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Datasheet for the decision of 8 January 2020

Case Number: T 1169/16 - 3.2.04

Application Number: 09012887.7

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IPC: F03D11/00, F03D11/04, E04H12/08, E04H12/34, F03D1/00, B66B9/00

Language of the proceedings: EN

Title of invention:
A wind turbine tower elevator and a method for assembling a wind turbine tower

Patent Proprietor:
Vestas Wind Systems A/S

Opponent:
Siemens Aktiengesellschaft

Headword:

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

Keyword:
Sufficiency of disclosure - (yes)
Amendments - added subject-matter (no)
Inventive step - (yes)
Novelty - (yes)

Decisions cited:

Catchword:

Europäisches Patentamt
European Patent Office
Office européen des brevets

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 1169/16 - 3.2.04

D E C I S I O N
of Technical Board of Appeal 3.2.04
of 8 January 2020

Appellant: (Opponent)	Siemens Aktiengesellschaft Werner-von-Siemens-Straße 1 80333 München (DE)
Representative:	Siemens AG Postfach 22 16 34 80506 München (DE)
Respondent: (Patent Proprietor)	Vestas Wind Systems A/S Hedeager 42 8200 Aarhus N (DK)
Representative:	Inspicos P/S Kogle Allé 2 2970 Hørsholm (DK)
Decision under appeal:	**Decision of the Opposition Division of the European Patent Office posted on 21 March 2016 rejecting the opposition filed against European patent No. 2136017 pursuant to Article 101(2) EPC.**

Composition of the Board:

Chairman	A. de Vries
Members:	S. Oechsner de Coninck
	T. Bokor

Summary of Facts and Submissions

I. By its decision dated 21 March 2016 the opposition division rejected the opposition against the European patent No. 2 136 017. On 12 May 2016 the appellant-opponent filed an appeal and paid the appeal fee simultaneously. The statement setting out the grounds of appeal was filed on 17 June 2016.

II. The opposition division held that the grounds for opposition mentioned in Article 100 (a),(b) and (c) EPC did not prejudice the maintenance of the granted patent having in particular regard to the following documents:

ES7: DE 20206290 U1
ES8: ES 1043689 U (with German translation)
ES12: DE 2400313 A1
ES14: DE 10318020
ES17: DE 1 866 876

III. Oral proceedings were held on 08 January 2020.

IV. The appellant requests that the decision under appeal be set aside, and that the European patent No. 2 136 017 be revoked.

V. The respondent (patent proprietor) requests that the appeal be dismissed, i.e. that the opposition be rejected (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 the auxiliary requests 1 to 13 filed with the response to the grounds of appeal dated 3 November 2016.

VI. The independent claims 1 and 11 according to the main request read as follows:

1."A tapered wind turbine tower (2) comprising inside it a wind turbine tower elevator (22), characterized in that
said elevator (22) comprises means for enabling both vertically and horizontally movement of said elevator and means for making an elevator basket (23) of said elevator (22) maintaining a constant distance to the inside surface of said tapered wind turbine tower (2), said means comprising vertical or substantially vertical guides (27) connected to said tower (2), said guides (27) extending at a constant distance from the inside surface of said tower (2)."

11."A method for assembling a wind turbine tower (2) by use of an elevator inside said tower (2), characterised in that said method comprising the steps of,
establishing at least two annular tapered tower rings (8, 9, 14)
mounting a first tower ring (8, 9, 14) of said at least two tower rings (8, 9, 14) on at least a further tower ring (8, 9, 14) of said at least two tower rings (8, 9,14), making said first tower ring (8, 9, 14) overlap said further tower ring (8, 9, 14), and
connecting said first tower ring (8, 9, 14) and said further tower ring (8, 9, 14) through their overlap (35) by use of connection means wherein said connection means are tightened up by use of said elevator (22) which comprises means for enabling both vertically and horizontally movement of said elevator and said means making an elevator basket (23) of said elevator (22) maintaining a constant distance to the inside surface of said wind turbine tower (2), said means comprising vertical or substantially vertical guides (27) connected to said tower (2), said guides (27) extending at a constant distance from the inside surface of said tower (2)."

