

Internal distribution code:

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

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

Case Number: T 2189/14 - 3.2.08

Application Number: 09447040.8

Publication Number: 2284420

IPC: F16H57/02, F03D11/02

Language of the proceedings: EN

Title of invention:

Parallel gear unit for a gearbox for a wind turbine

Patent Proprietor:

ZF Wind Power Antwerpen NV

Opponent:

Siemens Aktiengesellschaft

Headword:

Relevant legal provisions:

EPC Art. 56

RPBA Art. 12(1), 13(1)

Keyword:

Inventive step - (no)

Late-filed argument - justification for late filing (no) -
admitted (no)

Decisions cited:

Catchword:



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 2189/14 - 3.2.08

D E C I S I O N
of Technical Board of Appeal 3.2.08
of 19 January 2018

Appellant: Siemens Aktiengesellschaft
(Opponent) Werner-von-Siemens-Straße 1
80333 München (DE)

Representative: Gleißner, Thomas
Siemens AG
CT IP IS
Otto-Hahn-Ring 6
80200 München (DE)

Respondent: ZF Wind Power Antwerpen NV
(Patent Proprietor) De Villermontstraat 9
2550 Kontich (BE)

Representative: Vogt, Alexander
ZF Friedrichshafen AG
Graf-von-Soden-Platz 1
88046 Friedrichshafen (DE)

Decision under appeal: **Interlocutory decision of the Opposition
Division of the European Patent Office posted on
25 September 2014 concerning maintenance of the
European Patent No. 2284420 in amended form.**

Composition of the Board:

Chair P. Acton
Members: M. Foulger
Y. Podbielski

Summary of Facts and Submissions

- I. With the decision posted on 25 September 2014 the opposition division decided that the patent could be maintained in amended form on the basis of the main request filed during the oral proceedings on 10 September 2014.
- II. The appellant (opponent) filed an appeal against this decision. The appeal was filed in due form and within the given time limits.
- III. The appellant requested that the decision under appeal be set aside and the patent be revoked.

The respondent requested that the appeal be dismissed.

- IV. Oral proceedings took place before the Board on 19 January 2018.
- V. The following documents are referred to in this decision:

D2: WO 2005/005866 A1

D4: Czichos, Habig, "Tribologie-Handbuch", page 438

D5: Matek, Muhs, Wittel, Becker, "Roloff/Matek Maschinenelemente", 13 Auflage, Vieweg 1994, page 411

D6: Gold, "Maschinenelemente Vorlesungsumdruck Band I", Ausgabe 09/2004, Aachen, page 305

- VI. Claim 1 reads:

"A parallel gear unit (20) for a gearbox (30) for a wind turbine, the parallel gear unit (20) comprising at least a low speed shaft (21) and a high speed shaft (22), each shaft (21, 22) comprising a gear (23, 25)

with helical teeth, **(A)** the gears (23, 25) of each shaft (21, 22) being adapted for meshing with each other, **characterised in that (B)** the low speed shaft (21) is rotatably supported by roller bearings (24a) and **(C)** the high speed shaft (22) is rotatably supported by sliding bearings (24b), wherein the parallel gear unit (20) furthermore comprises an intermediate shaft (36) in between the low speed shaft (21) and the high speed shaft (22), the intermediate shaft (36) being rotatably supported by roller bearings (24a)."

(Feature references added in bold by the Board.)

VII. The appellant argued essentially the following:

D2 was the most relevant prior art and disclosed all features of claim 1 other than that of the high speed shaft being rotatably supported by sliding bearings (feature (C)). Although feature (B) was not explicitly disclosed, it was clear from the context that only a roller bearing could have been meant. Roller bearings were therefore implicitly disclosed for supporting the low speed shaft. The only sensible interpretation of feature (A) was that gears of each shaft are adapted for meshing with the gears of the adjacent shaft, especially because the gears were provided with helical teeth. Moreover, the patent description and drawings did not indicate any other interpretation.

The problem to be solved was therefore to improve the service life of the gear unit.

It was well known in the art that sliding bearings were better suited to higher speed applications and also had good vibration damping properties (see D4-D6). Both

these factors would have incited the skilled person to use sliding bearings in the parallel gear unit of D2 in order to solve the problem posed without the use of inventive activity.

The line of defense regarding a modular construction put forward by the respondent was a late amendment to their case because up to the oral proceedings the respondent had not at all reacted to the notice of appeal. The appellant therefore had no time to prepare a counter-argument. Moreover this argument had neither been raised in the proceedings before the opposition division nor had it any basis in the patent specification. This argument was therefore to be disregarded.

VIII. The respondent argued essentially the following:

D2 did not disclose the features that the high speed shaft was rotatably supported by sliding bearings (feature (C)), that the low speed shaft was rotatably supported by roller bearings (feature B) and that the gears of each shaft were adapted for meshing with each other (feature (A)).

