Internal distribution code:

(A) [-] Publication in OJ
(B) [-] To Chairmen and Members
(C) [-] To Chairmen
(D) [X] No distribution

Datasheet for the decision of 28 February 2017

Case Number: T 2216/13 - 3.3.06

Application Number: 09006866.9

Publication Number: 2092971

IPC: B01D33/03, B07B1/46, E21B21/00, E21B21/06, B01D35/20, C09K8/00

Language of the proceedings: EN

Title of invention:
Apparatus for screening drilling mud

Patent Proprietor:
Axiom Process Limited

Opponent:
Openshaw, Paul Malcolm

Headword:
Screening apparatus / AXIOM

Relevant legal provisions:
EPC Art. 52(1), 54, 56, 84, 100(b)

Keyword:
Sufficiency of disclosure (yes)
Inventive step - main request (no) - auxiliary request (yes)
Postr-grant amendment not objectionable under Article 84 EPC (auxiliary request) - combination of granted claims

Decisions cited:
G 0003/14

Catchword:

Europäisches Patentamt
European Patent Office
Office européen des brevets

Beschwerdekammern
Boards of Appeal
Chambres de recours

European Patent Office
D-80298 MUNICH
GERMANY
Tel. +49 (0) 89 2399-0
Fax +49 (0) 89 2399-4465

Case Number: T 2216/13 - 3.3.06

D E C I S I O N
of Technical Board of Appeal 3.3.06
of 28 February 2017

Appellant 1: (Patent Proprietor)	Axiom Process Limited Unit 10B Brunswick Industrial Estate Newcastle Upon Tyne Tyne and Wear NE13 7BA (GB)
Representative:	Newell, Campbell Marks & Clerk LLP Atholl Exchange 6 Canning Street Edinburgh EH3 8EG (GB)
Appellant 2: (Opponent 2)	Openshaw, Paul Malcolm Openshaw & Co. 8 Castle Street Farnham Surrey GU9 7HR (GB)
Representative:	Potter, Julian Mark WP Thompson 138 Fetter Lane London EC4A 1BT (GB)
Decision under appeal:	**Interlocutory decision of the Opposition Division of the European Patent Office posted on 19 August 2013 concerning maintenance of the European Patent No. 2092971 in amended form.**

Composition of the Board:

Chairman	B. Czech
Members:	P. Ammendola
	C. Heath

Summary of Facts and Submissions

I. The appeals by the Patent Proprietor and the two Opponents are from the interlocutory decision of the Opposition Division concerning maintenance of European patent No. 2 092 971 in amended form. The patent in suit was granted on a divisional application of the application internationally published under number WO 2004/110589 (below parent application).

II. Independent claims 1 and 13 of the patent as granted read as follows:

"*1. A basket (4) suitable for use in a vibratory screening apparatus (1), for use in removing solids from a liquid and solids mixture feed, said basket (4) mounting a stack of at least three screen assemblies (8',8'',8'''), with superposed screen assemblies separated from each other by a respective flow directing tray (9',9''):*

said stack of at least three screen assemblies (8',8'',8''') being provided with a flow distributor (15) formed and arranged so as to be switchable between a plurality of different flow directing configurations, including;

a) a parallel processing configuration in which said flow distributor receives filtrate from a primary upper screen assembly (8') and divides said filtrate into at least a first feed stream and a second feed stream, directs said feed streams onto respective ones of first (8'') and second (8''') screen

assemblies, and receives filtrate from said respective flow directing trays(9''); and

b) an intensive screening configuration in which the whole of the filtrate from a primary upper screen assembly (8') is directed onto a first screen assembly (8'') and the whole of the filtrate from said first screen assembly is directed onto a second screen assembly (8''')."

"*13. A vibratory screening apparatus (1) for use in removing solids from a liquid and solids mixture feed, said apparatus comprising a basket according to claim 1 and further comprising a static outer housing (2), said housing comprising: a base support (60) formed and arranged for mounting at least one said basket (4) in floating manner so as to be vibratable, in use of the apparatus, by a vibrator device (10) formed and arranged for vibrating said basket (4), said base support (60) having a sump (61) for receiving filtrate from said basket (4), and said housing (2) having a feed device (64) formed and arranged for directing said liquid and solids mixture feed to said basket (4) mounted in said base support (60).*"

Dependent claims 2 to 12 as granted are directed to more specific embodiments of the basket of claim 1. In particular, claim 10 reads as follows:

"*10. A basket as claimed in any one of claims 1 to 9 wherein the flow distributor (15) is mounted on the basket (4).*"

The remaining dependent claims 14 and 15 as granted are directed to more specific embodiments of the vibratory screening apparatus of claim 13.

For the sake of conciseness of this decision, the following abbreviations are used herein below:

- The three screens and the two trays of the claimed basket are identified by the reference numbers used in claim 1 (i.e. " ***8'*** " to " ***8'''*** " and " ***9'*** " and " ***9''*** ").
- The expressions "**PP configuration**" and "**IS configuration**" are used to indicate, respectively, the "***p****arallel* ***p****rocessing* ***configuration***" defined in feature "*a)*" of granted claim 1 and the "***i****ntensive* ***s****creening* ***configuration***" defined in feature "*b)*" of the same claim.

III. Oppositions had been filed by two Opponents on the grounds of Article 100 (a) to (c) EPC.

IV. During the opposition proceedings the following documents were, *inter alia*, referred to:

P-1: WO 01/81014 A2

and

SSH: "*Shale Shakers and Drilling Fluid Systems*", 1999, Gulf Professional Publishing; in particular page 72 describing an "IMCO 3-D Shaker".

V. The Patent Proprietor with letter of 5 June 2013 filed a amended set of claims labelled Auxiliary Request 1. Claim 1 thereof differs from claim 1 as granted only in that it additionally specifies that the basket

comprises (inserted wording made apparent by the Board)

"... *a flow distributor (15)* ***mounted on the basket (4) and*** *formed and arranged ...*".