VII. The appellant argues as follows:

- Concerning sufficiency, the claims require horizontal movement and constant distance. Horizontal movement is only described at the top, and it is not clear how the horizontal movement is to be realised on a lower level.
- Granted claim 1 contains subject-matter not comprised in the original disclosure. Figure 12 and the corresponding description appear contradictory, the overlapping parts of the tower rings are not shown. A constant distance to the wall is not possible due to the overlaps. For this reason, there could not have been any clear and unambiguous disclosure for a skilled person of the "constant distance" feature.
- Concerning novelty, any means that enable movement along a wall that is not completely vertical must inevitably include a horizontal component. ES8 and ES14 are novelty destroying because they disclose a tapered wind turbine tower in which the basket moves with such a horizontal component.
- Starting from either ES8 or ES14, the skilled person trying to improve access to the whole inner side of the tower, would find the solution in ES12 and use the whole cable system as an obvious alternative to the rails disclosed in ES8 (or ES14).

VIII. The respondent argues as follows:

- For sufficiency, no proof of verifiable facts are provided why at least the detailed embodiment cannot be carried out by the skilled person. The guiding means at the top is sufficiently clearly described to enable movement in the horizontal direction.
- A proper interpretation of the constant distance does not require an exactly constant distance, but only that the slope of the rails and the walls are the same, that they are essentially parallel.

- Claim 1 should be read as defining vertical and horizontal movement as distinct and separate. Neither ES8 nor ES14 describes means for enabling such movement.
- The skilled person would not combine ES8 with ES12 because ES12 relies on a cable system structurally incompatible with the rails and toothed rack of ES8.

Reasons for the Decision

1. The appeal is admissible.

2. Background - Interpretation of claims 1 and 11

The patent concerns a tapered wind turbine comprising an elevator and a method for assembling a wind turbine tower using the same elevator. The core of the invention resides in an elevator that comprises means for enabling both vertical and horizontal movement and so allows access to the whole inner side of the tower.

2.1 It is established case law regarding claim interpretation that the skilled person reads a claim contextually, with his normal reading skills, i.e. with synthetical propensity, building up rather than tearing down, so as to arrive at an interpretation which is technically sensible and takes into account the whole of the disclosure of the patent (Case Law of the Boards of Appeal, 9th edition, 2019, (CLBA) II.A.6.1).

2.2 Reading the whole content of claim 1 in this manner, the skilled person first learns that there is provided "means for enabling both vertically and horizontally [sic] movement of said elevator", as well as means that maintain a constant distance to the tower, wherein the tower is explicitly defined as tapered in the

introductory statement of the claim. The claim then specifies that such means comprises "*vertical or substantially vertical*" guides connected to said tower, wherein the guides extend at a constant distance from the inside surface. The skilled person understands "substantially vertical"guides as being vertical "to a great extent", "in the main" or "to all intents and purposes" (see definition of "substantially" in OED), which may but does not need to include a small horizontal component. In conjunction with "vertical" this formulation allows for some small horizontal component, but it is nevertheless squarely focussed on the vertical quality of the guides. The skilled person thus understands it as defining that part of the "means enabling .... movement" that enables vertical movement of the elevator, distinct from that part of the means which enable the horizontal movement purposely mentioned in the claim.

Consequently, the skilled person understands the claim wording, read contextually and with their mind willing to understand, to define means that enable distinct and separate vertical and horizontal movements, where the means for vertical movement is then further specified as the guides extending at a constant distance from, that is parallel to, the tower inside surface, while the means for horizontal movement is left unspecified.

2.3 This construction of the claimed wording is also fully supported and consistent with the description. The core of the invention as stated in paragraph 10 relies on moving the elevator vertically and horizontally to enable easy access to substantially the entire inside surface of the tower. This can only be obtained if the means for horizontal movement are different from the vertical guides. The means for horizontal movement are

shown in figure 12. The last sentence of paragraph 67 describes the upper rail 25 depicted in figure 12 as means to move the elevator basket in the horizontal direction.

3. Sufficiency - Article 100(b) EPC

3.1 The appellant disputes the possibility for the skilled person to realise the horizontal movement, which according to the claim 1 is not limited to be enabled only at the top of the tower, but at any position along the tower. The patent does not explain how uncoupling and subsequent re-coupling that would allow a constant distance might take place at positions other than at the top of the tower, nor would this be immediately apparent from common general knowledge.

3.2 Horizontal movement to access the whole inner side of the tower is explained in paragraphs 66 to 69 in relation to figure 12. In paragraph 69 the skilled person learns that "when the basket 23 is in its top position, it can be moved freely horizontally on the annular rail 25. The basket 23 is then connected to a vertical rail 27 or rail pair by guiding means 30, and when the basket 23 is lowered it will maintain a constant distance to the inside of the tower rings 14, even though the horizontal cross section of the tower rings 14 increases downwards." This embodiment represents the at least "one way" to carry out the invention as consistently required by case law (CLBA, 9th edition 2020, II.C.5.2).

