a selected make-up as being the core of the invention.

- (g) Consequently, the addition of the unclear feature "sharply" in the interpretation derived above does not extend the subject-matter of claims 1 and 6 beyond the content of the application as originally filed (Articles 100(c) and 123(2) EPC).

2.2.4 Feature "mating flanks and/or mating crests/roots at the location of the perturbation" in feature M7/P7

In view of the interpretation of the feature "sharply" (see preceding point), the respondent's arguments concerning the combination of this feature with the feature "mating flanks and/or mating crests/roots at the location of the perturbation", and also those concerning the particular embodiment "or mating crests/roots", cannot be agreed with.

The respondent based its argument on the lack of disclosure combining these features/this embodiment with the feature "sharply"; however, as the feature "sharply" has to be interpreted in the manner set out in point 2.2.3.(e) above, the content of paragraph [0059] as originally filed cannot be considered to be the (only possible) basis for this combination, but instead other passages of the original disclosure dealing with the provision of an increased contact pressure for producing a thread seal are relevant.

Paragraph [0033] as originally filed discloses that the term perturbation "*refers to a deviation in an original path of the load flank, the stab flank, the root, or the crest on the thread such that a bump is formed thereon*" (emphasis added). Perturbations involving mating flanks and/or mating crests/roots at the location of the perturbation, and in particular involving only the crests/roots, are thus disclosed.

Paragraph [0035] discloses that the effect of such variations in the lead or height of a thread is that an increase in contact pressure takes place in order to form a thread seal (see first and third sentences).

The application as originally filed thus discloses the embodiment in which a "sharply" increased contact pressure, in the sense of claims 1 and 6 as discussed above, exists between mating flanks and/or mating crests/roots at the location of the perturbation, and in particular only between mating crests/roots.

2.2.5 Claim 6: combination of claims

In the absence of any new arguments from the respondent concerning the alleged extension of subject-matter in claim 6 because of the combination of the independent method claim with a former dependent device claim, the Board's opinion remains the same as that already put forward in the preliminary opinion.

The application as originally filed stated that the object of the invention was to provide a thread seal (see paragraph [0013]). Paragraphs [0014] and [0016], corresponding to the "Summary of the invention" section, disclosed that the aim of the invention was to provide a threaded connection and a method of forming a thread seal. The "Detailed description" section (paragraphs [0031] to [0061]) disclosed a number of embodiments of the invention, wherein wedge threads and free-running threads were proposed together with methods of forming such threads (see paragraphs [0039] and [0041]), with the general aim of forming a thread seal (see paragraphs [0035], [0052] and [0053]).

Therefore, the application as originally filed as a whole disclosed that the aim of forming a thread seal could be achieved by providing and using any of the disclosed embodiments of the description concerning threads, including wedge threads. Therefore it was

originally disclosed that a method of forming a thread seal could incorporate one of the originally disclosed threads, e.g. the claimed wedge thread.

2.3 Extension of the protection conferred by the patent (Article 123(3) EPC)

In the absence of any new arguments by the respondent at the oral proceedings, the Board maintains its preliminary opinion as put forward to the parties.

Independent claims 1 and 8 as granted, which established the maximum scope of protection granted by the patent, merely defined a pin thread and a box thread, without specifying the kind of thread in each case. Therefore, claims 1 and 8 as granted encompassed any pin and box thread, including threads composed of different types of threads, such as those suggested by the respondent.

The amended claims 1 and 6 of the main request therefore do not extend the protection conferred by the patent as granted.

2.4 Sufficiency of disclosure (Article 83 EPC)

The respondent's argument regarding the natural variations in the machinery used to produce a thread and their alleged implications concerning the reproduction of the invention cannot be agreed with. The Board remarks that no new arguments were provided at the oral proceedings in this respect and sees no reason to deviate from its preliminary opinion.

As the opposition division correctly stated in this respect, the person skilled in the field of machining

threads in pipes is well aware of the tolerances produced by their machinery, and therefore, when reading the detailed description of the patent specification (see in particular paragraphs [0043] to [0059]), they would be able to implement the invention.

