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**Datasheet for the decision
of 19 December 2018**

Case Number: T 0616/16 - 3.2.01

Application Number: 10161060.8

Publication Number: 2243700

IPC: B63H23/24, B63H25/42,
B63H25/46, B63H21/17, B63H21/22

Language of the proceedings: EN

Title of invention:
Redundant thruster system

Patent Proprietor:
Rolls-Royce Marine AS

Opponent:
ABB AB

Headword:

Relevant legal provisions:
EPC Art. 54(2)
RPBA Art. 13(1)

Keyword:

Novelty - Main Request, 9th auxiliary request - (no)
Late-filed auxiliary requests - new objections to be discussed
- Auxiliary Requests 13, 15, 16

Decisions cited:

Catchword:



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Case Number: T 0616/16 - 3.2.01

D E C I S I O N
of Technical Board of Appeal 3.2.01
of 19 December 2018

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Decision under appeal: **Decision of the Opposition Division of the
European Patent Office posted on 13 January 2016
revoking European patent No. 2243700 pursuant to
Article 101(3) (b) EPC.**

Composition of the Board:

Chairman G. Pricolo
Members: H. Geuss
P. Guntz

Summary of Facts and Submissions

- I. The appeal is directed against the decision of the Opposition Division of the European Patent Office posted on 13 January 2016 revoking European patent No. 2243700 pursuant to Article 101(3)(b) EPC.
- II. The revocation of the patent is based *inter alia* on lack of novelty of the subject-matter of granted claim 1 and of claim 1 of auxiliary requests 2 and 3 in view of document E1:

Maritime Electrical Installations and Diesel
Electric Propulsion, ABB AS Marine, 2003 (E1)

- III. Oral proceedings before the Board were held on 19 December 2018.

The appellant (patent proprietor) requested that the decision under appeal be set aside and that the patent be maintained as granted or, in the alternative, that the patent be maintained in amended form on the basis of one of 9th, 13th or 15th auxiliary requests as filed with the letter dated 19 November 2019, received on 19 November 2018 or on the basis of the 16th auxiliary request submitted during the oral proceedings.

The respondent (opponent) requested that the appeal be dismissed.

- IV. Claim 1 as granted reads as follows:

Redundant thruster system for dynamic positioning of a vessel,
comprising at least three thrusters to create transversal thrust connected to a switchboard for main

power supply,
said switchboard being divided into two parts by a bus-
tie with electrically isolated power distribution
systems,
wherein said at least two parts of the switchboard are
normally active, and
each part is arranged to supply at least two thrusters,
wherein at least one of the thrusters; namely the
redundant thruster, is connected to the two parts of
the main switchboard, giving a dual power system vessel
and a three way thruster redundancy.

V. Claim 1 of the 9th auxiliary request reads as follows:

Redundant thruster system for dynamic positioning of a
vessel,
comprising at least three thrusters to create
transversal thrust,
connected to a switchboard for main power supply,
said switchboard being divided into two parts by a bus-
tie with electrically isolated power distribution
systems,
wherein said at least two parts of the switchboard are
normally active, and
each part is arranged to supply at least two thrusters,
wherein at least one of the thrusters; namely the
redundant thruster, is connected to the two parts of
the main switchboard, giving a dual power system vessel
and a three way thruster redundancy,

and wherein the power distribution system of the
redundant thruster comprises a combination of a
frequency converter with duplicated rectifier,
a power supply from each part of the switchboard,
at least one isolating transformer and
redundancy in power supplies for all auxiliary systems.

VI. Claim 1 of the 13th auxiliary request reads as follows:

Redundant thruster system for dynamic positioning of a vessel,
comprising at least three thrusters to create transversal thrust,
connected to a switchboard for main power supply,
said switchboard being divided into two parts by a bus-tie with electrically isolated power distribution systems, wherein
said at least two parts of the switchboard are normally active, and
each part is arranged to supply at least two thrusters, wherein at least one of the thrusters; namely the redundant thruster, is connected to the two parts of the main switchboard,
giving a dual power system vessel and a three way thruster redundancy,
and wherein the power distribution system of the redundant thruster comprises a combination of a frequency converter with duplicated rectifier, a power supply from each part of the switchboard wherein each power supply is connected to an individual rectifier of the duplicated rectifier,
at least one isolating transformer and redundancy in power supplies for all auxiliary systems.