3.3 Since one way of realising a horizontal movement is disclosed in detail, and allows the skilled person to realize suitable means for its realisation, the invention is sufficiently disclosed for them to carry

out the invention, particularly in relation to the "means for enabling...horizontal movement" within the scope of claim 1. Thus, they are given the necessary information to realize the enabling means such that any part of the inner surface of the tower is accessible. That the Appellant-Opponent has conceived of the possibility of horizontal movement elsewhere other than at the top, where coupling and uncoupling would be practically impossible to realise without departing from the required constant distance, is not relevant to the question of sufficiency. Such an embodiment would not meet that requirement of the claim and thus does not fall within the claim scope. In any case other than alleging a hypothetical embodiment the Appellant has provided no evidence that the information provided in the patent is intrinsically so wrong or incomplete that the skilled person cannot carry it out, or that carrying it out would require undue burden. In this context it is noted that the burden of proof lies with an (appellant) opponent to rebut the general presumption of sufficiency of a claimed invention, see CLBA Chapter II.C.9. The level of proof depends on the strength of presumption. Generally, where inventions of a basic mechanical nature are concerned, such as in the present case, that presumption that the invention is sufficiently disclosed is very strong indeed and the level of proof required commensurately very high.

3.4 The above conclusions apply *mutatis mutandis* to the method claim 11.

3.5 The Board thus confirms the opposition division's positive assessment of sufficiency, Article 100(b) EPC.

4. Added subject-matter - Articles 100 c) and 123(2) EPC

4.1 During examination claim 1 has been amended by adding the last feature: "said guides extending at a constant distance from the inside surface of said tower."
This feature has no explicit basis in the text of the original application as filed (EP 2 136 017 A) which contains the same description as the parent application as filed (WO 2007/082531 A1). Claim 11 also contains the same amendment.

4.2 The Board is convinced that the skilled person, using his common general knowledge, would have directly and unambiguously derived from the whole application as filed that the guides extend at a constant distance.

4.3 Claim 1 as granted is otherwise based on claim 1 as filed, respectively parent claims 23 and 24, which require means for maintaining the basket at a constant distance from the tower inside surface. Therefore the core idea of keeping the basket at a constant distance along its vertical path has been disclosed both in the parent application as well as in the divisional application as filed. Contextual reading of the whole description in particular from the paragraphs [106] and [107] (page 20, line 23, to page 21, line 2 of the parent description), define the relevant means for the realisation of the vertical guides either as rails or very tight cables. For the skilled person the only conceivable manner that this central aspect can be realized by guides in the form of rails or tight cables is if they themselves are attached at a constant distance from the wall. This is indeed what is shown in the relevant figure 12, where the vertical guides 27 clearly extend parallel to, i.e. at a constant distance from the tower inner wall.

4.4 The appellant considers that there is a contradiction between the representation of figure 12 and the configuration of the tower because of the overlapping of ring segments bolted together as for example shown in figures 8 and 9. The overlaps form steps on the inside surface along which a straight rail or tight cable as in figure 12 cannot possibly extend in parallel. Due to this contradiction or inconsistency the added feature is not unambiguously disclosed.

4.5 The Board is unable to see such a contradiction. Figures 12 and 13 are the only figures relating to the arrangement of the elevator within the tower. They are both clearly of schematic nature including only that detail which the draughtsman considered necessary to illustrate the central aspects of the invention. For this reason the walls in figure 12 are shown as unsegmented, smooth and rectilinear. Seams, flanges or overlapping parts have been left out as insignificant detail distracting from the general idea that the elevator must travel parallel to the inside wall. Thus figure 12 illustrates that parallel is to be understood on a general scale in relation to the general extension of the wall and regardless of any minor local variation or irregularity that must necessarily exist due to seams, flanges and the like. These variations the draughtsman considered insignificant. With this understanding of the figures the skilled person does not see any contradiction or ambiguity.

4.6 Thus, the Board confirms the conclusion of the opposition division that the subject-matter of claims 1 and 11 of the patent as granted does not extend beyond the content of the application as filed, and the ground for opposition mentioned in Article 100(c) EPC does not prejudice the maintenance of the patent as granted.

