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Datasheet for the decision of 7 May 2014

Case Number: T 2535/10 - 3.2.04

Application Number: 02025882.8

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Language of the proceedings: EN

Title of invention:
Flexible serrated trailing edge for wind turbine rotor blade

Patent Proprietor:
Siemens Aktiengesellschaft

Opponent:
Vestas Wind Systems A/S

Headword:

Relevant legal provisions:
EPC Art. 100(a), 56

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

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Catchword:

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Case Number: T 2535/10 - 3.2.04

D E C I S I O N
of Technical Board of Appeal 3.2.04
of 7 May 2014

Appellant: (Opponent)	Vestas Wind Systems A/S Alsvej 21 8940 Randers (DK)
Representative:	Inspicos A/S Kogle Allé 2 P.O. Box 45 2970 Hørsholm (DK)
Respondent: (Patent Proprietor)	Siemens Aktiengesellschaft Wittelsbacherplatz 2 80333 München (DE)
Representative:	Siemens AG Postfach 22 16 34 80506 München (DE)
Decision under appeal:	**Decision of the Opposition Division of the European Patent Office posted on 19 October 2010 rejecting the opposition filed against European patent No. 1314885 pursuant to Article 101(2) EPC.**

Composition of the Board:

Chairman	A. de Vries
Members:	E. Frank
	T. Bokor

Summary of Facts and Submissions

I. The appeal lies from the decision of the opposition division dated 24 March 2010 and posted on 19 October 2010, to reject the opposition against the European patent No. 1 314 885 pursuant to Article 101(2) EPC. The patent had been opposed inter alia on the ground of lack of inventive step.

II. The appellant (opponent) filed a notice of appeal on 28 December 2010, paying the appeal fee on the same day. The statement of grounds of appeal was submitted on 28 February 2011.

III. The parties were summoned to attend oral proceedings, which were duly held on 7 May 2014. The following evidence has been considered for the purposes of the present decision:

D1 = US 5 088 665 A
D5 = DK 95 00009 U and its English translation
D12 = Henrik Stiesdal: "The Wind Turbine, Components and Operation", Bonus-Info 1998 newsletter, BONUS ENERGY A/S, 1998
D13 = Erich Hau: "Windkraftanlagen", Springer, 2nd edition 1996, pp. 186 and 187

IV. The appellant requests that the decision under appeal be set aside and that the patent be revoked.

The respondent (proprietor) requests that the appeal be dismissed, i.e. the patent be maintained as granted (main request), or, alternatively, that the decision under appeal be set aside and the patent be maintained in an amended form on the basis of any of the auxiliary requests 1 to 4 filed during the first instance

proceedings with letter of 23 February 2010 and refiled in the appeal proceedings with its reply dated 28 June 2011.

V. The wording of claim 1 reads as follows:

Main request (claim 1 as granted).

"A method for improving the efficiency of a wind turbine rotor, comprising the furnishing a serrated panel at a trailing edge (3) on each of the wind turbine rotor blades (1) of the wind turbine rotor, each of said panels having a plurality of span-wise, periodic indentations (15), such that the serrations extend from the trailing edge into airflow behind the trailing edge on each wind turbine rotor blade of the wind turbine rotor, wherein the serrations are provided at an angle different from 0 degrees relative to the blade chord, characterized in that the angle of the serrated part changes passively in response to the speed and angle of the air flow at the trailing edge of the blade due to the flexing of the serrations and/or the serrated panel."

Auxiliary request 1

Claim 1 is as in the main request but adds at its end the following text:

"and that stiffness characteristics of the serrated panel are tuned in a way that aerodynamic properties of the serrated trailing edge are automatically and instantaneously adjusted to the actual wind conditions in such a manner that the efficiency of the wind turbine rotor is improved."

Auxiliary request 2

Claim 1 is as in the first auxiliary request but adds at its end the following text:

"and that for the improvement the size, shape and flexibility of the serrations are varied along the winqspan and portions of the wingspan are left without serrations."

Auxiliary request 3

Claim 1 is as in the second auxiliary request, but inserts the following text immediately following the first characterizing feature:

"..., while the panel is manufactured in a material and thickness sufficient to ensure the changing of the angle of the serrated part,
- where at a low ambient wind speed a resulting wind speed vector has a shallow angle to the chord and the shape of the panel is close to the shape unloaded,
- where at a higher ambient wind speed the resulting wind speed vector has a larger angle to the chord and the panel flexes to a position within a range defined by the combination of stiffness characteristics of the serrated panel and the range of aerodynamic forces in the operating wind speed range of the wind turbine,"
and in the penultimate feature replaces "that" by "where".