The problem to be solved by feature (C) was to reduce axial vibrations as explained in paragraph [0042] of the patent. Feature (A) was to be interpreted as meaning that the gears of the low speed shaft were adapted for meshing with the gears of the high speed shaft. This allowed a modular construction with the associated benefits.

The prior art did not teach the skilled person to use sliding bearings in order to solve the problem of axial vibrations. Moreover, D4 showed that either sliding or

roller bearings could be used and hence did not provide an unambiguous teaching for the skilled person. Hence, the subject-matter of claim 1 involved an inventive step.

Reasons for the Decision

1. In the course of the oral proceedings, the respondent argued that feature A - one of the differentiating features between the invention and D2 - had the technical effect that the gears could be used as part of a modular system. The appellant submitted that this line of argument should not be admitted into the proceedings, as it amounted to a fresh case, was made far too late in the proceedings and the appellant did not have sufficient time to prepare a counter-argument.

The respondent did not make any written submissions in the appeal proceedings which had commenced in November 2014. This has the procedural consequence that the appeal proceedings are based only on the notice of appeal, the statement of grounds of appeal and the Board's communication (Art. 12(1) RPBA).

For the first time at the oral proceedings, the respondent presented a line of argument as to the technical effect of an alleged distinguishing feature between the invention and the prior art; by doing so they effectively presented their own case as an alternative to the appellant's. A party may, at any time, argue against the other party's case by engaging with that party's arguments, for example by finding flaws in the logic. In the present case however, the respondent's submissions go far beyond that. they

constitute a fresh case, and are clearly late.

The Board sees no justification for admitting them into the proceedings. The respondent gave no reasons as to why it had presented its case only at the oral proceedings before the Board. The appellant had no time to consider the line of argument and considering it solely during an interruption of the oral proceedings appears in the circumstances insufficient. Therefore, the Board decided not to admit the respondent's line of argument into the proceedings.

2. Inventive step

2.1 Closest prior art

It is common ground that D2 is the closest prior art and that it discloses:

A parallel gear unit for a gearbox (8) for a wind turbine (A), the parallel gear unit comprising at least a low speed shaft (24) and a high speed shaft (28), each shaft comprising a gear (42, 62) with helical teeth (p. 4, l. 12 & p. 4, l. 31),

wherein

the low speed shaft (24) is rotatably supported by bearings (40), wherein the parallel gear unit furthermore comprises an intermediate shaft (26) in between the low speed shaft and the high speed shaft, the intermediate shaft being rotatably supported by roller bearings (48, 50 - p. 4, l. 14-15).

The respondent's argument that feature A whereby "the gears of each shaft being adapted for meshing with each other" is not known from D2 is not persuasive. The figures in the patent merely show gears which can mesh

with the adjacent gear. Moreover as the gears are helical then it is not possible that any gear can mesh with any other gear. Therefore, the Board considers that feature A can only be read in the sense that the gear of each shaft is adapted for meshing with that of the adjacent shaft. Under this interpretation, the feature is clearly shown in D2, fig. 3.

The subject-matter of claim 1 therefore differs from this known parallel gear unit in that the low speed shaft is supported by roller bearings, and in that the high speed shaft is rotatably supported by sliding bearings.

2.2 Problem to be solved

According to the respondent, the problem to be solved is to damp axial vibrations. On the other hand, the appellant regarded the problem to be solved as being to improve the service life of the gear unit.

The second of these problems is a typical problem which is commonly faced by the skilled person which they would always consider. The first problem is also common in wind turbines due to the high dynamic forces and speed variations in the gearbox during operation (cf patent, paragraph [0042]). Hence, the Board considers that the skilled person would contemplate either or both of these problems when starting from D2.

2.3 Solution

The skilled person is aware that different bearing types are used in different contexts - some types being

better for slow speed applications and other types being more suited for high speed applications. This knowledge belongs to the common general knowledge of the person skilled in the art as shown by documents D4-D6.

It is known that sliding bearings are more suitable for high speed shafts (D6, p.305) and that rolling element bearings are more suitable for lower speed shafts (see D5, 14.1.3). D4 clearly shows that for higher speeds sliding bearings are preferred and that for lower speeds rolling element bearings are preferred. Moreover D6 teaches that sliding bearings are to be preferred when vibration damping is required.

The skilled person would apply this knowledge to the parallel gear unit known from D2 in order to solve either of the problems proposed by the parties. The skilled person would then arrive at the subject-matter of claim 1 without the exercise of inventive skill.

Order

For these reasons it is decided that:

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

The Registrar:

The Chair:



C. Moser

P. Acton

Decision electronically authenticated