Dependent claims 2 to 9 of the Auxiliary Request 1 are identical to the granted claims with the same numbering, while the remaining claims 10 to 13 correspond to the granted claims 12 to 15 renumbered.

VI. During the oral proceedings before the Opposition Division the Patent Proprietor filed, *inter alia*, an amended description as (part of the) Auxiliary Request 1, as well as amended claims as Auxiliary Request 2.

VII. In the contested decision, the Opposition Division came to the following conclusions.

The granted patent contained no subject-matter extending beyond the content of the parent application (Article 100(c)/76(1) EPC).

The patent in suit enabled the skilled person to carry out several embodiments of the invention. The Opponents were wrong in asserting that granted claim 1 embraced insufficiently disclosed
- baskets partially illustrated by Figures 7 to 10B of the patent itself, as well as
- embodiments operating in an IS configuration without any contribution of the flow distributor in redirecting the flow of matter (i.e. baskets that in the IS configuration caused the whole filtrate of screen 8' to reach the screen 8'' and the whole filtrate from this latter to reach screen 8''', without entering or contacting the flow distributor.
[Herein below, such baskets allegedly representing

embodiments falling within the ambit of granted claim 1 are referred to as **"IS without flow distributor" baskets**.]

The basket according to claim 1 as granted was novel over the prior art. More particularly, the IMCO 3-D shaker did not to show a basket with a flow distributor as claimed.

However, the subject-matter of claim 1 as granted did not involve an inventive step taking the apparatus disclosed in Figure 1 of document P-1 as closest prior art, in combination with the teaching in document SSH relating to the possibility of superposing a scalping screen above the fine screens of a shale shaker, in order to prevent fouling (e.g. clogging) or damaging of the latter.

Auxiliary Request 1 was objectionable under Article 84 EPC because the amended description belonging to this request did not support the claims as amended.

The amended version of the patent according to the then pending Auxiliary Request 2 was, however, found to comply with the EPC.

VIII. With its statement setting out the grounds of appeal dated 23 December 2013 Appellant 1 (herein below **Proprietor**), filed

- as Auxiliary Request 1, a copy of the Auxiliary Request 1 (claims and amended description) that had been pending before and refused by the Opposition Division, and
- a new set of amended claims labelled Auxiliary Request 2, to be considered in combination with the

amended description according to Auxiliary Request 1.

IX. With a further letter of 20 May 2014 the Proprietor filed four further sets of amended claims as Auxiliary Requests 3 to 7, indicating hat the claims of Auxiliary Request 3 were also to be considered in combination with the amended description found allowable by the Opposition Division.

X. In its statement of grounds of appeal, Opponent 1 maintained objections under Article 100(a) (inventive step only), (b) and (c) EPC against the patent in the amended version held allowable by the Opposition Division. However, with letter of 11 January 2017 it withdrew its opposition and its appeal.

XI. At the Oral Proceedings of 28 February 2017 Opponent 2 expressly withdrew objection under Article 100(c)/76(1) EPC. As regards inventive step it submitted additionally that the subject-matter of claim 1 (Main Request and Auxiliary Request 1) was also obvious taking the shale shaker partially shown in Figure 11 of P-1 as the closest prior art.

XII. Final requests

Appellant I (Patent Proprietor) requested that the decision under appeal be set aside and the patent be maintained as granted (Main Request) or, in the alternative, that the patent be maintained in amended form on the basis of:

- the claims and the amended description of the Auxiliary Request 1 filed with the statement of grounds of appeal, or

- the claims of Auxiliary Request 2 filed with the statement of grounds of appeal in combination with the description according to Auxiliary Request 1, or
- the claims of Auxiliary Request 3 filed with letter of 20 May 2014 with the description according to the request held allowable by the Opposition Division, or
- the claims according to one of the Auxiliary Requests 4 to 7 filed with letter of 20 May 2014.

The Appellant II (Opponent 2) **requested** that the decision under appeal be set aside and the patent be revoked.

XIII. The submissions of the Proprietor of relevance here may be summarised as follows.

Main Request (patent as granted)

The Opposition Division had erred in finding that the apparatuses of Figures 7 to 10B of the patent in suit were not in accordance with claim 1 as granted. Hence, the patent in suit enabled a person skilled in the art to carry out all the embodiments illustrated by the Figures of the patent, as well as the variations thereof explicitly suggested in particular in paragraph [0010] of the patent specification. Claim 8 contained a clear suggestion of the further possibility to utilize a weir of variable height and that a skilled person was able to design such a weir even in the absence of any further explicit instructions in this respect in the patent in suit.
The alleged lack of an enabling disclosure of "IS without flow distributor" baskets was irrelevant since

such baskets were not embraced by claim 1 as granted, as correctly considered by the Opposition Division.

The description of the IMCO 3-D Shaker in SSH was not a direct and unambiguous disclosure of an apparatus with all the features of claim 1 as granted. In particular, means causing the specific flow of matter required according to claim 1 for a basket in PP configuration were not even implicitly disclosed.

The apparatus illustrated in Figure 11 of P-1 was more remote from an apparatus according to claim 1 at issue, since in the former the separation of the feed into two streams did not occur in the distribution apparatus depicted, but at the connection between the two pipes 100 and 102 and the "holding tank" mentioned in the last sentence on page 6 of P-1. In any case, the person skilled in the art would not even contemplate the theoretical possibility of providing the basket of any of the shale shakers disclosed in P-1 with a further scalping screen, because this would necessarily require further cumbersome modifications and/or the addition of further parts. In particular, the additional holding tank, necessary for the functioning of the apparatus of Figure 11, would cause a substantial increase in the area of floor space required by the base of the shale shaker [herein below this surface is referred to as **foot print]**, this being contrary to the aim of the invention to retain a small foot print of the screening apparatus.