5. Novelty

5.1 Claim 1 and claim 11 both contain the same expression: "means for enabling for both vertically and horizontally movement of said elevator." In the appellant's view the claim terms should be given their broadest meaning to encompass also means that enable movement along a path inclined to the vertical and that therefore includes both horizontal and vertical components. The documents ES8 and ES14 show such movement of an elevator along an inclined path, due to the taper of their towers and would therefore be novelty destroying.

5.2 The Board disagrees. As already explained in section 2.2 above the skilled person understands the claim terms to define means enabling distinct and separate vertical and horizontal movement, with the means enabling vertical movement specified as the vertical or substantially vertical guides parallel to the inner surface. Thus the skilled person understands horizontal movement to be enabled by other unspecified means.

5.3 With the above understanding, reading the disclosure of ES8 or ES14 with the terms of claim 1 or 11, both disclosures are seen to include vertical or substantially vertical guides parallel to the wall, but not means which enable a distinct and separate horizontal movement.

ES8 (page 4, last 3 paragraphs) discloses an elongated tapered tower of a wind turbine 7 (Figure 1), where an elevator basket (Kabine 1) ist movable along a rail structure (Trägersäule 2). A central toothrack (Zahnstange 4) can be engaged by toothed wheels

(Zahnräder 5) driven by motors (Motoren 6) to move the basket along the lengthwise direction of the tower. This tower as depicted in figure 1 is of the classical tapered configuration. The skilled person reading claim 1 on this disclosure, directly identifies this rail structure 2 to correspond to the guide means extending at a constant distance from the inside surface of said tower defined in claims 1 and 11. No other means is disclosed in ES8 that would allow the basket 1 to move otherwise than along this rail, and therefore fails to disclose the means for enabling "horizontally" movement required by claims 1 and 11.

ES14 discloses a tower having a frame structure (Gitterturm 11) for a wind turbine (Windkraftanlage 11). An access system (Zugangseinrichtung 13) comprises a rail (Schiene 14) provided inside the framed tapered structure. The access system is also foreseen as an elevator system (Aufzug, paragraph 21). The rail attached to the inner side of the tower corresponds to the guide means extending at a constant distance from the inside surface of said tower defined in claims 1 and 11. As for ES8 no other means is disclosed in ES14 that also fails to disclose the means for enabling "horizontally" movement required by claims 1 and 11.

5.4 In the light of the above the Board confirms the opposition division's positive finding of novelty with respect to ES8 or ES14.

6. Inventive step

6.1 Inventive step has been challenged starting from either ES8 or ES14 as a suitable starting point. As concluded in relation to novelty, the tapered wind turbine of claim 1 differs from each of these disclosures at least

by the means for enabling horizontal movement as distinct and separate means from the vertical guides as interpreted above.

6.2 The objective technical problem has to be formulated in accordance with the technical effect associated with this separate means for enabling horizontal movement. Accessibility to the whole inner surface of the wind turbine is obtained by these additional means and the problem can be formulated as to improve access to the the inner wall of a wind turbine tower. This problem is also in conformity with the technical problem expressed in paragraph 10 of the patent.

6.3 The Board further agrees, that, as submitted by the appellant, the relevant skilled person is a team including a person skilled in wind turbine design and development and a person skilled in the field of lift technology. That team will thus most likely be familiar with the lift systems disclosed in ES7, ES12 and ES17 but in non-windturbine applications. The central question is whether these documents offer the solution claimed and (for the skilled team) are easily transferable to the windturbine and elevator systems of ES8 or ES14.

6.4 ES12 has been submitted as offering a solution known to the person skilled in lifts for elongated structures that the team of skilled person would consider as an easily usable solution. However, its elevator system is structurally significantly different from that used in ES8. In ES12 the elevator system is specifically adapted for a cooling tower, which is designed as a central strut 1 on which is hung a network of cables forming the tower's outer wall, see figure 1.

The elevator system is shown in detail in figure 2 and explained on pages 3 and 4. Between upper and lower trolleys (Laufkatzen 11,12) two carrying cables (Führungsseil 17) serve to guide an elevator basket (Aufzugskorb 18), that is moved along a generally vertical direction by pulling cables (Seilwinden 26). The trolleys are provided with wheels (Laufräder 15) that engage I-profiled circumferential rails (Kreisschienen 13,14). Moving the trolleys around the circumference of structural spaced apart rings (Ringe 3,6,7,8) allows for horizontal movement and permits access to the whole inner surface of the cooling tower between each ring. The cooling tower disclosed in ES12 is made of a non-self-supporting envelope (page 2, paragraph 2, last three sentences). The annular rings 3,6,7 and 8 carried on a central mast 1 by a cable network 4 form the carrying structure of that tower, and thus its load bearing part. Each envelope section between two consecutive rings is curved and made of a soft material, for example a resistant web. Therefore the rings constitute the only possible parts on which the trolleys and cable system that permit horizontal movement can be mounted. Therefore for the skilled team, the means for moving the basket in the horizontal direction is specifically adapted to the non-self-supporting structure of the cooling tower of ES12, in particular the absence of a structural part between the rings that could bear an attachment means or other load carrying assembly.

