

Internal distribution code:

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

**Datasheet for the decision
of 29 April 2021**

Case Number: T 1681/17 - 3.5.02

Application Number: 12178689.1

Publication Number: 2693589

IPC: F03D7/04, F03D9/25, H02J3/16,
F03D7/02, H02J3/38

Language of the proceedings: EN

Title of invention:
Wind park control system

Patent Proprietor:
Siemens Gamesa Renewable Energy A/S

Opponent:
Vestas Wind Systems A/S

Relevant legal provisions:
EPC Art. 56

Keyword:
Inventive step - main request and auxiliary request (no)



Beschwerdekammern
Boards of Appeal
Chambres de recours

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

Case Number: T 1681/17 - 3.5.02

D E C I S I O N
of Technical Board of Appeal 3.5.02
of 29 April 2021

Appellant: Vestas Wind Systems A/S
(Opponent) Hedeager 42
8200 Aarhus N (DK)

Representative: Inspicos P/S
Kogle Allé 2
2970 Hørsholm (DK)

Respondent: Siemens Gamesa Renewable Energy A/S
(Patent Proprietor) Borupvej 16
7330 Brande (DK)

Representative: Sauthoff, Karsten
Siemens Gamesa Renewable Energy GmbH & Co. KG
Otto-Hahn-Ring 6
81739 München (DE)

Decision under appeal: **Interlocutory decision of the Opposition
Division of the European Patent Office posted on
12 May 2017 concerning maintenance of the
European Patent No. 2693589 in amended form.**

Composition of the Board:

Chairman R. Lord
Members: H. Bronold
W. Ungler

Summary of Facts and Submissions

- I. The appeal of the opponent lies from the interlocutory decision of the opposition division that European patent No. 2 693 589 in amended form according to the then auxiliary request 1 fulfilled the requirements of the European Patent Convention.
- II. The appellant (opponent) requested that the decision under appeal be set aside and the patent be revoked.
- III. The respondent (patent proprietor) requested that the appeal be dismissed (main request), or if that was not possible, that the patent be maintained in amended form on the basis of claims 1 to 9 filed as second auxiliary request with letter dated 9 February 2017 (auxiliary request).
- IV. In their statement setting out the grounds of appeal the appellant argued *inter alia* that the subject-matter of claims 1 and 8 according to the respondent's main request lacked novelty over document D1 (WO 2009/083445 A1) and also lacked an inventive step over a combination of document D1 with the common general knowledge of the person skilled in the art.
- V. In a communication under Article 15(1) RPBA 2007, the board informed the parties of its preliminary opinion that claims 1 and 8 according to the main request seemed to differ from the disclosure of D1 only in the last feature regarding priorities of the wind turbines based on electrical loss in the connection. The additional features of the auxiliary request when taken

alone seemed not to be suitable to justify an inventive step.

VI. With letter dated 1 February 2021 and in reply to the board's communication, the appellant provided further details supporting their objections already set out in the statement of grounds of appeal. The respondent replied neither to the board's communication nor to the appellant's letter.

VII. Oral proceedings before the board were held on 29 April 2021 as a videoconference, with the consent of both parties.

VIII. Independent claim 1 according to the main request reads as follows:

"A wind park control system (101) for controlling a reactive power output of a plurality of wind turbines (105, 106, 107) of a wind park (100), wherein the wind park is adapted to deliver active power and reactive power to a utility grid (417), the wind park control system (101) comprising
a determination unit (102) being adapted to determine a total amount of reactive power being required by the utility grid (417) and being adapted to determine for each wind turbine (105, 106, 107) an individual amount of reactive power, which the wind turbine (105, 106, 107) is capable to deliver,
a calculation unit (103) being adapted to calculate a capability scheme, wherein the capability scheme comprises an order for the plurality of wind turbines (105, 106, 107) according to which order the wind turbines (105, 106, 107) are selected for delivering reactive power, wherein the capability scheme is calculated based on the determined individual amount of

reactive power of each wind turbine (105, 106, 107) and the total electrical power loss being contributed by each connection of all the wind turbines (105, 106, 107) to the utility grid (417), and an adjustment unit (104) being adapted to adjust an actual amount of reactive power to be provided by the plurality of wind turbines (105, 106, 107), wherein the reactive power output of each wind turbine (105, 106, 107) is controlled based on the calculated capability scheme,

characterized in that

the wind turbines (105, 106, 107) are selected for delivering reactive power in the order of the capability scheme, such that the determined total amount of reactive power is fulfilled, wherein the order of the wind turbines (105, 106, 107) in the capability scheme is based on priorities, wherein a wind turbine (105, 106, 107) having a connection with the lowest electrical loss has the highest priority."