Auxiliary Request 1

The Opposition Division had erred in not maintaining the patent in the amended form according to the Auxiliary Request 1 on the grounds of a non-compliance

with Article 84 EPC, if only because the alleged non-compliance was not caused by the amendments made (G 3/14, OJ 2015, 102).

As regard inventive step, the additional requirement of claim 1 that the flow distributor had to be "*mounted on the basket*" meant that all parts of the former had to be fixed to the basket and would, thus, be vibrating therewith. As correctly observed by the Opposition Division, it was self-evident that this additional requirement produced the additional technical advantage of mitigating the propensity of solids contained in fluid to sediment and clog the flow paths while passing through the flow distributor.
Whether starting from Figure 1 or from Figure 11 of P-1, it would not have been obvious to the person skilled in the art to add a scalping screen to such an apparatus, if only because this would require a number of complex and foot print-increasing modifications. Moreover, it had not been obvious either to the person skilled in the art to mount the entire flow distribution equipment illustrated in Figure 11 onto the vibrating basket, because of the presence in this apparatus of pipes carrying (possibly manually operated) valves. It was self-evident to the person skilled in the art that pipes with valves fixed on a vibrating basket were prone to failure due to the mechanical stress this entails.

XIV. The counter-arguments of the Opponent may be summarised as follows.

Main request (patent as granted)

The claimed invention was insufficiently disclosed considering the following aspects:

- Claim 1 as granted was very broadly formulated.

- However, the patent only disclosed how to implement a single kind of basket according to granted claim 1, i.e. the one illustrated in Figures 2A-4B and in paragraphs [0018] to [0020] of the patent.

- Figures 7 to 10B and the corresponding description in paragraphs [0026] and [0029] clearly implied that granted claim 1 also embraced baskets in which the flow distributor contained a "*weir*". However, it was not apparent from the Figures and the patent description how to arrange and/or form such weir allowing to switch the flow distributor between the two configurations, as required by the claim.

- Claim 1 also embraced "IS without flow distributor" baskets for which the patent provided no enabling disclosure either.

- Also the list of alternative types of flow distributor in paragraph [0010] of the patent and the mere mention in claim 8 of "*a variable height weir*" were not sufficient to enable the skilled person to realise further embodiments of the patented basket.

The basket of claim 1 as granted lacked novelty over the IMCO 3-D Shaker. Those features of claim 1 that were not explicitly mentioned were nevertheless implicit features of such prior art apparatus.

In any case, a basket as claimed was not inventive. As apparent from e.g. document SSH, pages 111, 112, 142 and 143, the use of an upstream scalping screen, optionally incorporated into the upper part of the

shale shaker's basket, was a conventional measure in the removal of gumbo and large drilled particles from drilling fluid and, thus, for avoiding fouling and prolonging life time of the finer mesh screens of the shale shakers. Hence, it was also obvious for the skilled person to add a scalping screen to the upper part of the basket of the shale shaker disclosed in Figure 11 of P-1, which already had a limited foot print and allowed both parallel and series processing configurations. It was well within the ordinary skills of the person skilled in the art to carry out such addition. In particular, it was self-evident that such modification also implied the addition of a tray, possibly with a sufficiently dimensioned gutter at its lower end, to be connected either directly to the pipes 100 and 102 of the embodiment of Figure 11 of P-1, or to an additional holding thank feeding such pipes. The aim, mentioned in paragraph [0007] of the patent, of avoiding or keeping "*relatively little*" any increase of the foot print of the screening apparatus could not be equated to a requirement for exclusion of even the smallest increase of the foot print beyond the minimum dimensions required for holding the vibrating basket. This was also immediately apparent when comparing the two equally preferred embodiments of the invention illustrated in Figures 11 and 12 of the patent in suit. Thus, the skilled person would arrive at the subject-matter of claim 1 at issue in an obvious manner when staring from Figure 11 of P-1.

Auxiliary Request 1

The Opposition Division had correctly refused Auxiliary Request 1 for non-compliance of amended claim 1 with Article 84 EPC. In the present case, a non-compliance already present in the claims as granted was aggravated

by the amendment made to granted claim 1, i.e. the incorporation therein of the feature present in granted claim 10. This aggravation of non-compliance was in itself objectionable under Article 84 EPC. Since it arose as a consequence of the amendment, present claim was open to objections under Article 84 EPC.

As regards inventive step, it had to be considered that the added feature requiring the flow distributor to be "*mounted on the basket*" did not imply that the whole of it had to be fixed on the basket. In any case, this additional feature did not provide any disclosed or self-evident technical advantage. Thus, the subject-matter of claim 1 was merely the result of the obvious measure of adding an upper scalping screen to either of the two embodiments of the prior art disclosed in Figures 1 and 11 of P-1, respectively, in order to prevent the damage or fouling of the fine shale shaker's screens.
Starting from the apparatus of Figure 1 of P-1 the person skilled in the art "simply" needed to close the bottom of the riser box (80) and to direct the filtrate of the added scalping screen to the center of the upper opening of such (modified) box, in the middle point between the weirs.
Starting from the apparatus of Figure 11 of P-1, the skilled person would certainly envisage fixing the pipes and valves of the "header system" to the vibrating basket, as this measure could be expected to minimize the foot print.
The subject-matter of claim 1 of Auxiliary Request 1 was thus also obvious.

Reasons for the Decision

Main Request (patent as granted)

1. The finding of the Opposition Division that the granted patent contains no subject-matter extending beyond the content of the parent application (Article 100(c) EPC) ultimately remained undisputed.

   The Board sees no reason for calling this finding into question.

2. Sufficiency of disclosure

2.1 The Opposition Division found that the patent as granted was not objectionable under Article 100(b) EPC essentially because (decision under appeal, Reasons, 1.3, penultimate paragraph) the patent taught in Figures 2A-4B and in paragraphs [0018] to [0020] how to implement the basket with a flow distributor as defined in claim 1 as granted. This teaching enabled the skilled person to manufacture a basket comprising a flow distributor in which flap valves permitted switching between the PP configuration and the IS configuration as required.