Auxiliary request 4

Claim 1 is as in the third auxiliary request, but with the first characterizing feature amended to read (amendment highlighted by the Board):

"..., while the panel *is mounted on the pressure side of the blade and* is manufactured ..."

VI. The appellant argued as follows:

Main request
Apart from protruding into the area behind the trailing edge, claim 1 does not specify the extension of the serrations of the serrated panel. Nor does method claim 1 require that the serrations always extend, i.e. in any operating conditions, into the airflow behind the trailing edge. Thus, both the downwardly inclined and outwardly deformed positions of the lift list 4 of the lower profile shown in figure 3 of D5 protrude into the airflow behind the trailing edge as defined by claim 1. The disclosed shape of lift list 4 also lies within the meaning of the term "panel" of claim 1. Moreover, as in claim 1 of the patent, it can also be inferred from D5 that the angle of the flexible lift list 4 changes passively in response to the speed and angle of the airflow, since the angle of attack is a function of the resulting wind speed across the rotor blade: cf. D5, paragraph bridging pages 4 and 5. Hence, claim 1 differs from D5 only in that, instead of lift list 4 a serrated panel with a plurality of span-wise periodic indentations are foreseen.

The problem underlying this distinguishing feature can be seen in an increase of the blades' lift/drag ratio, see patent specification, paragraph 0005. The competent skilled person faced with this problem is familiar with the technical field of aerodynamics, cf. D12, page5, or D13, page 186. Thus, the skilled person would indeed turn to D1, which suggests a serrated panel at the trailing edge of, e.g., a propeller blade to improve

its lift and drag characteristics. This is a general teaching in D1, see col. 2, 4th paragraph., and is in no way bound to the fixed angle arrangement with pivotable hinge of the figure 2 and 3 embodiments. Therefore, starting from D5, figure 3, lower profile, the skilled person would readily adapt the lift list 4 by incorporating serrations as in D1, to improve the rotor blades' lift/drag ratio to thus arrive at the subject-matter of method claim 1. Claim 1 of the main request, therefore, does not involve an inventive step.

Auxiliary requests
The passive changing of D5's lift list 4 must inherently be effected automatically and instantaneously as in claim 1 of the 1st auxiliary request. Moreover, since the figure 4 embodiments of possible serrations in column 4 of D1 are again not limited to figure 2 and 3 arrangement, D1 also discloses a variation of size, shape, and thickness of serrations along (portions of) the wingspan. Since size and shape are varied, flexibility will necessarily also change in claim 1 of the 2nd auxiliary request. Furthermore, when the wind speed increases, the angle of attack relative to the chord will inevitably increase in D5 as in claim 1 of the 3rd auxiliary request. Finally, in D5, figure 3, lower profile, the lift list 4 is securely mounted on the profile's pressure side as required by claim 1 of the 4th auxiliary request. In summary, method claim 1 of the auxiliary requests thus also does not involve an inventive step in the light of D5 and D1.

VII. The respondent argued as follows:

Main request

Claim 1 requires that the serrations of the serrated panel extend from the trailing edge into airflow behind the trailing edge at any time, i.e. always. D5 figure 3, lower profile, shows a cut-away view of a rotor blade and thus the profile's chord line can not clearly be derived. In any case the chord does not extend by the downwardly angled lip 5 in its normal position: on page 6 of D5 it is clearly stated that the lift list 4 usually, i.e. in the undeformed state of lip 5, does not contribute to an increase of the chord. Thus, different to the method of claim 1 of the patent, lip 5 of lift list 4 of D5 does not always extend into airflow behind the trailing edge. This is however essential in order to passively react to the angle of the air flow at all times. Moreover, even the snap-action to a new position 6 of lip 5 of D5's lift list cannot be considered a passive change in response to the angle of the airflow as required by claim 1, since in D5, see page 6, this action was invariably a function of the resulting wind speed. Finally, the angled lift list 4 of D5, see figure 3, does not form a "panel" as defined by claim 1.

