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Datasheet for the decision of 13 July 2023

Case Number: T 1090/20 - 3.5.02

Application Number: 11177247.1

Publication Number: 2424066

IPC: H02J3/50, H02J3/18

Language of the proceedings: EN

Title of invention:
System and method for distribution of inverter VAR support

Patent Proprietor:
General Electric Company

Opponent:
Vestas Wind Systems A/S

Relevant legal provisions:
EPC Art. 100(c), 123(2)

Keyword:
Amendments (all requests) - extension beyond the content of the application as filed (yes)

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Case Number: T 1090/20 - 3.5.02

D E C I S I O N
of Technical Board of Appeal 3.5.02
of 13 July 2023

Appellant: (Patent Proprietor)	General Electric Company 1 River Road Schenectady, NY 12345 (US)
Representative:	Zimmermann & Partner Patentanwälte mbB Postfach 330 920 80069 München (DE)
Respondent: (Opponent)	Vestas Wind Systems A/S Hedeager 42 8200 Aarhus N (DK)
Representative:	Inspicos P/S Agern Allé 24 2970 Hørsholm (DK)
Decision under appeal:	**Decision of the Opposition Division of the European Patent Office posted on 21 February 2020 revoking European patent No. 2424066 pursuant to Article 101(3)(b) EPC.**

Composition of the Board:

Chairman	R. Lord
Members:	C.D. Vassoille
	W. Ungler

Summary of Facts and Submissions

I. The appeal of the patent proprietor lies against the decision of the opposition division revoking European patent no. 2 424 066.

II. In the contested decision, the opposition division concluded that the ground for opposition under Article 100(c) EPC prejudiced the maintenance of the patent. For similar reasons, each of the auxiliary requests 1 to 5D and the first and second auxiliary requests submitted during the oral proceedings before the opposition division was considered not to meet the requirements of Article 123(2) EPC.

III. The board summoned the parties to oral proceedings. In a communication under Article 15(1) RPBA 2020 annexed to the summons to oral proceedings, the board informed the parties of their preliminary opinion on the case. It was stated *inter alia* that the board provisionally shared the opposition division's findings in the decision under appeal. Additionally, it was held that claim 1 of each of auxiliary requests 6 and 7 appeared not be clear within the meaning of Article 84 EPC.

IV. Oral proceedings before the board took place on 13 July 2023 as a Zoom videoconference with the consent of the parties.

The appellant (patent proprietor) requested as main request that the decision under appeal be set aside and that the patent be maintained as granted, or if that was not possible that the patent be maintained in amended form on the basis of one of the auxiliary requests 1, 1A to 1C, 2, 2A to 2D, 3, 3A to 3D, 4, 4A

to 4C, 5, 5A to 5D, 6 and 7, all filed together with the statement setting out the grounds of appeal.

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

V. Claim 1 of the appellant's main request has the following wording (feature references in bold added by the board):

"**(a)** A grid-connectable power inverter system (100), comprising:
(b) one or more power inverters (108, 110, 112, 114) configured to receive power from at least one corresponding energy source (104, 106); and
(c) at least one controller (130) configured to control each power inverter via algorithmic software reactive power support commands such that at least one power inverter provides reactive power to the power grid to which it can be connected (120) based on its reactive power capacity and only while its total power capacity is not exhausted in generating real power,
characterised in that
(d) the power inverter system (100) further comprises at least one incrementally switchable reactive power (VAR) bank (140),
(e) wherein the at least one controller (130) is further configured to control the at least one incrementally switchable reactive power (VAR) bank (140)
(f) and the one or more power inverters (108, 110, 112, 114) having sufficient reactive power capacity such that the one or more power inverters are configured to incrementally supply reactive power to the power grid (120) in smaller increments than that capable of being

supplied via the at least one incrementally switchable reactive power (VAR) bank (140)."

VI. Claim 1 of each of the auxiliary requests 1, 1A to 1C, 2, 2A to 2D, 3, 3A to 3D, 4, 4A to 4C, 5, 5A to 5D at least comprises features (e) and (f) of claim 1 of the main request.

VII. The characterising portion of claim 1 of auxiliary request 6 has the following wording (amendments highlighted with respect to the main request):

"the power inverter system (100) further comprises at least one incrementally switchable reactive power (VAR) bank (140), wherein the incrementally switchable reactive power (VAR) bank can only be switched to the grid as a whole, wherein the at least one controller (130) is further configured to control the at least one incrementally switchable reactive power (VAR) bank (140) and the one or more power inverters (108, 110, 112, 114) having sufficient reactive power capacity such that the one or more power inverters are configured to incrementally supply reactive power to the power grid (120) in smaller increments than that capable of being supplied via the at least one incrementally switchable reactive power (VAR) bank (140)."

