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**Datasheet for the decision
of 10 November 2022**

Case Number: T 0131/21 - 3.2.01

Application Number: 15826146.1

Publication Number: 3234303

IPC: E21B33/035, E21B33/038,
E21B33/076, E21B43/013,
E21B41/10

Language of the proceedings: EN

Title of invention:

APPARATUS, SYSTEMS AND METHODS FOR OIL AND GAS OPERATIONS

Patent Proprietor:

Enpro Subsea Limited

Opponent:

FMC Kongsberg Subsea AS

Headword:

Relevant legal provisions:

EPC Art. 54, 56

Keyword:

Novelty - main request (yes)

Inventive step - main request (no) - obvious combination of known features

Decisions cited:

Catchword:



Beschwerdekammern

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Case Number: T 0131/21 - 3.2.01

D E C I S I O N
of Technical Board of Appeal 3.2.01
of 10 November 2022

Appellant: FMC Kongsberg Subsea AS
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Decision under appeal: **Interlocutory decision of the Opposition
Division of the European Patent Office posted on
10 December 2020 concerning maintenance of the
European Patent No. 3234303 in amended form.**

Composition of the Board:

Chairman H. Geuss
Members: A. Wagner
P. Guntz

Summary of Facts and Submissions

I. The appeal of the opponent lies against the decision of the opposition division concerning the maintenance in amended form of the European Patent No. 3 234 303 according to auxiliary request 2.

II. In its decision, the opposition division held inter alia that auxiliary request 2, being the main request in appeal, met the requirements of Article 54 EPC and Article 56 EPC. The Opposition Division found that the subject-matter of claim 1 was inventive over

D4: WO 2013/121212 A

combined with

D2: WO2013/126592 A2.

III. Oral proceedings were held before the board on 10 November 2022.

IV. The appellant (opponent) requested that the decision under appeal be set aside and that the European patent be revoked.

The respondent (patent proprietor) requested that the appeal be dismissed.

V. Claim 1 of the main request reads as follows. The feature numbering is adopted as proposed by the appellant (opponent).

1.1 A flow access apparatus (10, 150, 300, 602) for a flow system in communication with a subsea well of a

subsea oil and gas production installation, the flow access apparatus (10, 150, 300, 602) comprising:

1.2 a body (12, 312);

1.3 a plurality of connectors (20a, 20b, 322, 320) configured to connect the apparatus (10, 150, 300, 602) to the flow system; and

1.4 a flow access interface (18, 118, 318) for connecting the apparatus (10, 150, 300, 602) to a subsea process apparatus;

1.4b wherein the flow access interface provides a single connection point and/or landing point for the subsea process apparatus,

1.5 wherein the body (12, 312) defines a plurality of flow paths (15, 17, 115, 117, 315, 317, 615, 617), and

1.6 each flow path fluidly connects one of the plurality of connectors (20a, 20b, 322, 320) to the flow access interface (18, 118, 318) to provide an intervention path from a connected subsea process apparatus to the flow system in use;

1.7 wherein the flow access apparatus (10, 150, 300, 602) is configured to be connected to the flow system between a flow line connector for a jumper flow line, and a jumper flow line of the flow system;

1.8 wherein a first connector of the plurality of connectors (20a, 20b, 322, 320) is configured to be connected to the flow line connector;

1.9 and wherein a second connector of the plurality of connectors (20a, 20b, 322, 320) is configured to connect the flow access apparatus (10, 150, 300, 602) to the jumper flow line.

VI. The appellant's (opponent's) arguments relevant to the present decision may be summarized as follows:

Distinguishing features

Claim 1 did not have any distinguishing feature with regard to D4 (figures 1, 2 and 6). The conclusion of the opposition division that D4 did not disclose feature 1.4b of the main request was wrong. The skilled person knew that the only way to connect the subsea process apparatus (processing equipment 60) to the flow access apparatus (hub assembly 50) was a single landing action on both openings 56, 58 (D4, figure 2). The fact that the two openings 56, 58 were two distinct, spatially separated entities did not exclude a single landing point.

With reference to page 16, lines 12 to 34, D4 disclosed for the skilled reader at least inherently that a process apparatus 60 simultaneously accessed the distinct openings 56, 58 of the flow access apparatus (assembly 50) in a single docking manoeuvre. The landing was also disclosed in figures 12A, 12B and figures 13A, 13B. Therein it was shown that a process apparatus 674, 730 was landed on the flow access apparatus (hub 650).