The rotor blade shape of a wind turbine is decisive for the performance of the blade, e.g. as to its noise level, see D12, page 5. In the early days of wind turbine blade design profile improvements might have been influenced by past experience in aerofoils, but this was no longer the case. Since D1 referred to aircraft constructions, the competent skilled person in the technical field of rotor blade design for wind turbines would therefore not have taken it into consideration. Even if he had, D1 only suggests an actively adjusted and pivotably hinged panel at constant angles, which is also coplanar with the airplane's wing chord, as followed in particular from

the figure 2 and 3 embodiment of D1 read in conjunction with column 3. Thus, the skilled person would in any event not consider the serrations of D1, which are only adjustable at fixed angles, suitable for a passively flexing lift list as in D5, if the lift to drag ratio had to be increased. Thus, method claim 1 of the main request is inventive over D5 and D1.

Auxiliary requests

D5 and D1 do not provide any suggestion as to stiffness characteristics that enable the panel at the trailing edge to respond to the speed and angle of the air flow. Rather, on page 6 of D5, last line, it is stated that in the event of higher resulting wind speeds, less buoyancy is provided when the lift list 4 has been deformed. However, this is in contrast to the effect provided by the method of claim 1 of the 1st auxiliary request, since due to the automatic and instantaneous flexing of the serrations, the lift/drag ratio, i.e. the buoyancy, is increased. This effect was even more clearly specified in claim 1 of the 3rd auxiliary request, where in addition the panel's response at low ambient wind speed is defined. Moreover, since in claim 1 of the 2nd auxiliary requests size, shape and flexibility are varied, the serrations could be adapted in a more subtle manner to the blade. Although other possible embodiments of serrations are shown in figure 4 of D1, these serrations related to the figure 2 and 3 embodiment as described from col. 3, line 58 onwards. Hence, the variations in size, shape and thickness of the panel's saw teeth described in col. 4 of D1 are bound to the concept of an active hinge connection as taught in fig. 2 and 3, and thus would never be considered suitable for a passively deforming lift list as in D5 (2nd auxiliary request). The mounting of the panel on the pressure side of the blade as in claim 1

of the 4th auxiliary request, in addition is advantageous for retrofitting. In conclusion, method claim 1 of the auxiliary requests is not obvious in the light of D5 and D1, and therefore inventive.

Reasons for the Decision

1. The appeal is admissible.

2. *Inventive step - main request*

2.1 The angle of attack of an aerofoil, such as a rotor blade of a wind turbine, is the angle formed by the chord line of the blade and the relative wind speed. At a given flow speed, as the angle of attack is increased, lift also will increase. At high angles to the flow when the critical angle of attack of the blade design is exceeded, the blade will abruptly lose lift, and the rotor blade stalls. In this context "chord" or "chord line" is commonly understood to refer to the straight line connecting the leading edge to the trailing edge of the rotor blade at a given cross section along the blade.

The Board notes that claim 1 does not specify that at a given angle of attack the serrations of the serrated panel at the trailing edge of the rotor blade extend in the direction of the chord line. Rather, they extend “from the trailing edge into airflow behind the trailing edge”. Using normal reading skills the skilled person reads this as meaning that a portion of the serrated panel extends into the area behind the rearward, trailing edge of the rotor blade, and in this manner the serrations extend into the airflow.

The Board furthermore agrees that, as argued by the appellant, claim 1 does not require that the serrations must extend into the airflow behind the trailing edge at all times. In particular method claim 1 refers to the furnishing of the serrated panel at the trailing edge, but also includes the method step of changing passively the angle of its serrated part in response to the speed and angle of the air flow when the wind is blowing. This can occur at any operation condition of the wind turbine, be it during standstill or operation of the wind turbine at a certain wind speed. This feature therefore does not represent a clear limitation of the serrated edges use.

2.2 It is common ground that document D5 forms the closest prior art. The Board shall hereinafter refer to its English translation as filed with letter dated 18 May 2009. This document relates to the mounting of an elongated body onto the rear edge of the pressure side of wind turbine blades, in such a way that the buoyancy and the stalling angle (i.e. the angle of attack) are controlled. This results in an improvement of efficiency, whilst the noise contribution is relatively small compared to, e.g., vortex generators or gurney flaps. See D5, abstract, and page 3, line 26 to page 4, line 15.

D5 suggests a continuous or segmented body of a so-called lift “list” as the elongated body at the trailing edge, cf. D5, page 4, line 17 to page 5, line 2. Figure 3 of D5 shows two versions of an embodiment that changes its "conformation as a function of the local resulting wind speed" across the blade, the list being "deformed passively" at higher resulting wind speeds, cf. D5, page 6. As advanced by the appellant in this regard, it is well-known to the skilled person

that the resulting wind speed (vector) and the blade's chord line define the angle of attack of the rotor blade. Therefore the angle of the airflow is a function of the resulting wind speed: see point 2.1 above, cf patent specification , column 5, lines 14 to 30. The deformation is shown in figure 3 as a change in the angle of the lift list.