2.2 The Opponent maintained that such disclosure would be insufficient considering the breadth of claim 1.

   i) It stressed that paragraph [0010] of the patent in suit contained an open-ended generic list of flow control devices as alternatives to flap valves, whereby compared to the only embodiment actually disclosed in sufficient detail, the subject-matter falling within the ambit of claim 1 was expanded to a plethora of conceivable embodiments, but without providing any

further guidance:

ii) Indeed, the preferred baskets partially illustrated in Figures 7 to 10B, in which the flow control device was a "*weir*", did not sufficiently disclose in which way the two apparently fixed weirs of different heights schematically depicted in these figures were "*switchable*" one into the other.

iii) Moreover, claim 1 as granted was so broadly formulated that it even embraced "IS without flow distributor" baskets, for which the patent in suit manifestly provided no enabling disclosure either.

2.3 These arguments do not convince the Board for the following reasons.

2.3.1 An insufficiency objection requires that there are serious doubts, based on technical considerations and/or substantiated by verifiable facts. The mere fact that a claim is broad is not in itself a ground for considering that there is insufficiency of disclosure.

2.3.2 The fact that there is a plethora of conceivable embodiments suggested by the description and falling within the ambit of claim 1 does not *per se* necessarily imply that the skilled person is only able to carry out the/those specific embodiment/s that is/are disclosed in detail in the patent. Moreover, Opponent 2 presented no technical considerations and/or verifiable facts rendering plausible that the disclosure of the embodiments illustrated in Figures 2A-4B in combination with the mentioned alternatives to the flap valves listed in [0010] would not enable a person skilled in the field of vibratory screening apparatuses for the liquid/solid separations to design various

modifications of these embodiments without undue burden.

2.3.3 As to the alleged lack of reproducibility of baskets according to claim 1 in which the flow distributor contains a weir, the Opponent essentially argued that the weir-containing flow distributor illustrated by the modules in the Figures 7 to 10B and described in paragraphs [0026] and [0029] were not embodiments of the claimed invention because the weirs were not "*switchable*", i.e. they disclosed two distinct flow distributors with fixed weirs of different height, which could only be transformed one into the other by dismantling the whole basket and replacing the weir by a weir of different height.

The Proprietor rebutted this objection arguing essentially that it would be apparent from paragraphs [0029] and [0032] that in the context of the invention a "*switchable*" flow distributor was any flow distributor that could be "*reconfigured*", e.g. also by "replacing" therein a weir with another weir of different height. Thus, also the two modules of Figures 7 to 10B were embodiments of the subject-matter of claim 1.

2.3.4 However, the Board is also convinced that neither Figures 7 to 10B nor the corresponding description, including the specific passages in paragraph [0029] pointed to by the Patent Proprietor, allow to conclude that the flow distributors in the baskets illustrated in these figures are to be understood as being "*switchable*" between different configurations as required according to claim 1.

In particular, the Board has no doubts that the person

skilled in the art reading the definition of the flow distributor given in claim 1 would attribute its conventional meaning, in a mechanical context, to the term "*switchable*". According to such meaning, in the context of claim 1, a flow distributor which is "*switchable*" between the IS and PP configurations must necessarily comprise parts that are movable between different positions/orientations, and not merely a part which have to be removed and replaced by another part to achieve the change in flow configuration.

2.3.5 Such a meaning is also clearly different from the description of the flow distributor of Figures 7 to 10B as provided in paragraph [0029], according to which the module with PP configuration (Figures 7 to 8B) "*may be readily reconfigured*" into the module with IS configuration (Figures 9 to 10B) in that "*the weir* (39) *is replaced by a high wall (57)*", i.e. is replaced by another weir of increased height. This paragraph thus only discloses replacing a fixed weir of a given height by another fixed weir of a different height. Hence, paragraph [0029] neither mentions "*switchable*" flow distributors nor is it formulated in a way that justifies the conclusion that the term "*switchable*" is used in the patent in suit to also designate flow distributors reconfigurable by exchanging replaceable parts thereof.

Accordingly, the Board holds that the skilled person reading the patent as granted would not consider that Figures 7 to 10B and the corresponding description passages relate to baskets that comprise a "*switchable*" flow distributor as required according to claim 1 at issue.

2.3.6 Thus, the Board finds that, as correctly observed by

the Opponent, the weir-containing modules illustrated in Figures 7 to 10B and described in paragraphs [0026] and [0029] do not *per se* disclose, i.e. make available to the public, further embodiments of the subject-matter of claim 1 as granted, since these Figures and paragraphs of the patent in suit provide no teaching on how to design a weir-containing flow distributor that is "*switchable*" between the two required configurations.

2.3.7 However, the Board holds that the person skilled in the art reading of the patent in suit is nevertheless prompted by the disclosure of the two distinct flow distributors of Figures 7 to 10B (differing in that the weirs 39 and 57 have different heights) to at least consider the possibility of realizing a single flow distributor according to the patented invention with a single weir whose height could be "*switched*" between two different levels. As correctly pointed out by the Proprietor, the explicit mention in claim 8 of the possibility that the flow control device in the flow distributor may also be "*a variable height weir*", represents a further clear pointer in the patent in suit to such embodiments of the claimed basket.

2.3.8 For the Board, the fact, stressed by the Opponent, that the patent in suit does not disclose how to realize a "*variable height weir*" according to claim 8, i.e. having a height "*switchable*" between two different levels, does not represent an insurmountable obstacle for the person skilled in the art. Absent any evidence to the contrary, the Board is convinced that it is merely a matter of technical common sense and well within the abilities of the person skilled in the art to conceive a weir with a variable height, comprising sliding or other movable parts parts.