Independent claim 8 defines a corresponding method for controlling a reactive power output of a plurality of wind turbines.

IX. Independent claim 1 according to the auxiliary request comprises the following additional feature:

"wherein the determination unit (102) is adapted to determine the electrical losses based on a resistance being provided by the connection and a current being associated with the reactive power of the wind turbine (105, 106, 107)."

Independent claim 7 defines a corresponding method for controlling a reactive power output of a plurality of wind turbines.

X. The arguments of the appellant, as far as they are relevant for this decision, can be summarised as follows:

The subject-matter of claims 1 and 8 was not inventive starting from the disclosure of document D1 in combination with the common general knowledge of the person skilled in the art. When looking for a solution to the objective problem of minimising electrical losses in the connections of a wind farm, the person skilled in the art knew that the length of the connection lines determined the losses. The person skilled in the art further knew that electrical losses reduced the contribution a wind turbine could provide. Since D1 disclosed that the wind turbine closest to the point of common connection had the highest contribution of reactive electrical power, it was obvious that this wind turbine had the lowest electrical losses and should be used with the highest priority.

The respondent's arguments in favour of the auxiliary request were late filed and should not be admitted under Article 13(2) RPBA 2020. In substance, the additional features of claims 1 and 7 according to the auxiliary request merely defined the application of Ohm's law, which was trivial for the person skilled in the art.

XI. The arguments of the respondent, as far as they are relevant for this decision, can be summarised as follows:

Claims 1 and 8 of the main request involved an inventive step over a combination of D1 with the common general knowledge. D1 contained no disclosure regarding

priorities based on electrical losses in the connections of the wind turbines. D1 merely concerned priorities based on maintenance or wear of the wind turbines. Further, the objective technical problem defined by the appellant was based on hindsight because it contained the effect mentioned in paragraph [0005] of the patent.

The additional features according to claims 1 and 7 of the auxiliary request were not trivial. The additional features were not just an application of Ohm's law since it was defined that the determination unit was adapted to determine the electrical losses.

Reasons for the Decision

1. Admissibility of the appeal

The appeal was filed in due time and form and sufficiently substantiated. Thus, the appeal is admissible.

2. Main request: inventive step - Article 56 EPC

2.1 Objective technical problem

Following the board's communication under Article 15(1) RPBA, in the discussion of inventive step there was no dispute that document D1 disclosed all features of claims 1 or 8 according to the main request except the

last feature regarding priorities, which reads as follows:

"wherein the order of the wind turbines (105, 106, 107) in the capability scheme is based on priorities, wherein a wind turbine (105, 106, 107) having a connection with the lowest electrical loss has the highest priority."

However, there was dispute whether the objective technical problem could be based on paragraph [0005] of the patent, according to which *"there may be a need for an efficient and reliable control of the reactive power of the wind park to ensure that overall requirements are fulfilled and electrical losses are minimised."*

The respondent argued essentially that the problem defined by the appellant was based on hindsight. The board disagrees and sees no obstacle to starting from the technical need as specified in paragraph [0005] of the contested patent for formulating the objective technical problem. The respondent's argument that the formulated problem was based on hindsight because it contained the technical effect specified in the patent did not convince the board. It is correct that when carrying out the problem-solution approach it should be avoided that the objective problem includes parts of the claimed solution. This is however not the case here since the solution is the disputed feature dealing with priorities. This solution does not form part of the objective problem formulated by the appellant.

Therefore, the board finds the objective technical problem as formulated by the appellant of *"how to provide an efficient and reliable control of the reactive power of a wind park to ensure that overall*

requirements are fulfilled and electrical losses are minimised" appropriate. This objective problem is therefore used to assess inventive step of claims 1 and 8 according to the main request.

2.2 Interpretation of claims 1 and 8

In substance, the appellant argued primarily that the priority of wind turbines as claimed may be interpreted broadly to encompass maintenance of the wind turbine because the need for maintenance determined the electrical loss in the connection.

The board is not convinced that the term priority in the claim needs any further interpretation. The claimed term "priorities" is defined as being based on the "connection with the lowest electrical loss". As it is uncontested that this expression is clear, the board could not identify any reason why there should be a need to further interpret this claim wording.