2.5 Conclusion

In view of the considerations in point 2.2.1 above, the main request is not allowable.

3. Auxiliary request 1

3.1 Admittance (Article 13(2) RPBA 2020)

3.1.1 The Board agrees with the appellant that the circumstances of the case justify the admittance of auxiliary request 1 for the following reasons.

3.1.2 The respondent alleges that it had already raised the objection discussed in point 2.2.1 above in point 4.1 of its reply to the grounds of appeal and that auxiliary request 1, in response to this, could and should have been filed earlier.

The title of point 4.1 of the reply to the statement of grounds of appeal was "*Contrariétés à l'article 123(2) et (3)*". This point concerned the main request.

The title of the cited point does not imply that all the facts stated in it should be regarded as objections under both Article 123(2) and 123(3) EPC, since the legal basis differs.

While the fifth paragraph of point 4.1 raised an objection under Article 123(3) EPC against claims 1 and

6 due to the alternative "wedge thread plus a **non wedge thread**" ("*une portion wedge et.. une autre portion*"), the sixth paragraph stated that the particular embodiment "wedge thread plus **free-running thread**" ("*des portions wedge et free running*") was **not encompassed by the patent specification**. It did not, however, explicitly explain whether this was stated in the context of Article 123(3) EPC or for any other purpose. Article 123(2) EPC was not cited as the legal basis for a corresponding objection on the basis of this paragraph, which concerned the patent specification and **not the original disclosure** anyway, and no objection was explicitly raised beyond enunciating a fact for which the consequences were not detailed. Even if the seventh paragraph of point 4.1 mentions an unallowable intermediate generalisation that is allegedly not in accordance with the requirements of Article 123(2) EPC, it does so without giving any details or specifics of the objection.

- 3.1.3 Consequently, the Board's preliminary opinion was the first time that this objection was raised specifically.
- 3.1.4 The appellant therefore had the right to respond to this new objection and did so in its next submissions by filing auxiliary request 1.
- 3.1.5 In view of the above, exceptional circumstances can be identified which justify the admittance of auxiliary request 1 under Article 13(2) RPBA 2020.
- 3.2 Added subject-matter (Article 123(2) EPC)
 - 3.2.1 Claims 1 and 6 of auxiliary request 1 now incorporate the original wording of claim 2 as filed (and as granted). This clarifies that the pin thread and the

box thread are wedge threads. The objection in point 2.2.1 above has thus been overcome.

3.2.2 Since the only amendments in claims 1 and 6 with regard to the main request concern the feature "wedge thread", the same reasoning applies as for the main request in points 2.2.2 to 2.2.5 above, in which the respective objections were found to be unconvincing.

3.2.3 Claims 2, 3, 4 and 5

The respondent objected that the combination of dependent claims 2 to 5 (corresponding to dependent claims 3, 6, 8 and 9 as originally filed) with claim 1 of auxiliary request 1 was not originally disclosed. This is not convincing for the following reasons:

The claimed invention originally disclosed a threaded connection in which only two types of threads were envisaged in the particular embodiments: either a wedge thread or a free-running thread (see e.g. last sentence of originally filed paragraph [0013], paragraph [0036], wedge threads, and paragraph [0052], free-running threads). The invention was originally claimed without specifying the kind of thread used (see also paragraph [0014] as originally filed), and therefore the skilled person reading the patent application was aware that either of those two types of threads could be used in the claimed invention.

Claim 2 as originally filed defined pin and box threads as being wedge threads, whereas claim 5 as originally filed defined free-running threads, each claim thus corresponding to one of the only two possible particular embodiments as originally disclosed.

Even if each of claims 3, 6, 8 and 9 as originally filed (corresponding to claims 2, 3, 4 and 5 of the auxiliary request 1) were only dependent on claim 1, the skilled person would immediately understand that each of the embodiments was to be implemented in combination with either wedge threads or free-running threads, since they were the only two originally disclosed particular embodiments concerning the type of thread. Indeed, if the dependencies in the original claim tree were strictly applied, dependent claims 3, 6, 8 and 9 as originally filed would not be combined with either of the two disclosed threads, as none of the original dependent claims 3, 6, 8 and 9 is dependent on claim 2 or claim 5 as originally filed – an interpretation which obviously does not make sense.