2.3.9 Thus, the Board concludes that the skilled person is also able to fabricate baskets as claimed, wherein the flow control device "*switchable*" between the two configurations of the flow distributor is a "*variable height weir*".

2.4 The further objection that "IS without flow distributors" baskets are insufficiently disclosed is based on the assumption that the subject-matter of claim 1 actually also encompasses such baskets.

2.4.1 The Opponent justifies such assumption stressing that in claim 1 only the definition of the PP configuration in feature "*a)*" explicitly required the flow distributor to direct the flow of matter, whereas in feature "*b)*" the wording defining the IS configuration did not explicitly require that the filtrates coming from screens 8' and 8'' (i.e. those respectively collected by the trays 9' and 9'') had to flow trough the flow distributor before reaching the subsequent screen.

2.4.2 However, as also correctly observed in the decision under appeal (Reasons, 1.3, second paragraph), the person skilled in the art reads claim 1 taking into account all the other features of the claims and, if expedient, the whole disclosure of the patent.

2.4.3 Although means ensuring the desired flow of matter are not explicitly mentioned in feature "*b)*" of claim 1, the person skilled in the art reading the definition doubtlessly understands that the claimed baskets also mandatorily comprise (in addition to the screens 8' to 8''' already explicitly mentioned in the definition in "*b)*")

- the flow distributor and

- the trays 9' and 9''.

The trays are explicitly described (also in claim 1 itself) as having the function to separate the screens and to direct the flow of the filtrates coming from the screens above them.
Hence, the trays' function is precisely to avoid that the filtrate from screen 8' or that from screen 8'' flows (e.g. drops) directly onto the screen below, i.e. they have rather the function to prevent the spontaneous occurrence of a flow of matter as ensured by the IS configuration.

2.4.4 Thus, the only reasonable conclusion regarding the implications of feature "*b)*" of claim 1 is that, similarly to what happens in Figures 2 to 5 for the embodiment with flap valves, also in the IS configuration it is always the flow distributor which (in accordance with its name) ultimately redirects as desired the filtrates collected by the trays 9' or 9''.

2.4.5 Hence, the Board comes to the conclusion that "IS without flow distributor" baskets are not embraced by claim 1 as granted. Thus, the allegation that the patent in suit provides no enabling disclosure of such baskets is not relevant in assessing the sufficiency of disclosure of the invention as claimed.

2.5 Accordingly, in the Board's judgement, the patent in suit is not objectionable under Article 100(b) EPC.

3. Novelty

3.1 Opponent 2 maintained that the subject-matter of claim 1 as granted lacked novelty over the description, in documents SSH (page 72, left-hand column), of the IMCO

3-D Shaker, an apparatus comprising "three fine mesh screens" and "a **bypass gate** which can handle any volume of fluid, **hinged mud control gates** which regulate flow of mud to the screens" (emphasis added by the Board).

3.1.1 In particular, Opponent 2 disagreed with the finding in the decision under appeal that the description of the IMCO 3-D Shaker document SSH did not disclose a flow distributor as defined in claim 1. It argued essentially that those features of claim 1 that were not explicitly mentioned in the description of the IMCO 3-D shaker were nevertheless necessarily implicit features thereof.

3.1.2 For instance, the explicit reference to said "bypass gate" amounted to an implicit disclosure of a flow distributor allowing to switch between PP and IS configurations as required by claim 1 as granted, because it was common general knowledge that parallel and series processing may generally be used to cope with varying capacity demands, i.e. parallel processing being used when high capacity was required and series processing when capacity requirements were low. Moreover, the term "bypass gate" as such implied that at least one screen could be bypassed, the shaker thereby operating in a parallel mode.

3.2 The Board holds, however, that even assuming (*arguendo* only) in favour of Opponent 2 that the description given in document SSH necessarily implies that the IMCO 3-D Shaker is switchable between parallel and series processing by appropriate settings of the "bypass gate"and/or "hinged gate(s)", this would not imply that the IMCO 3-D Shaker is necessarily an apparatus comprising, at least implicitly, a basket with all the mandatory features of claim 1 at issue.

3.2.1 For instance, the parallel processing possibly implied by the term "bypass gate" is not necessarily the same as the one entailed by the PP configuration as defined in claim 1: whereas according to a specific design feature of the latter, the splitting into two (or more) parallel liquid streams only occurs after the liquid feed has already passed the (first) screen "*8'*", the description of the IMCO 3-D Shaker might as well just imply that the feed might is split in three parallel liquid streams before being subjected to first (and only) filtration (in a kind of fully parallel mode) within the apparatus.

3.2.2 Nor are said "bypass gate" and/or "hinged mud control gates" necessarily "*switchable*" within the meaning of this term in the context of claim 1 (see point 2.3.4, *supra*), i.e. able to alternate between parallel or series processing.

3.3 If only for these reasons, the Board concludes that the description, in document SSH, of the IMCO 3-D Shaker does not directly and unambiguously disclose an apparatus with all the features of claim 1 as granted. The subject-matter of claim 1 is, thus, novel (Articles 52(1) and 54 EPC).

4. Inventive step

4.1 The invention

4.1.1 The patent in suit is directed to a basket (claim 1) and a vibratory screening apparatus (claim 13) comprising such basket.

4.1.2 According to the description of the patent (paragraph [0007]), what was aimed for was to provide a screening

apparatus with an increased effective screen surface area also permitting parallel flow processing and a relatively little or no increase of the size of the apparatus.

4.2 The closest prior art

4.2.1 Considering the similarities, in terms of the technical issues addressed and the devices disclosed, between the patent in suit and document P-1, the Board accepts that the latter represents the closest prior art.

4.2.2 Indeed, document P-1 (page 1, lines 6 to 13; page 1, line 31, to page 2, line 7) discloses a "tandem" shale shaker, i.e. a vibratory screening apparatus with at least two screen assemblies, for removing solids from a liquid and solids mixture feed such as a drilling fluid, that allows to "enhance the capacity of the shale shaker during high mud volumen operations without increasing their foot print".