Consequently, in the event of higher resulting wind speeds, the lift list of D5 will be deformed passively, namely its angle will be changed passively in response to the speed and angle of the airflow, whereby its aerodynamic effect is controlled, just as in claim 1 of the patent due to the flexing of the serrations and/or the serrated panel.

2.3 The lower half of figure 3 of D5 shows the second version of a lift list 4 with a lip 5, which forms a certain angle to the pressure side of the blade during stand still or lower resulting wind speeds. Since the shape of the lift list is flat and elongate, it falls under the normal meaning of the term "panel" of claim 1. The Board further notes, that, in similar manner to the lip 5 of list 4 in figure 3 of D5, the serrated panel of claim 1 may also bend or hinge about an axis extending the length of the panel, cf. patent specification, paragraph 0026, and figure 7: cross section of the serrated panel in the middle.

In the event of higher resulting wind speeds, the lift list of the lower profile in figure 3 will be deformed passively, such that its lip 5 attains a new position 6 increasing the chord but providing less buoyancy (n.b. the last sentence of page 6 taken to refer to the second embodiment erroneously uses the reference signs of the upper figure; "lip 2" and "position 3" at line

10 of page 6 should thus read: "lip 5" and "position 6"). As stated in lines 6 to 8 spring action, i.e. a returning force, can be obtained by deformation of the material.

2.4 As argued by the respondent, the cut-away view of the lower embodiment of figure 3 does not show the entire cross section of the rotor blade and hence the chord line cannot, in fact, be determined. Nor is the rotor blade's angle of attack indicated in figure 3.

However, regardless of the profile's exact angle of attack or whether the lift list 4 does or does not contribute to an increase of the chord as stated on page 6 of D5, the skilled person would immediately glean from figure 3 that in any case the downwardly inclined lip 5 extends into the area behind the trailing edge in its undeformed state, be it at standstill or lower resulting wind speeds. For this reason alone, see point 2.2 above, the lower embodiment of figure 3 of D5 discloses a panel having a lip 5, which extends from the trailing edge into airflow behind the trailing edge on each rotor blade as required by claim 1 of the patent.

2.5 As noted above claim 1 does not require the lip to extend into the airflow under all conditions. It suffices if it does so under certain conditions, for example that of high wind speeds. This would also, fall within the ambit of method claim 1, see point 2.3 above. Thus, the Board considers the deformed position 6 of D5's lip 5 at higher resulting wind speeds also as a direct and unambiguous disclosure of a panel portion according to claim 1 which extends from the trailing edge into airflow behind the trailing edge.

2.6 Otherwise, it is common ground that the subject-matter of claim 1 differs from the second version of D5's figure 3 embodiment in that, instead of the lift list 4 with its lip 5, a serrated panel is provided at the trailing edge of each wind turbine rotor blade, each of the panels having a plurality of span-wise, periodic indentations.

Since according to the patent (see specification paragraphs 0005 and 0014) the provision of the blades with serrated trailing edges has a beneficial impact on the aerodynamic efficiency of the profile in terms of lift to drag ratio, the underlying problem of this distinctive feature is regarded as further improving the lift/drag characteristics of D5's rotor blade.

2.7 Although the Board acknowledges that the shape of the aerodynamic profile is decisive for blade performance of a wind turbine, nevertheless it must follow the fundamental physical laws of aerodynamics of objects in an air flow, and the forces that are produced by air flows. Cf. D12, page 5. For this reason, developments in the technical field of wind turbine rotor blades generally follow those in the wider field of aerodynamics, and many measures that are adopted in wind turbine rotor blade design originate as improvements in similarly shaped aerofoil bodies producing an aerodynamic force such as wings or rotor blades. For example, common lift modifying devices such as stall strips, vortex generators, and flaps (aircraft), or Gurney flaps (car racing, helicopter stabilizers), have already been used on wind turbine rotor blades to improve the lift/drag ratio or otherwise adjust the aerodynamic characteristics of the rotor blade, see the patent, specification paragraph 0007; document D5, page 3, line 26 to page 4, line 10;

and the common general knowledge described by D13, page 186, third paragraph.