Furthermore the wording of feature 1.4b not even necessarily claimed "a single landing point" but simply "a landing point". The term "single" in feature 1.4b only referred to the "connection point". The opposition

division disregarded this option covered by the claim wording. D4, figure 2, obviously disclosed with the openings 56, 58 "a landing point".

Inventive step: D4 with D2

Should the board come to the conclusion that D4 does not disclose feature 1.4b, the claimed subject-matter did not involve an inventive step over D4 combined with D2 - contrary to the opposition division's opinion.

D4 already solved the problem as posed in the patent in suit, see D4, page 3, lines 23 to 28 and patent in suit, paragraph [0014]. Starting from D4, the objective technical problem had to be seen in how to connect or land the process apparatus 60 to or on the hub assembly 50.

The skilled person would consider D2, as in D2 (see paragraph [0064]), the flow access apparatus (base module 11) had the same purposes as the one disclosed in D4 (see page 16, lines 13 to 15) and because the flow access apparatus 11 intervened not exclusively at the production tree but also at a location near the tree or other equipment (paragraph [0006]).

Figures 10 to 15 of D2, referred to by the respondent (patent proprietor), disclosed a hub 6' with a plurality of fluid paths and an interface with a single landing point for the process apparatus 11. The landing of the process apparatus 11 was described in D2, paragraphs [0057, 0058]. Therein it was disclosed that the hub 6' was set slightly apart from the tree in a dedicated space. Frame 101, used to receive the subsea process apparatus, provided said dedicated space for the hub. Contrary to the respondent's submissions the

frame 101 could be supplemental to the tree structure. In paragraph [0006] it was disclosed that the hub could be coupled into a production tree, but also into other equipment, thus a flow line jumper.

A skilled person would obviously combine D4 with D2 to solve the problem of how to design the connection between the flow access apparatus and the subsea flow apparatus, thereby arriving at the claimed subject-matter by providing a single interface and thus a single landing point, e.g. by replacing the hub assembly 50 by the hub 6', or alternatively by one of the hubs 506, 606 shown in figures 23 to 30.

VII. The respondent's (patent proprietor's) arguments relevant to the present decision may be summarised as follows:

Distinguishing features

Feature 1.4b was not disclosed in D4. D4 was absolutely silent about a landing of the processing equipment 60 on the flow access apparatus (hub assembly 50). Figures 1 and 2 showed two connection points 56, 58, to which the processing equipment 60 may be connected e.g. by pipes. It was not inevitable that a process apparatus was landed on the connection points.

Nothing in the cited passage on page 16 disclosed a single landing point. Even if a simultaneously access in a single docking manoeuvre was disclosed, using two landing points did not change the number of landing points involved in the operation.

The hub 650 shown in figures 12A, 12B and figures 13A, was a single bore hub with a single flow path and thus also did not disclose the claimed subject-matter.

The argument that feature 1.4b also covered the option of "a landing point" was presented for the first time after summons to oral proceedings. The appellant (opponent) did not present exceptional circumstances or cogent reasons why this line of attack was not presented earlier. Therefore this argumentation was not to be admitted into appeal proceedings under Article 13(2) RPBA.

Furthermore, it was clear from the wording of feature 1.4b and also from the disclosure of the patent as a whole - in particular paragraph [0019] - that "a single landing point" was defined.

Inventive step: D4 with D2

Starting from D4, the objective technical problem had to be seen in relation to fluid intervention in the jumper system. Feature 1.4b had the technical effect of increasing the operational capability to land a subsea processing apparatus for flow intervention in the jumper system. The objective technical problem was: *"How to increase the flexibility and range of fluid intervention operations achievable when providing fluid access in the jumper system."*

First of all the opposition division was right in stating that the prior art did not include any teaching that would have prompted the skilled person to modify D4 such that the skilled person would arrive at the claimed subject-matter.

Furthermore, the skilled person would not consider D2 because D2 was not directed to fluid intervention in the jumper system but within the structure of the subsea tree. The technical specifications with regard to e.g. physical load, landing load or vibration issues

within the tree structure or at the manifold were not comparable to those in the jumper system. A skilled person would not cherry pick one component - here the hub 6', 506, 606 - out of the tree system and implement it in the jumper system of D4 as these components were not suitable for the jumper system with regard to safety and stability.