This is further confirmed by the disclosure of the particular embodiments, in which the features of dependent claims 3, 6, 8 and 9 are explicitly disclosed in combination with wedge threads:

- Claim 2: perturbations only on one of the pin thread or the box thread can be seen in the example in figures 4A and 4B, together with the last two sentences of paragraph [0036];
- Claim 3: a substantially sinusoidal pattern for the perturbations on one of the pin thread or the box thread can be seen in figures 8 and 9 in combination with the first six sentences of paragraph [0049];
- Claim 4: the particular sizes claimed are disclosed in the fifth sentence of paragraph [0038];

- Claim 5: a groove formed in only a portion of at least one of the pin thread root or the box thread root is discussed in paragraph [0055] in connection with wedge threads.

In view of the interpretation of the feature "sharply" (see point 2.2.3.(e) above), the addition of this feature does not result in the need for a supplementary basis in the application as originally filed concerning the claimed embodiments, since they all concern the provision of a contact pressure which is substantially increased at the location of the perturbation with respect to the adjacent regions in which no perturbation is provided **after** a selected make-up.

3.3 Clarity (Article 84 EPC)

Contrary to the respondent's opinion, the alleged lack of clarity of claim 1 does not arise from an amendment to the claim in the sense of the Enlarged Board of Appeal's decision G 03/14.

The respondent argued that the size ranges in claims 1 and 4 involved a contradiction resulting in a lack of clarity.

The size range in claim 1 of "about 0,0005 inch (0,0127 mm) to about 0,005 inch (0,127 mm)" was defined in claim 1 as granted.

The size range in claim 4 of "about 0,001 inch (0,0254 mm) to about 0,002 inch (0,0508 mm)" was defined in claim 6 as granted, which was dependent on claim 1.

The combination of both size ranges was thus part of the subject-matter of the claims as granted. It is irrelevant to this discussion that the pin and box threads have been defined as "wedge threads" following an amendment to claim 1 after grant, since claim 1 does not define any interaction between the form of the thread and the size of the perturbation of this thread. The amendment to claim 1 thus does not entail any modification to the features concerning the size of the perturbation which could have introduced non-compliance with Article 84 EPC in the sense of G3/14.

Consequently, the alleged objection of a lack of clarity raised by the respondent cannot be examined (see Order of G 03/14).

3.4 Insufficiency of disclosure (Article 83 EPC)

The respondent's arguments cannot succeed, since the interpretation of the feature "sharply" (see point 2.2.3.(e) above) implies that the skilled person does not need any further information to reproduce this feature in combination with wedge threads apart from what is discussed below.

Paragraphs [0040] to [0043] as well as the drawings of the patent specification provide detailed information on how to produce a perturbation which will achieve a substantially increased contact pressure at the location of the perturbation with respect to the adjacent regions in which no perturbation is provided in order to obtain a thread seal after a selected make-up.

The skilled person thus finds all the necessary information to reproduce the invention in the patent specification.

4. Remittal (Article 111 EPC and Article 11 RPBA 2020)

The appellant requested that the case be remitted if novelty and inventive step of auxiliary request 1 were to be discussed.

The respondent agreed to this during the oral proceedings.

However, the Board shall only remit a case to the department whose decision was appealed for further prosecution if special reasons present themselves for doing so.

The contested decision did not discuss either novelty or inventive step, and therefore there is no decision to review in this respect; however, a review of the decision in a judicial manner is the primary object of the appeal proceedings (Article 12(2) RPBA 2020).

The Board considers that the above-mentioned circumstances amount to special reasons in the sense of Article 11 RPBA 2020, and therefore decides to remit the case for further prosecution to the opposition division in the exercise of its powers under Article 111(1) EPC.

Order

For these reasons it is decided that:

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

The Registrar:

The Chairman:



C. Spira

C. Herberhold

Decision electronically authenticated