Contrary to the respondent's view, therefore, in the case at hand the relevant skilled person involved in the design of wind turbine rotor blades will possess a sound knowledge in the field of aeronautical engineering.

2.8 Thus, faced with the problem of further improving the lift to drag ratio of D5's rotor blade, the skilled person with aeronautical knowledge would for example consider document D1, which is related to an aerofoil where the principles of an aerodynamic lifting surface apply, such as a wing or propeller blade. See D1, column 3, lines 32 to 42.

2.9 In particular, D1 is concerned with the concept of improving the lift and drag characteristics of the aerofoil throughout the entire angle of attack range, by means of a serrated panel. The panel has a plurality of span-wise, periodic indentations, and is connected at the trailing edge of the aerofoil. Cf. D1, abstract, column 1, lines 15 to 20, column 2, lines 17 to 27, and column 6, lines 5 to 12.

2.10 Moreover, D1 suggests that the connection may be fixed with no pivotal action provided at an angle formed by the serrated panel and chord that lies between 0 and 90 degrees, cf. D1, figure 13, column 3, lines 52 to 57. According to a further embodiment illustrated in figure 5 the serrations may also be integrally formed in the trailing edge and, thus, separate connecting means are not required, cf. D1, column 5, lines 8 to 10. Therefore, as argued by the appellant, a pivotable hinge is not mandatory to connect the serrated panel to

the trailing edge of the aerofoil. Nor must the serrated panel be adjusted in discrete positions, such as coplanar with the chord line. This is only described in the context of the further embodiment of figures 2 and 3, cf. D1, column 3, line 48, to column 4, line 4.

2.11 Following from above, based on D1's disclosure no functional relationship between the aerodynamic effects provided by the serrations and their way of being attached to, or arranged along, the trailing edge of an aerofoil is taught to the skilled person. Nor are any particular stiffness properties of the serrations of the serrated panel vis-à-vis their advantageous lift and drag characteristics derivable from or hinted at in D1.

2.12 Finally, no plausible argument has been given by the respondent, as to why the general concept of providing serrations at the trailing edge might possibly not be suitable or ideal for rotor blades of a wind turbine, e.g. for reasons of increased aerodynamic noise, or any other trade-offs. The patent itself, at specification paragraph 0008, cites D1 but mentions no disadvantages in connection with wind turbines.

2.13 Therefore the Board concludes that, starting from the lower profile of figure 3 of D5 and faced with the problem to further improve its lift and drag characteristics, the skilled person would consider the aerodynamic concept of D1, and modify the angled flexible lift list 4 at the trailing edge of D5's rotor blade in such a way that it is serrated along its downwardly angled lip 5 with a plurality of span-wise, periodic indentations.

2.14 In summary, the Board holds that method claim 1 of the main request does not involve an inventive step, contrary to the requirements of Articles 100(a) and 56 EPC.

3. *Inventive step - auxiliary request 1*

3.1 Compared to the main request, method claim 1 of the first auxiliary request has been further characterised in that:

- the serrated panel provides stiffness characteristics tuned in a way that aerodynamic properties of the serrated trailing edge are automatically and instantaneously adjusted to the actual wind conditions in such a manner that the efficiency of the wind turbine rotor is improved.

3.2 The Board follows the appellant's view that the wording "automatically and instantaneously adjusted" in claim 1 does not imply properties that are not already present or inherent in D5's lift list. Indeed on page 5, first paragraph, D5 explicitly states that it is provided that the lift list may "automatically be adjusted to the current wind speeds", so that it must also be provided with the same characteristics as claimed.

The Board adds that the respondent's argument that the stiffness characteristics of the serrated panel as in claim 1 of the auxiliary request 1 result in an increase of the lift/drag ratio, whereas D5, see page 6, last two lines, is concerned with the different aim of increasing the chord but providing less buoyancy, also fails to establish a clear difference over D5. The Board refers to paragraph 0027, lines 14 to 30, concerning the patent's figure 9 embodiment. In the

lower profile of figure 9 the serrated panel flexes upwardly at higher ambient wind speed. At that moment lift, i.e. buoyancy, of the lower profile shown in figure 9 of the patent is reduced and the chord increased. Hence, the effects in D5 and in the patent are the same or similar, and the lift list of D5 must possess similarly tuned stiffness characteristics to passively regulate the efficiency of the wind turbine in case of the resulting wind speed vector having a (too) large angle of attack.