VII. Claim 1 of the 15th auxiliary request reads as follows:

Redundant thruster system for dynamic positioning of a vessel,
comprising at least three thrusters to create transversal thrust, connected to a switchboard for main power supply,
said switchboard being divided into two parts by a bus-tie with electrically isolated power distribution

systems,
wherein said at least two parts of the switchboard are normally active, and
each part is arranged to supply at least two thrusters, wherein at least one of the thrusters; namely the redundant thruster, is connected to the two parts of the main switchboard,
giving a dual power system vessel and a three way thruster redundancy, and
wherein the power distribution system of the redundant thruster comprises a combination of a frequency converter with duplicated rectifier,
a power supply from each part of the switchboard wherein each power supply is connected to an individual AC to DC rectifier of the duplicated rectifier, the AC to DC rectifiers being connected via a bus bar to a common DC to AC inverter which in turn is connected to the redundant thruster,
the power distribution system further comprising at least one isolating transformer and
redundancy in power supplies for all auxiliary systems.

VIII. Claim 1 of the 16th auxiliary request reads as follows:

Redundant thruster system for dynamic positioning of a vessel,
comprising at least three thrusters to create transversal thrust,
connected to a switchboard for main power supply, said switchboard being divided into two parts by a bus-tie with electrically isolated power distribution systems,
wherein said at least two parts of the switchboard are normally active, and
each part is arranged to supply at least two thrusters, wherein at least one of the thrusters; namely the

redundant thruster, is connected to the two parts of the main switchboard, giving a dual power system vessel and a three way thruster redundancy, and wherein the power distribution system of the redundant thruster comprises a combination of a frequency converter with duplicated rectifier, a power supply from each part of the switchboard wherein each power supply is connected to an individual AC to DC rectifier of the duplicated rectifier, the AC to DC rectifiers being connected via a bus bar to a common DC to AC inverter which in turn is connected to the redundant thruster, the power distribution system further comprising at least one isolating transformer and redundancy in power supplies for all auxiliary systems,

wherein one of the power supplies comprises the at least one isolating transformer, where each one of the individual AC to DC rectifiers is dimensioned according to 50 - 100% of the power output to the electrical motor.

IX. The patent proprietor's (appellant's) submissions as relevant to the present decision may be summarized as follows:

Document E1 is not novelty destroying for the subject-matter of claim 1 as granted (main request).

In particular, the feature "wherein at least one of the thrusters; namely the redundant thruster, is connected to the two parts of the main switchboard, giving a dual power system vessel and a three way thruster redundancy" has to be interpreted in the sense that the redundant thruster is fed continuously by both parts of

the main switchboard. This interpretation is clear for those skilled in the art since the IMO Guidelines defines for a dynamic positioning system (DP) as claimed that the power supply to the redundant thruster must be without any interruption in order for it to be manoeuvrable at all times in critical situations. However the switches in E1 (cf. figure 3.1) cannot all be closed simultaneously due to the presence of electrical or mechanical interlocks. Therefore, in case of a breakdown of the power supply in one part of the switchboard according to E1, the thruster stops, switches have to be activated and the thruster has to be restarted. Thus, a three way redundancy is not obtained by the circuit according to figure 3.1 in E1.

The 9th auxiliary request corresponds to the second auxiliary request underlying the decision under appeal, claim 1 thereof being a combination of claims 1 and 2 as granted.

In E1 it is not disclosed that the transformer (in figure 3.1) is an isolating transformer, in particular, it is not explained that a galvanic separation is obtained by the transformer according to E1.

Auxiliary requests 13, 15 and 16 should be admitted into the proceedings.

In any case, the filing of these requests is a reaction to the communication of the Board. The amendments in auxiliary request 16 cover the objections with respect to the undisclosed subject-matter issue in auxiliary requests 13 and 15.

X. The rebuttal of the opponent (respondent) was essentially the following:

The subject-matter of claim 1 as granted is not novel

for the reasons given in the opposition division's decision. It cannot be inferred clearly from the patent specification that a three way redundancy has to be understood as a simultaneous connection of the redundant thruster to both parts of the switchboard.

Furthermore, the vessel according to figure 3.1 in E1 is also provided with a dynamic positioning system. Consequently the system according to figure 3.1 having conventional switches is able to provide a sufficiently fast changeover to maintain the required manoeuvrability.

With respect to the 9th auxiliary request it is submitted that the features of granted claim 2 are also shown in E1. In particular, figure 3.1 discloses isolating transformers. It is unlikely that the transformers in E1 are not able to provide a galvanic separation.

Auxiliary requests 13, 15 and 16 should not be admitted into the proceedings. The submission of these requests cannot be seen as a reaction to the communication of the Board since the provisional opinion of the Board on the novelty of the subject-matter of claim 1 as granted was based on an objection raised by the opponent from the beginning of the opposition proceedings.