D2 only taught to provide a hub 6, 6', 506, 606 within the structure of the subsea tree. Reference is made to figure 1 of D2, wherein it was clearly shown that the hub 6 was part of the tree structure, encompassing all components left from the CVC flow line hub at reference number 15. The hub 6, 6' was not disclosed as isolated component but was disclosed in the context of a support frame 101 being part of the tree (figures 10 to 15). All embodiments of the flow access apparatus of D2 used the tree structure to guarantee a safe landing of a subsea process apparatus on the hub. None of the multi-bore hubs 6', 506, 606 - shown in figures 4, 23, 26, 29 or 30 as part of the tree - was suitable to be placed in a jumper line for load and safety issues.

Reasons for the Decision

1. The main request being the sole request on file, does not meet the requirements of Article 56 EPC.
2. D4 as closest prior art was not disputed.
3. **Distinguishing features**
 - 3.1 Claim 1 differs from the flow access apparatus disclosed in D4 in feature 1.4b, i.e. in that the fluid access interface provides a single connecting point

and/or a single landing point for a subsea process apparatus.

3.2 The following features are considered by the parties to be disclosed in D4.

3.2.1 In figure 2 or figure 6 a flow access apparatus (hub assembly 50; 250) is positioned between a connector for a jumper flow line and a jumper flow line (page 16, line 21, page 19, lines 2 to 7). The body 51, 52; 251, 252 of the hub assembly 50; 250 defines a plurality of flow paths (page 16, lines 5 to 12).

3.2.2 The fluid access apparatus has a flow access interface (at openings 56, 58; 256, 258) for connecting a subsea process apparatus (process equipment 60) with two connecting points (openings 56, 58; 256, 258). The process apparatus might be a device for e.g. fluid sampling, fluid metering, fluid injection or fluid measurement (D4, page 16, lines 13 to 15). Each flow path is connected to the flow access interface to provide an intervention path.

3.3 Contrary to the opinion of the appellant (opponent) it is not disclosed that the flow access interface (at openings 56, 58; 256, 258) provides a single landing point for the subsea process apparatus 60 (feature 1.4b).

3.3.1 D4 is completely silent on how the subsea process apparatus 60 is connected to the two connection points 56, 58 of the flow access apparatus 50. As argued by the respondent (patent proprietor) and indicated by the lines shown in figure 1 or 6, the process apparatus 60 must not at all be landed on the two landing point but

may also be connected via pipes.

- 3.3.2 Therefore also the argument of the appellant (opponent) submitted with letter dated 10 October 2022 that the claim wording also covered the general option of "a landing point" is not convincing.

4. Technical effect

Feature 1.4b has the technical effect to facilitate convenient landing on and/or connection of a subsea process apparatus for performing an intervention operation (see patent in suit, paragraph [0021]).

5. Objective technical problem

- 5.1 The underlying technical problem can be formulated as *"How to land and/or connect the subsea process apparatus to the flow access apparatus in the jumper system taking into consideration an increased flexibility and range of fluid intervention operations for fluid access."*
- 5.2 The argument of the respondent (patent proprietor) that the underlying technical problem of the distinguishing feature was focused on an increased flexibility and not on providing a suitable connection, is not convincing.
- 5.3 D4 addresses the same problem as the patent in suit, i.e. an increased flexibility and range of fluid intervention operations.
D4, page 3, lines 25 to 28, reads: *"An object of the invention is to provide a flexible method and apparatus suitable for use with and/or retrofitting to industry standard or proprietary oil and gas production manifolds, including Christmas trees."*

Paragraph [0014] of the patent in suit recites: "*An object of the invention is to provide a flexible apparatus, system and method of use suitable for use with and/or retrofitting to industry standard or proprietary oil and gas production manifolds, including subsea trees, and/or end terminations*".

5.4 The solution provided in D4 is to place the flow access apparatus in the jumper line. The same is done in the patent in suit.

The advantages of such an arrangement are described in D4, page 16, lines 21 to 34. The skilled person retrieves from D4 that providing the flow access apparatus with a plurality of flow paths in the jumper line increases the flexibility with regard to the subsea process apparatus that can be used. In particular, the advantages are e.g. the use of larger items of process equipment, the use of different configurations of process equipment or an improved access of ROVs.

The same advantages for a flow intervention in the jumper line are mentioned in the patent in suit, see e.g. paragraph [0008]: "*the flow intervention equipment on the choke body [on a Christmas tree] may limit the access available to large items of process equipment and/or access of divers or remotely operated vehicles (ROVs) to the process equipment or other parts of the tree.*" and paragraph [0038]: "*A flow line connector for a jumper flow line may be a preferred location for the connection of the access hub. This is because it is displaced from the Christmas tree sufficiently to reduce associated spatial access problems [...]*".