VIII. The characterising portion of claim 1 of auxiliary request 7 has the following wording (amendments highlighted with respect to the main request):

"the power inverter system (100) further comprises at least one incrementally switchable reactive power (VAR) bank (140), wherein the incrementally switchable reactive power (VAR) bank can only be switched in a

single increment, wherein the at least one controller (130) is further configured to control the at least one incrementally switchable reactive power (VAR) bank (140) and the one or more power inverters (108, 110, 112, 114) having sufficient reactive power capacity such that the one or more power inverters are configured to incrementally supply reactive power to the power grid (120) in smaller increments than that capable of being supplied via the at least one incrementally switchable reactive power (VAR) bank (140)."

IX. The relevant arguments of the appellant can be summarised as follows:

The term "incrementally switchable" did not add any technical subject-matter compared to what was originally disclosed. In particular, the meaning of this term was already implicitly contained in the term "reactive power (VAR) bank", since the skilled person would understand nothing other than that a VAR bank was incrementally switchable. In this context, reference was made to paragraph [0015] of the application as published (see in particular column 4, line 51 ff.), document E4 (see in particular paragraphs [0002] and [0003]) and document E6 (see in particular figures 1 and 6).

Furthermore, an increment could be considered to correspond to a step from zero to one or from zero to 100 %. A narrow interpretation of "incrementally switchable" as meaning "step by step" and one at a time was not justified. It was to be considered that claim 1 referred to a system and not to a method. "Incrementally switchable" in this context meant nothing more than that the reactive power (VAR) bank

had to be suitable to do that, which applied to every VAR bank that comprises a plurality of switchable capacitive or inductive elements.

Furthermore, the skilled person would understand that the wording of original claim 8, in particular "than that", implied a size relation between increments of the power inverters and that of the reactive power (VAR) bank. The skilled person would therefore understand that the increments provided by the power inverters should be smaller than the smallest increment that the VAR bank is capable of providing.

Auxiliary requests 6 and 7 were filed in response to the view expressed by the opposition division in the contested decision that the application implied that the reactive power (VAR) bank could only be switched as a whole.

X. The relevant arguments of the respondent can be summarised as follows:

The term "incrementally switchable" had a technical meaning for the person skilled in the art and thus, added technical information to the subject-matter of claim 1. In particular, the term implied that the reactive power (VAR) bank could be switched incrementally, i.e. step by step, one at a time and in a temporal sequence. The skilled person would understand from the context of claim 1 that the control structure had to be adapted accordingly in order to switch the reactive power (VAR) bank incrementally. Incrementally did not imply that a number of elements of the VAR bank were switched at the same time, but only one at a time in a consecutive manner. The application did not disclose any information in this

respect. In particular, it did not disclose how the reactive power (VAR) bank was switched. What the person skilled in the art would normally understand was that, depending on the demand for reactive power, the required number of elements of the VAR bank would be connected to the system. This was the opposite of incremental switching.

Furthermore, the wording of original claim 8, using the singular term "that", referred to the amount of power available from the VAR bank. Thus, original claim 8 did not directly and unambiguously disclose an incrementally switchable reactive power (VAR) bank.

Reasons for the Decision

1. Main request - Ground for opposition under Article 100(c) EPC

1.1 An "incrementally switchable reactive power (VAR) bank" is not directly and unambiguously derivable from the original application documents (reference is in the following made to the publication no. EP 2 424 066 A2).

1.2 A relevant aspect that led the board to this conclusion is the technical meaning of the expression "incrementally switchable" that the skilled person would understand from claim 1 as a whole. Contrary to the appellant's argument, the expression encompasses neither switching the reactive power bank to the grid as a whole nor switching the reactive power bank to the grid in a single "increment".

Rather, as the respondent noted, the well-defined meaning of "incrementally switchable" implies switching step-by-step and one at a time (i.e. in increments) in a temporal sequence. This meaning also corresponds to what is claimed in claim 1 with respect to the incremental supply of reactive power to the power grid by the power converters, which is described in the original application as "fine-tuning" or "refining" the supply of reactive power (see paragraph [0015]).

Switching the reactive power bank from zero to one or from zero to 100 % (i.e. switching as a whole or in a single "increment") clearly does not fall within this definition. On the contrary, the latter definitions would even contradict the meaning of claim 1 as far as the claimed incremental supply of reactive power by the

power converter is concerned. The skilled person would not understand claim 1 as being based on two different definitions of the term "incrementally".

1.3 A further relevant point in the board's assessment is that the term "incrementally switchable", although contained in an apparatus claim, clearly implies a technical limitation of the claimed subject-matter.

If one were to consider the formulation "incrementally switchable (VAR) bank" in isolation, the board could perhaps accept the appellant's argument that the formulation could be understood to mean that the reactive power (VAR) bank is technically designed to be incrementally switchable.