4.2.3 The shale shakers according to P-1 (claims, Figures 1, 3 and 11) comprise a stack of (at least) two superposed screen assemblies ("14/16", ""18/20"), mounted on a "basket 22" movably mounted on and with respect to the base. The two screen assemblies are separated from each other by a "flowback pan 30" (i.e. a flow directing tray). The basket also comprises distribution conduits, flow directors and a distribution apparatus, such that switching between parallel and series processing configurations is possible by appropriate settings of the flow directors and of the distribution apparatus. This is not in dispute.

4.2.4 More particularly, the embodiment partially illustrated in Figure 11 and described in words (page 5, line 29,

to page 6, line 10) in P-1 [herein below **the apparatus of Figure 11**] comprises *inter alia* a (flow) distribution system ("header system 110") consisting essentially of two pipes ("100", "102") with corresponding outlets ("92", "94"), each controlled by a valve ("96","98") and arranged such as to feed (unscreened) fluid mixture into conduit(s) ("troughs" "104", "106") leading onto the superposed screen assemblies mounted onto "basket 22". In the apparatus of Figure 11, "the valves may be replaced by other flow regulating devices ... for example, using ... weirs which are raised and lowered to reduce or increase the flow rate, respectively, of unscreened material exiting a holding tank and fed to the shaker" (P-1, page 6, last sentence).

4.2.5 The Board holds that the person skilled in the art reading P-1 understands that the apparatus of Figure 11 may be switched between parallel and series configurations by appropriate operation of the two valves (96 and 96) which are part of the distribution apparatus.

4.2.6 Accordingly, for the Board, the shale shaker disclosed in P-1 / Figure 11 represents a most appropriate starting point for the assessment of inventive step.

4.2.7 The fact that in parallel configuration the actual separation of the feed into two streams occurs in a part of the apparatus not depicted in Figure 11, but rather occurs at the point were the two pipes are connected to the holding tank, does not imply, as alleged by the Proprietor, that the apparatus of Figure 11 is more remote from the subject-matter of claim 1 at issue than the prior art apparatus depicted in Figure 1 of P-1.

Indeed, it only implies that in the embodiment illustrated by Figure 11 the portion of the apparatus responsible for the distribution of the feed onto one and/or the other of the two screen assemblies extends to parts that are not depicted in that Figure, but nevertheless disclosed in the same citation.

4.3 The technical problem as apparent from the patent

4.3.1 The Board notes that the technical problem addressed in the patent is not only that explicitly mentioned (e.g. in paragraphs [0007] and [0008]) of providing a vibratory screening apparatus with a large effective screening area and allowing parallel or series operations, but with relatively little or no increase the apparatus' size/foot print.

4.3.2 The Board accepts the undisputed fact that a person skilled in the processing of used drilling fluid by means of shale shakers, is indeed familiar with the conventional measure of first passing the drilling fluid through a "scalping" screen in order to prevent fouling and to prolong the lifetime of the fine mesh size screens (see e.g. in document SSH, page 142, Figure 7-2, item "Scalping Shaker"; page 143, last paragraph of section "GUMBO REMOVAL"; page 111, first paragraph of section "CASCADE SYSTEM"). Hence, the Board is convinced that the person skilled in the art reading the patent in suit will understand in particular from paragraphs [0003] ("*reduce maintenance*"), [0008] ("*reduces operating costs for screens consumed*"), [0012] ("*meshes of successively finer cut*") and [0025] ("*Each module has a first, coarse mesh, upper scalping, deck 30 with a first, coarse mesh, screen 31*") that the "*primary upper screen assembly (8')*" of the claimed basket and patent

invention is meant to be a "*coarse mesh*" or "*scalping*" screen and, thus, that its (implicit) function is manifestly the removal of gumbo and/or large materials from the feed prior of its filtration by the finer downstream screens.

Accordingly, the patent in suit is also concerned with increasing the lifetime of the shale shaker's fine mesh screens (i.e. preventing their damaging) and/or reducing their propensity for fouling (by clogging).

4.3.3 Thus, the Board holds that, according to the patent in suit, the technical problem to be solved by the claimed device is that of providing a screening basket for a vibratory apparatus for screening liquid/solids mixture which at the same time

- has, in combination, a small "foot print" and a large effective screening area;
- allows parallel or series operations, and
- ensures that the fine screens have a long—lifetime and show little propensity to fouling.

4.4 The solution

4.4.1 As a solution to this technical problem the patent in suit proposes the basket defined in claim 1 as granted and the vibratory screening apparatus according to claim 13 comprising such a basket (see wording of claims 1 and 13 under II, *supra*).

4.5 Success of the solution

4.5.1 It is self-evident and undisputed among the Parties that the proposed solution meets the objectives formulated as the technical problem under 4.3.3, *supra*, i.e. that a basket as claimed, when incorporated in a

vibratory screening apparatus, provides all the sought-for properties, i.e.

- the combination a small foot print with a large effective screening area,
- the possibility of switch between parallel and series operations, and
- long—lifetime and little propensity to fouling.

4.5.2 In particular, the Board considers plausible that, compared to the basket and flow distribution system of the apparatus according to the closest prior art (the apparatus of Figure 11 of P-1), the provision of a basket additionally comprising primary upper screen 8' acting as scalping screen will ensure that the downstream finer mesh screens last longer and are less prone to to clogging.

4.5.3 Hence, the subject-matter of claims 1 and 13 as granted effectively solves the posed technical problem.

4.6 Obviousness

4.6.1 The assessment of the obviousness of the proposed solutions thus boils down to considering whether or not the person skilled in the art seeking to solve the technical problem posed would obviously consider modifying the shale shaker according to P-1 /Figure 11 in a manner resulting in an apparatus falling within the ambit of of claim 1 at issue.