5.5 Thus, when starting from D4, the problem of an increased flexibility is already solved by placing the flow access apparatus in the jumper line. However D4

does not disclose a single embodiment of how the connection between the subsea process apparatus and the flow access apparatus with multiple flow paths is realised. When trying to put the disclosure of D4 into practice, the skilled person unavoidably is confronted with the problem as mentioned by the appellant (opponent), i.e. of how to connect the subsea process apparatus to the flow access apparatus provided in the jumper line.

6. **Inventive step**

6.1 A skilled person faced with the problem of how to actually connect the subsea process apparatus to the flow access apparatus while maintaining or even increasing the flexibility of fluid process apparatus for fluid intervention in the jumper line would consider D2.

6.1.1 The argument of the respondent (patent proprietor), that the prior art lacked any hint or pointer to a solution to the problem posed is not convincing. D2 also is directed to the problem to provide a connection between a flow access apparatus and a subsea process apparatus while providing an increased flexibility and range of fluid intervention operations (see paragraph [0002]: "*The present disclosure relates to apparatus and methods for coupling fluid processing or other apparatus into a production flow at or near a production tree, manifold or other equipment*" and paragraph [0005]: "*subsea processing of fluids is now desirable. Such processing can involve adding chemicals, separating water and sand from the hydrocarbons, pumping the produced fluids, analysing the produced fluids, etc.*").

6.1.2 D2 solves the problem by providing a hub 6', 506, 606 and a support frame 101 e.g. near the production tree for using a reconfigurable base module 11. The base module includes e.g. a flow meter 12 (paragraph [0044]) and is configured to receive other modules for fluid intervention. The base module and the other modules include devices for the same purposes as the fluid process apparatus of D4 (D2, [0064]: e.g. a metering device, chemical injection device, sampling device).

6.1.3 D2 describes the flow access apparatus within the structure of the tree (figure 1), however the particular embodiment referred to by the respondent (patent proprietor) and shown in figures 1, 4, 5 and 10 to 15, is described as a supplemental entity positioned next to the tree, see paragraph [0057]: *"In some embodiments, the support frame 101 is coupled to or disposed adjacent the tree 1 structure such that it is supplemental to the tree 1 structure and can provide the dedicated space aside the tree 1 structure for the hub 6'."* and paragraph [0058]: *"Support frame 101 is disposed adjacent tree 1 and the hub 6' is disposed on floor 103 within support frame 101 to create a dedicated space for the hub 6'."*

From paragraph [0002] of D2 (first sentence), it becomes clear that the hub can also be coupled at or near a manifold or other equipment.

6.2 A skilled person knowing from D4, that a flow access apparatus positioned in the jumper line is subject of less spatial limitations, and looking for a possibility of connecting the flow access apparatus to the subsea process apparatus would recognize that the hub 6' of D2, having a single landing point (e.g. figure 4 or figure 10), can be used independently from the tree

structure and also can be connected to the flow line connector for the jumper line. The fact that in D2, the hub 6' is disclosed in combination with the frame 101 does not hinder the skilled person to integrate the hub 6' in the apparatus of D4 as the frame is disclosed as being supplemental to the tree structure (paragraph [0057]).

- 6.3 By providing the hub 6' next to the flow jumper connector 30 of D4 or by replacing the hub assembly 50 of D4 by the flow access apparatus 6', 101 of D2 the skilled person arrives at the claimed subject matter, including a flow path interface that provides a single connection and landing point.
- 6.4 The argument of the respondent (patent proprietor) that the hub 6' of D2 was not suitable for the use in the jumper flow line is not convincing. The claim does not define any feature that would qualify the claimed flow access apparatus specifically for the use in the jumper flow line. Neither does the description or do the figures of the patent in suit. Also the respondent (patent proprietor) did not submit any technical feature that makes the claimed flow access apparatus suitable for the use in a jumper flow line compared to the flow access apparatus of D2 shown in figure 1 within the structure of the tree.
- 6.5 Hence, the subject-matter as claimed in claim 1 of the main request does not involve an inventive step.

Order

For these reasons it is decided that:

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

The Registrar:

The Chairman:



A. Voyé

H. Geuss

Decision electronically authenticated