6.5 Given this fact, that the elevator system of ES12 is specifically adapted for a non-self-supporting cable wall structure, and the fact that the wall structure of ES8 or ES14 is significantly different, the Board holds that it is neither obvious nor straightforward for the skilled person to adopt ES12's elevator system for

application to ES8 or ES14. Thus, starting from ES8 the lifting movement of a lift basket on vertical rails by a driving pinion along the toothed rack is not compatible with the horizontal guiding means in form of trolleys as in ES12. The upper and lower trolleys 11,12 (ES12, figure 2) that enable movement in the horizontal direction are designed for use with flexible guiding means such as cables and it is not apparent how they could carry or otherwise be used to move a rigid assembly in form of a toothed rack or other rigid rail that needs tight cooperation. Therefore the Board is unconvinced that directly applying the system of ES12 to impart lateral movement to the fixed rack attached along the whole length of the tower of ES8 could be adopted as such using straightforward measures.

6.6 The Board is also unconvinced that the team of skilled persons would simply transfer the entire wall concept of ES12 and replace the whole arrangement of ES8 by this cable system. Clearly, the outer wall structure of a cooling tower and of a windturbine fulfill different functions and cannot simply be interchanged. The walls of the windturbine tower of ES8 bear the main load of the turbine and must be self-supporting (Trägersäule 8) as well as providing firm support for anchoring means (Verankerungen 9). Furthermore, its elevator relies on a rigid rail system designed for reliable and secure transport of person (see also page 1, paragraph 2). The team of skilled persons seeking better access to the inner side of a tower has no particular reason to depart from this basic design concept but would rather develop it further in the course of a routine design effort.

6.7 Therefore the Board concludes that the claimed subject-matter involves an inventive step over ES8 and ES12.

6.8 The same conclusion also applies when starting from ES14, which (figure 1) shows a windturbine on a lattice tower support structure. Here also the Board does not believe that the lift scheme of ES12, specifically designed for a non-self-supporting cable net, can be easily transposed to this rigid lattice support structure. Nor, for the reasons indicated above, would that team seriously contemplate replacing the entire wall structure of ES14 by that of ES12. .

6.9 The other lines of argumentation starting from either ES12 or ES7 do not change the above assessment. Assuming that the skilled person would start from E12, which concerns a cooling tower carried on a mast from which a non-self-supporting cable net is suspended forming an outer skin or wall, they would only ever, in the context of obvious development, arrive at a cooling tower, but not a windturbine (CLBA, 9th edition 2020, I.D.3.6).

ES7 is similarly not concerned with wind-turbine towers, but with a multi-lift arrangement in a building with plural shafts with an assembly for moving lifts from one shaft to another so as to provide a lift circulation system with improved capacity, see abstract and introductory portion. Thus, any obvious modification would only ever result in such an arrangement in a building. Furthermore, the system appears to be predicated on cylindrical or segment cylindrical shafts; there is no suggestion to use the system in tapered structures.

6.10 Similarly, and leaving aside the question of its admission in the proceedings, ES17 is not concerned with wind turbines or elevator systems for wind turbines. Rather, it discloses (see figure 9) a crane

mounted on top of a building to lift an elevator basket (Hubgondel 1) across a building facade (page 2, paragraph 2-4). The crane is movable horizontally on rails 6. The Board does not consider it at all obvious or within routine skills, to apply such a crane system mounted on the top of a building to the tower of a windturbine as in ES8 or ES14.

6.11 The Board concludes, therefore, that considering the various combinations of ES7, ES8, ES12, ES14 and ES17 as submitted by the appellant, the subject-matter of claims 1 and 11 as granted involves an inventive step within the meaning of Article 56 EPC.

7. In the light of the above, the Board confirms the opposition division's decision to reject the opposition, Article 101(2) EPC. Thus there is no need for the Board to consider the respondent's auxiliary requests.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

G. Magouliotis A. de Vries

Decision electronically authenticated