4.6.2 Firstly, as already indicated above at point 4.3.2, the Board accepts the undisputed fact that it is conventional in the relevant technical field to prolong the lifetime of screens and to prevent their clogging by pre-filtering drilled mud through a "scalping" screen.

Hence, the skilled person would consider such possibility as a matter of engineering routine when seeking to solve the posed technical problem.

4.6.3 Secondly, it is also undisputed that, as apparent e.g. from page 112 of SSH (see the section entitled "The Integral Unit with a Single Vibratory Motion"), the skilled person would also be aware of the possibility to incorporate a scalping screen in the upper part of the vibrating basket itself.

For the Board, this would even be a most obvious option in the present case, where the person skilled in the art is also aiming at keeping small the foot print of the screening apparatus.

4.6.4 The Board holds that the incorporation of such an additional scalping screen into the apparatus of Figure 11 of P-1 would only require further measures involving routine design options readily available to the person skilled in the art of shale shakers. In particular, since the functioning of the distribution apparatus (i.e. the "header system 110 with a first outlet 92 , a second outlet 94, a first valve 96 and a second valve 98"; see P-1, page 5, last paragraph) shown in Figure 11 requires the feed material to enter the depicted portion of the apparatus by means of the two pipes 100 and 102, the person skilled in the art would certainly consider necessary to locate a tray below the additional scalping screen so as to collect the filtrate of this latter and to direct it to these pipes either directly or via further conduits and/or an additional holding thank.

As convincingly argued by Opponent 2, a separate "holding tank" needs not, however, necessarily be

foreseen, since it may be sufficient to provide a gutter of appropriate dimensions at the lower end of the tray.

Moreover, the Proprietor's further line of argument that the addition of a holding tank would be incompatible with the aim of rendering available a shale shaker with small "foot print" is not conclusive, either. Indeed, for the Board, the aim of the invention mentioned in [0007] of the patent specifications. i.e. to avoid or to keep "*relatively little*" any increase of the "foot print" of the screening apparatus only refers to an alternative wherein the same effective screening is provided without superposing screen assemblies. This appears to be corroborated, for instance, by a comparison of the two equally preferred embodiments of the invention illustrated in Figures 11 and 12 of the patent in suit, which appear to have a significantly different foot print for one and the same type of basket.

4.6.5 Accordingly, the Board concludes that a person skilled in the art seeking to solve the stated technical problem in all aspects would arrive at a basket the subject-matter of claim 1 at issue without particular ingeniousness.

4.7 Hence, in the Board's judgement, the subject-matter of claim 1 as granted does not involve an inventive step (Article 52(1) and 56 EPC) and is thus objectionable under Article 100(a) EPC.

4.8 Thus, the Proprietor's Main Request is not allowable.

Auxiliary Request 1

5. Allowability of the amendments

5.1 No added matter

The Board is satisfied that the amendments made to the claims and the description according to this request are not objectionable under Article 123(2) EPC or 76(1) EPC. Since this is not disputed by Opponent 2, detailed reasons need not be given in this respect.

5.2 Clarity objection not to be considered

5.3 The Board also finds that, contrary to the finding of the Opposition Division in this respect, the modifications resulting in such amended version of the patent are not objectionable under Article 84 EPC for the following reasons.

5.4 Claim 1 of Auxiliary Request 1 is the result of the incorporation, into granted claim 1, of the feature of dependent claim 10 as granted according to which the flow distributor "*mounted on the basket*".

5.5 According to decision G 3/14 the Enlarged Board of Appeal (OJ 2015, 102, Order and Reasons, 80 and 81), a claim amended post-grant, e.g. by incorporation of features from a dependent claim, is open to objections under Article 84 EPC "only when, and then only to the extent that the amendment introduces non-compliance with Article 84 EPC".

5.6 The Board holds that the alleged non-compliance with Article 84 EPC possibly due to the fact (considered by the Opposition Division, see decision under appeal,

Reasons, 2.2) that there is a contradiction between the requirement expressed in claim 1 at issue that the flow distributor must be "*switchable*" and the fact that the corresponding amended description does not mark the embodiments illustrated in Figures 7 to 10B as "not falling within the scope of claim 1" or the like, does not arise from the amendment in question.

5.6.1 Indeed, as set out *supra* (points 2.3.4 and 2.3.5) claim 1 as granted requires the flow distributor to be "*switchable*". Hence, considering the patent as granted, the embodiments illustrated in Figures 7 to 10B and described in [0021] and [0029] do not fall within the ambit of claim 1 either, let alone of claim 10 as as granted.

5.6.2 Thus, the Board concludes that the discrepancy between claim 1 and the description at issue is the same as the one between claim 10 and the description of the patent as granted. The mere allegation of Opponent 2 that the amendment made to claim 1 would aggravate and, hence, result in a new or further non-compliance with Article 84 EPC, is thus not convincing.

5.7 Accordingly, the Board concludes that Auxiliary Request 1 is not objectionable under Article 84 EPC.

6. Novelty

6.1 The subject-matter of claim 1 at issue novel since it is more limited than the novel subject-matter of claim as granted.

6.2 By implication, the vibratory screening apparatus of independent claim 11, which comprises a basket according to claim 1, and the subject-matter of all the

dependent is also novel vis-à-vis the prior art invoked (Articles 52(1) and 54 EPC).

7. Inventive step

7.1 The invention

7.1.1 Claim 1 at issue only differs from claim 1 as granted in that the "*flow distributor*" is additionally required to be "*mounted on the basket*", i.e. to be mounted on the vibrating portion of the screening apparatus.

7.1.2 Opponent 2 had initially argued that this feature would not necessarily mean that the whole flow distributor had to be mounted on the basket.

The Board rejects this construction because it is contrary to the conventional and clear meaning of the wording used. Moreover, the amended description explicitly qualifies as "not according to the invention" those Figures 6 and 11 in which the flow distributor is not fully mounted on the basket, and even Figures 7 to 10B, which illustrate modules without any "switchable" weirs, only describe flow directing means fixed on the basket.