In any case the amendments in the respective claim 1 in these auxiliary requests give rise to an intermediate generalisation and thus are objectionable under Article 123 (2) EPC. These claims namely include the additional feature of an isolating transformer without however defining where it is located within the circuit. Therefore, if the auxiliary requests were admitted during the oral proceedings before the Board of Appeal,

an extensive discussion would have to take place in respect of the allowability the amendments of these auxiliary requests.

Reasons for the Decision

1. With respect to the main request (patent as granted) and to the ninth auxiliary request, corresponding to the second auxiliary request underlying the decision under appeal, the Board follows the reasoning in the decision of the opposition division (points 3 and 5) to its full extent and adopts it as it own.

Since the lines of argument of the parties are the same as in the proceedings before the opposition division, the Board has nothing to add.

2. The 13th, 15th and 16th auxiliary request are not admitted into the proceedings, Article 13 (1) RPBA.
 - 2.1 According to Article 13 (1) RPBA any amendment to a party's case after it has filed its grounds of appeal or reply may be admitted and considered at the Board's discretion. The discretion shall be exercised in view of inter alia the complexity of the new subject-matter submitted, the current state of the proceedings and the need for procedural economy.
 - 2.2 The 13th and 15th auxiliary request have been filed with letter received on 19 November 2018.

The 16th auxiliary request has been presented during oral proceedings after the announcement of the Board not to admit the 13th and 15th auxiliary into the

proceedings.

The respondent/opponent objects undisclosed subject-matter in each of the independent claims 1 of these auxiliary requests.

- 2.3 Each claim 1 of these auxiliary requests consists of granted claims 1 and 2 and of additional features taken from the description.

The features of granted claim 2 define that the power distribution system of the redundant thruster comprises a combination of a frequency converter with duplicated rectifier, a power supply from each part of the switchboard, at least one isolating transformer and redundancy in power supplies for all auxiliary systems. In claim 1 of the auxiliary requests further features of the power distribution system of the redundant thruster have been added, such as for example the connection of each "power supply to an individual rectifier of the duplicated rectifier" (13th auxiliary request) respectively the connection of a DC to AC inverter to the redundant thruster (15th and 16th auxiliary request).

- 2.4 The respondent/opponent argues that it is not defined in claim 1 according to auxiliary request 13, 15 and 16 where exactly the isolating transformer is located. According to the wording of claim 1 it could be located anywhere in the circuit of the power distribution system, whereas in the figures of the patent in suit the isolating transformer is placed in one (or both) line(s) connecting the rectifiers to the switchboard.

Since now in claim 1 of the auxiliary requests 13, 15

and 16 further elements of the circuit (such as the rectifier respectively the DC/AC inverter) are defined, these added features result in an intermediate generalization with respect to the location of the isolating transformer.

Furthermore, in claim 1 of the 16th auxiliary request, one of the added feature defines that "one of the power supplies comprises the at least one isolating transformer".

In this respect the respondent/opponent pleads that "at least one transformer" for a single power supply is not originally disclosed as it means that also two or more isolating transformers could be installed in one single power supply line.

2.5 The appellant acknowledged that there is no explicit disclosure in the description for the above-mentioned connections of the power supply to an individual rectifier of the duplicated rectifier and of a DC to AC inverter to the redundant thruster, but the amendments are clearly shown in the figures 4, 5, 8 and 9. For the skilled person it is clear where the isolating transformer has to be located respectively that only one transformer per supply line is needed.

2.6 It is thus clear that admitting these auxiliary requests would necessitate discussing whether the introduction of the features relating to the above-mentioned connections can be taken in isolation from the location of the isolating transformer in the circuit shown in the figures.

This, however, would be a discussion occasioned by amendments made at a very late stage of the appeal

proceedings, and that might result in the dismissal of the auxiliary requests. Accordingly, both the current state of the proceedings and the need for procedural economy speak against admitting the auxiliary requests 13, 15 and 16.

- 2.7 Further, the appellant's argument that auxiliary requests 13 and 15 have been submitted as a reaction of the communication of the Board is not convincing. The opinion of the Board as issued in the communication merely reflects the conclusion of the opposition division in the contested decision, namely that the last feature of claim 1 was not able to limit the subject-matter of the invention in suit over E1.

Therefore, no new situation arose by way of the communication of the Board that would have justified the filing of auxiliary request in reaction thereto. The auxiliary requests 13 and 15 are therefore late-filed. The same applies, as a consequence and irrespective of whether auxiliary request 16 is a reaction to objections of undisclosed subject-matter raised against auxiliary requests 13 and 15, for auxiliary request 16.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:



A. Vottner

G. Pricolo

Decision electronically authenticated