3.3 As the added features fail to further differentiate the claimed subject-matter from D5, claim 1 of the auxiliary request 1 also lacks an inventive step in the light of D5 and D1, for the same reasons as for the main request, contrary to Article 56 EPC.

4. *Inventive step - auxiliary request 2*

4.1 With respect to auxiliary request 1, method claim 1 of the second auxiliary request has been further characterised in that:

- for the improvement the size, shape and flexibility of the serrations are varied along the winqspan and portions of the wingspan are left without serrations.

As argued by the appellant, the patent is silent as to the particular technical effects associated with these newly added features, apart from that they "maximise the improvement" of efficiency of the wind turbine rotor, see patent specification, column 6, lines 2 to 6. According to the respondent, however, the skilled person can readily deduce that varying the serrations on the rotor blade allows the serrations to be better or more subtly adapted to the rotor blade.

4.2 Turning to column 4 of D1, it is derivable from line 5 onwards that the serrations are preferably symmetric in shape. These serrations can be applied evenly over the full span, but also partially along the wing span as in claim 1 of the first auxiliary request. These configurations of the serrations are generally illustrated in figures 14, 15, and 16, and are clearly not exclusive to the figure 2 and 3 embodiment. A subsequent passage starting from line 14 of column 4 onwards states "although the saw teeth illustrated in figures 2 and 3 are symmetrically shaped with the serratia cut at 60 degrees included angles, *other possible embodiments are illustrated in the other drawings. For example*, in figure 4, ..." (italics added). The skilled person readily infers herefrom, that such other possible embodiments of serrations as illustrated in figure 4 are alternative to and certainly not bound to the active pivotal connection embodiment of figures 2 and 3, just as he will not read the symmetric shape of the serrations as limited to figures 2 and 3, cf. D1, column 4, lines 5 to 44.

Contrary to the respondent's view, the skilled person would therefore consider that figure 4 of D1 imparts a more general teaching for realizing serrations, namely by varying their shape, geometric depth "D", or thickness. For the sake of completeness, the Board notes that figures 6 to 9 of D1, and the corresponding text, column 5, line 11 onwards, also suggests various other shapes of serrations, where once again size and thickness (see column 5, line 36: "may be thin") are varied.

4.3 As argued by the appellant, varying the thickness and shape of serrations as suggested in D1, see above, must

inherently result in a variation of their flexibility. All the claimed variations are thus taught by D1. As in the patent it will be apparent to the skilled person that these variations represent an enhanced adaptability to requirements. Therefore, faced with the problem of a more subtle adaptation of the advantageous lift/drag ratio of the serrations to the rotor blade, the skilled person will draw on the further teaching of D1 when adopting its serrations to realize them with varied size, shape and flexibility and only along part but not all of the wingspan.

4.4 Therefore, claim 1 of the auxiliary request 2 again lacks an inventive step, Article 56 EPC, in the light of D5 and D1.

5. *Inventive step - auxiliary request 3*

5.1 With respect to method claim 1 of the second auxiliary request, in method claim 1 of the third auxiliary request moreover the following features have been inserted after the characterising part of the main request:

- the panel is manufactured in a material and thickness sufficient to ensure the changing of the angle of the serrated part,

- where at a low ambient wind speed a resulting wind speed vector has a shallow angle to the chord and the shape of the panel is close to the shape unloaded, and

- where at a higher ambient wind speed the resulting wind speed vector has a larger angle to the chord and the panel flexes to a position within a range defined by the combination of stiffness characteristics of the

serrated panel and the range of aerodynamic forces in the operating wind speed range of the wind turbine.

5.2 Since these newly added functional features are known from D5, see points 2.5, 2.6, and 3.2 above, the Board's conclusion under point 4.4 of this decision applies mutatis mutandis.

6. *Inventive step - auxiliary request 4*

6.1 With respect to method claim 1 of the third auxiliary request, in method claim 1 of the fourth auxiliary request moreover the following feature has been inserted after the characterising part of the main request:

- the panel is mounted on the pressure side of the blade.

6.2 According to the respondent, this makes it easier to furnish the rotor blade with a serrated panel as a retrofit. However, since the lift list of D5 (see page 6) is also attached to the pressure side of the blade, the Board's finding under point 5.2 equally applies.

7. In the light of the above, none of the respondent's requests can be considered allowable by the Board.

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:

G. Magouliotis A. de Vries

Decision electronically authenticated