In the present case, however, the term is embedded in the overall context of claim 1 and would therefore not be understood by the skilled person in isolation. Rather, the skilled person would understand the term "incrementally switchable" not only in connection with the reactive power (VAR) bank itself, but would read claim 1 to mean that the controller must also be suitably configured to control the reactive power (VAR) bank incrementally, i.e. step by step, one at a time and in a temporal sequence (see the definition above under point 1.2 above). Accordingly, claim 1 defines that "the at least one controller (130) is further configured to control the at least one incrementally switchable reactive power (VAR) bank (140)...".

Therefore, the respondent has correctly pointed out that "incrementally switchable" is a functionally limiting feature of the system, which requires that the power inverter system has a specific control structure

so that an incremental switching of the reactive power (VAR) bank is possible in the above sense of the term. This in turn means that the functional feature "incrementally switchable" within the meaning of claim 1 goes beyond the mere presence of several capacitors and/or reactors of the reactive power (VAR) bank suitable to be switched in and out of the system.

1.4 In the light of the above, the board cannot infer any information, in particular in paragraph [0015] of the original application, which directly and unambiguously discloses the incrementally switchable nature of the reactive power (VAR) bank in the sense of the above definition.

In particular, a corresponding teaching does not result from the disclosure of "controlling the VAR banks 140 by switching shunt capacitors and series [reactors] in or out of the system in a fashion familiar to those skilled in the art" as set out in paragraph [0015] of the patent publication. In this context, the appellant has stated that a request to supply reactive power to the grid would cause (simultaneous) connection of the corresponding capacitors or reactors so that the corresponding requested reactive power is provided.

However, the board agrees with the respondent that a connection of several elements of the reactive power (VAR) bank at a time does not correspond to "incrementally switchable" within the meaning of claim 1 for the reasons mentioned under point 1.2 above.

1.5 As a further basis of an incrementally switchable reactive power (VAR) bank, the appellant has referred to original claim 8, in particular the following part of it:

> "...the one or more power inverters operate to incrementally supply reactive power to the power grid (120) in smaller increments than that capable of being supplied via the at least one VAR bank."

The board agrees with the respondent that it cannot be directly and unambiguously inferred from the wording of claim 8 that the reactive power (VAR) bank is incrementally switchable. As argued by the respondent, claim 8 essentially refers to the incremental supply of reactive power by the power inverters.

All that the skilled person can additionally deduce from the above formulation is that the converters supply the reactive power incrementally such that the increments are smaller than an amount of reactive power that can be supplied by the reactive power (VAR) bank. The board is also satisfied that the wording "than that" in claim 8 in this sense is understood by those skilled in the art to refer to an amount of reactive power that can be supplied from the reactive power (VAR) bank and not to any increments of reactive power to be supplied to the power inverter system.

1.6 Neither the content of document E4 nor that of document E6 can change the above assessments, since the content of these documents (see in particular paragraphs [0002] and [0003] of E4 and figures 1 and 4 of E6) does not go beyond the technical information of paragraph [0015] of the original application, which the board is convinced does not directly and unambiguously disclose an "incrementally switchable reactive power (VAR) bank" in the sense set out above (see points 1.2 and 1.3 above).

Given this, the question of admittance of the respondent's arguments concerning document E6 into the appeal proceedings could be left open.

1.7 In the light of the above considerations, the board concluded that an incrementally switchable reactive power (VAR) bank, as claimed in the context of claim 1, is not directly and unambiguously derivable from the original application documents.

Therefore, the opposition division was correct in finding that the ground for opposition under Article 100(c) EPC prejudices the maintenance of the patent as granted.

2. Auxiliary requests 1, 1A to 1C, 2, 2A to 2D, 3, 3A to 3D, 4, 4A to 4C, 5, 5A to 5D, 6 and 7 – Amendments (Article 123(2) EPC)

2.1 Claim 1 of each of the auxiliary requests comprises the feature of an "incrementally switchable reactive power (VAR) bank", which is not directly and unambiguously derivable from the original application documents. The board refers to the findings under point 1. of the reasons regarding the main request, which also apply to the auxiliary requests.

2.2 With regard to the specific amendments made in claim 1 of auxiliary requests 6 and 7 (see points VII. and VIII. above), the board notes that these amendments are not such as to remedy the non-compliance of the main request with Article 123(2) EPC.

As outlined under point 1.2 above, the wording "incrementally switchable reactive power (VAR) bank"

does not include switching the reactive power (VAR) bank to the grid as a whole, nor does it include switching the reactive power bank to the grid in a single "increment".

The corresponding amendments made in claim 1 of auxiliary requests 6 and 7 are therefore not suitable to give a different meaning to the wording "incrementally switchable reactive power (VAR) bank". On the contrary, the amendments contradict that wording and therefore also do not meet the requirements of Article 84 EPC.

2.3 Therefore, the board has concluded that none of the auxiliary requests is allowable.

3. Result

Since none of the appellant's requests is allowable, the board had to accede to the respondent's request.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

U. Bultmann R. Lord

Decision electronically authenticated