7.2 The closest prior art and the technical problem

7.2.1 Opponent 2 also disputed the finding of the Opposition Division (decision under appeal, Reasons, 2.1, fourth paragraph) that a person skilled in the art would be aware that a vibrating environment would fluidise the fluid contained in the flow distributor and, thus, cause a reduction of the risk of sedimentation or clogging of the drilling mud passing through the flow distributor. It has stressed that also in P-1 there is

no mention that the drilling mud tended to settle or clog in the distributor apparatuses of this prior art.

In the following reasoning, the Board accepts (*arguendo* only) in favour of Opponent 2 that mounting also the flow distributor onto the vibrating basket implies no additional advantageous technical effect possibly justifying the choice of a closest prior art and/or a a formulation of the technical problem solved differing from those identified under 4.2 and 4.3, *supra*.

7.3 The solution

As a solution to the technical problem posed (4.3.3, *supra*), the patent proposes the basket defined in claim 1 at issue, comprising a stack of (at least) three screen assemblies separated by (at least) two trays and a flow distributor mounted on the basket and being switchable between the PP and IS configurations and is also characterised in that it "*mounted on the basket*".

7.4 The success of the solution

It is plausible and undisputed that a basket according to claim 1 of Auxiliary Request 1 effectively solves the posed technical problem for the reasons already mentioned under 4.5, *supra*.

7.5 Non-obviousness of the proposed solution

7.5.1 As already set out above (see 4.6.2 to 4.6.4, *supra*), the person skilled in the art would obviously envisage solving the technical problem by incorporating in the upper part of the basket of Figure 11 a scalping screen and a tray collecting its filtrate so as to direct it to pipes 100 and 102, possibly via further conduits

and/or a holding tank.

However, such obvious modification would not necessarily result in an apparatus wherein all parts of the flow distributor, i.e. at least pipes "100" and "102" and valves 96 and 98 are "*mounted on the basket*" as required by claim 1 at issue.

7.5.2 Opponent 2 argued that in implementing such modification, the person skilled in the art would also, inevitably, fix to the vibrating basket the pipes and valve(s) of the distribution arrangement shown Figure 11 of document P-1 for the sake of minimizing the foot print.

7.5.3 This rather vague argument does not convince the Board since, as correctly argued by the Proprietor,the person skilled in the art would be aware of problems potentially caused by the mechanical stress acting on pipes carrying valves exposed to vibrations. Thus, the person skilled in the art would be reluctant to mount a distribution system as illustrated in Figure 11 onto the vibrating basket.

7.5.4 The Board moreover observes that none of the prior art cited shows an example of a flow distributor clearly "*mounted on the basket*". In particular, it is undisputed that also in the only other distribution apparatus disclosed in document P-1, i.e. the one depicted in Figures 1 and 8, at least the riser box 80 of said distribution apparatus appears to be supported independently from the basket and, thus, not subjected to the vibration of the basket.

7.5.5 Hence, the Board concludes that the person skilled in the art starting from the apparatus of Figure 11 and

seeking to solve the posed technical problem was not induced by the prior art or common general knowledge to modify this apparatus by mounting the entire flow distributor on the basket.

7.6 Merely for the sake of completeness, the Board also sets out herein below why the alternative inventive step objection of Opponent 2, taking the apparatus depicted in Figure 1 of document P-1 as the closest prior art, is not conclusive, either.

7.6.1 The apparatus of Figure 1 comprises a "riser box 80" illustrated in Figure 8. According to Opponent 2, adding a scalping screen on the top of apparatus would be an obvious measure resulting in an apparatus falling within the ambit of claim 1.

7.6.2 The Board notes however that the measures proposed by the Opponent as being apt for directing, into the distribution apparatus illustrated in Figure 8 of P-1, the filtrate of a scalping screen added on the top of the basket, are manifestly rather complex.

Indeed, the proposed modifications implicitly require the transformation of the "riser box" into a holding tank, as well as the provision of means for carefully pouring the filtrate from the scalping screen onto the center of the top of such tank.

Hence, the Board is satisfied that such measures require to substantially depart from the functioning principle of the apparatus of Figure 1 of P-1, e.g. because the used drilling mud would no longer "rise" through the "riser box", and are neither suggested by the prior art nor self-evident. Thus, such measures are only obvious based on hindsight considerations.

Moreover, given that P-1 itself discloses in Figure 11 an embodiment in which the incorporation of the scalping screen only requires the more conventional measures already described at 4.6.4 above, it is simply not plausible that the person skilled in the art reading P-1 would primarily consider modifying the embodiment of Figure 1 (rather than the one of Figure 11) in a way substantially changing its functioning principle.

7.6.3 Hence, if only for these reasons, the alternative line of reasoning of the Opponent is also rejected.

7.7 In the Board's judgement, the subject-matter of independent claims 1 (basket) and 11 (vibratory screening apparatus comprising such basket) provides a solution to the technical problem that is not obvious in view of the prior art invoked. Hence, the subject-matter of these claims and, by implication, of dependent claims 2 to 10, 12 and 13, thus involves an inventive step (Articles 52(1) and 56 EPC).

8. Adapted description

The amended description pages according to Auxiliary request 1 properly reflects the post-grant amendments made to the claims (Article 84 EPC).

Conclusion

9. For the above reasons, the patent as amended according to the Proprietor's Auxiliary Request 1 complies with the requirements EPC.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the department of first instance with the order to maintain the patent in amended form with

- claims 1 – 13 and description pages 1 – 6 and 10 – 18 of Auxiliary Request 1 filed with the Proprietor's statement of grounds of appeal; and
- drawing sheets 1/6 to 6/6 of the patent as granted.

The Registrar: The Chairman:

D. Magliano B. Czech

Decision electronically authenticated