Regarding the argument that the need for maintenance was equivalent to electrical losses in the connection, the board does not agree with the appellant either. Compared to the wind turbines, the connection lines as such should normally not be subject to excessive wear.

2.3 Obviousness of the solution

Independent of whether the priorities claimed in 1 and 8 could be read on maintenance priorities, the solution provided in claims 1 and 8 of the main request is obvious for a person skilled in the art.

The cited passage on page 5 of D1 discloses that the "position in the map of each turbine unit is controlled

by management software which preferably is positioned hierarchically giving consideration to maintenance schedules, wear...". This sentence taken in isolation could indicate that D1 disclosed priorities which relate to maintenance schedules or the like. The following sentence on page 5 however refers to power output as a criterion for an automatic determination of a wind turbine's position in the map, i.e. its priority for delivering reactive power.

This is also emphasised in the passage of D1 on page 12, lines 18 to 25, which discloses that reactive power values for each turbine are a function of its position in the farm. As an example, it is stated that the closer a turbine is to the PCC (point of common connection) the greater its contribution will have on the voltage changes at the PCC.

Although this passage does not explicitly deal with electrical losses but with contributions of reactive power on voltage changes, the person skilled in the art faced with the objective technical problem as defined above would readily recognise that, for wind turbines which all have an identical reactive power rating, as disclosed in figure 7, the electrical losses in the connection lines are decisive for the amount of reactive power that each wind turbine can contribute, since the remaining criteria are identical for each wind turbine.

The board further agrees with the appellant in that the general aim to save money and energy would guide the person skilled in the art to manage the wind turbines such that electrical losses are minimised. This is equivalent to priorities of the wind turbines based on the maximum contribution which in turn implies, that

the turbine involving the least electrical losses will be used with highest priority.

In this context, the board does not agree with the respondent in that such an analysis is based on hindsight. As set out above, the board considers the priority defined in claims 1 and 8 and the definition in document D1 which aims for maximised contribution of reactive power to be equivalent to each other because both definitions are based on the consideration of identical physical background, namely the reactive power capability of each wind turbine and the electrical losses in the connection lines between each wind turbine and the common connection point. However, this physical background is well known. Thus, the subject-matter of claims 1 and 8 *de facto* differs from the disclosure of D1 merely in the formulation used but not in terms of physical (i.e. technical) effect.

- 2.4 Consequently, the board has arrived at the conclusion that the subject-matter of claims 1 and 8 according to the main request is rendered obvious by a combination of the disclosure of document D1 and the common general knowledge of the person skilled in the art.

Therefore, the main request is not allowable.

3. Auxiliary request: inventive step - Article 56 EPC

The additional feature of claims 1 and 7 according to the auxiliary request is trivial for the person skilled in the art.

The appellant argues essentially that the person skilled in the art was aware that electrical losses in

a power line may be calculated as the product of the resistance of the power line and the current squared. The current could comprise a reactive component. Thus, the skilled person's knowledge of Ohm's law would render claims 1 and 7 according to the auxiliary request obvious over "for example D1 in combination with a skilled person's common general knowledge". The board concurs with the appellant.

The respondent's argument that the additional feature according to the auxiliary request not only defined how electrical losses are determined but also that the determination unit determined those losses did not convince the board. Since the wording of the additional feature merely refers to the commonly known electrical values of current and resistance for the determination of the losses, it does not depart from the common general knowledge of the person skilled in the art, i.e. the application of Ohm's law. The respondent's argument that D1 comprised no disclosure as to how the electrical losses are determined is not pertinent either, because the appellant's corresponding argument was not based on the disclosure of D1 but on the common general knowledge of the person skilled in the art.

The board therefore agrees with the appellant in that the additional feature of claims 1 and 7 according to the auxiliary request is trivial for the person skilled in the art. A synergistic effect with the remaining differentiating features of claims 1 and 7 over the disclosure document D1 was neither argued by the respondent nor is it apparent from the file.

The board has therefore come to the conclusion that the subject-matter of claim 1 according to the auxiliary request does not involve an inventive step over the

disclosure of document D1 in combination with the common general knowledge of the person skilled in the art.

In view of the board's conclusion on inventive step of the auxiliary request there was no need to take a decision on the issue of admittance of the respondent's arguments regarding the auxiliary request raised by the appellant under Article 13(2) RPBA 2020.

4. Conclusion

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

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:



U. Bultmann

R. Lord

Decision electronically authenticated