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Datasheet for the decision of 27 March 2025

Case Number: T 1334/24 - 3.2.07

Application Number: 18150553.8

Publication Number: 3385031

IPC: B24B23/02, B24B23/04, H02P6/00, H02P29/00, H02M1/42

Language of the proceedings: EN

Title of invention:
CONTROL METHOD FOR AN ELECTRIC SANDING MACHINE

Applicant:
Mirka Oy

Headword:

Relevant legal provisions:
EPC Art. 54(2), 56, 76(1), 123(2)

Keyword:
Amendment after notification of Art. 15(1) RPBA communication (yes) -Admitted (yes)
Divisional application - added subject-matter (no) - after amendment
Novelty - (yes)
Inventive step - (yes)

Decisions cited:

Catchword:

Europäisches Patentamt
European Patent Office
Office européen des brevets

Beschwerdekammern

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Case Number: T 1334/24 - 3.2.07

D E C I S I O N
of Technical Board of Appeal 3.2.07
of 27 March 2025

Appellant: (Applicant)	Mirka Oy Pensalavägen 210 66850 Jeppo (FI)
Representative:	Hoffmann Eitle Patent- und Rechtsanwälte PartmbB Arabellastraße 30 81925 München (DE)
Decision under appeal:	**Decision of the Examining Division of the European Patent Office posted on 8 July 2024 refusing European patent application No. 18150553.8 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman	G. Patton
Members:	V. Bevilacqua
	Y. Podbielski

Summary of Facts and Submissions

I. The present appeal, which was filed within the prescribed period and in the prescribed form, lies from the decision of the examining division to refuse European patent application No. 18 150 553.8 which is a divisional application of the earlier application 12 164 398.5, which is itself a divisional application of 08 736 779.3.

II. In the statement setting out the grounds of appeal, the appellant requested

- that the decision be set aside and a patent be granted on the basis of the claims of the main request, alternatively,
- that a patent be granted on the basis of one of the auxiliary requests 1 to 63, 63a, 64 to 96 of the appealed decision.

The appellant further requested:

- reimbursement of the appeal fee due to substantial procedural violations,
- acceleration of the appeal proceedings under Article 10(3) RPBA, and
- in case of remittal, to change the composition of the examining division.

III. With its communication according to Article 15(1) RPBA the board allowed the request for acceleration of the appeal proceedings and expressed its preliminary opinion according to which

- no procedural violation occurred, and therefore,
- the appeal fee was not to be reimbursed, and
- the appellant failed to convincingly demonstrate that the findings of the appealed decision on the main request and on auxiliary requests 1 to 41 were not correct, and
- the appellant convincingly demonstrated that the findings of the appealed decision on auxiliary request 42 was not correct.

IV. With a further communication pursuant to Rule 100(2) EPC dated 17 February 2025 the board invited the appellant to comment on the objections raised against auxiliary request 42 in third party observations filed on 3 February 2025.

V. With its submissions dated 26 February 2025 the appellant submitted arguments on the main request and on auxiliary requests 1 to 26, 28 and 42. The appellant also filed a new auxiliary request 40b and argued about the admissibility and allowability thereof.

VI. Third party observations containing further objections directed against auxiliary request 42 were filed on 21 March 2025.

VII. The appellant reacted with submissions dated 25 March 2025, requesting that the third party observations filed on 21 March 2025 not be admitted into the proceedings or, if they were admitted or taken into account, that the oral proceedings be adjourned.

VIII. Oral proceedings before the board took place on 27 March 2025, at the beginning of which the appellant withdrew its conditional request for adjournment of the

oral proceedings.

During the oral proceedings the appellant filed a new auxiliary request 40c, which then became their main and only request, all other previously submitted requests having been withdrawn, including the request for reimbursement of the appeal fee due to substantial procedural violations.

The appellant also filed amended pages of the description.

The final request of the appellant was therefore only

- that the decision be set aside and a patent be granted on the basis of the claims of auxiliary request 40c.

The appellant admitted that its request to change the composition of the examining division in case of remittal was moot.

Further details of the oral proceedings can be found in the minutes thereof. At the conclusion of the oral proceedings the present decision was announced.

IX. Independent claim 1 of auxiliary request 40c reads as follows:

"A method for controlling an electric sanding machine comprising an electric drive motor that is a brushless direct current motor, which method comprises rectification of the mains voltage and switched control of the motor, wherein the motor is dimensioned in such a way that the nominal voltage of the motor is lower than the top value of the rectified mains voltage,

wherein the motor comprises neodymium, NdFeB, magnets, wherein current is consumed during that part of the cycle when the voltage is higher than the nominal voltage of the motor and no current is consumed when the voltage is lower than the nominal voltage of the motor, such that different degrees of power correction are obtained depending on how much lower the nominal voltage is, and wherein control of the motor is carried out electronically to be able to vary the speed of rotation, and the control is made in such a way that the speed of rotation is kept on a given level irrespective of a load of the electric sanding machine."

Dependent claim 2 of auxiliary request 40c reads as follows:

"The method according to claim 1, whereby if the mains voltage is 230 V, the top value of the rectified mains voltage is 325 V and the nominal voltage of the motor is 200 V, the current flows approximately 60% of the time, whereby the current is generated in such a way that no current flows when the rectified mains voltage is equal to the nominal voltage, and it increases linearly in such a way that the current is 10 A when the voltage is 325 V."

Independent claim 3 of auxiliary request 40c reads as follows:

"An electric sanding machine comprising a brushless direct current motor and a control unit configured for rectification of a mains voltage and switched motor control, wherein the motor is dimensioned in such a way that the nominal voltage of the motor is lower than the top value of the rectified mains voltage, wherein the

motor comprises neodymium, NdFeB, magnets, wherein depending on how much lower the nominal voltage is, different degrees of power correction are obtained, when current is consumed during that part of the cycle when the voltage is higher than the nominal voltage of the motor and no current is consumed when the voltage is lower than the nominal voltage of the motor, and wherein the control of the motor is carried out electronically to be able to vary the speed of rotation, and the control unit is made in such a way that the speed of rotation is kept on a given level irrespective of a load of the electric sanding machine."

Dependent claim 4 of auxiliary request 40c reads as follows:

"The electric sanding machine according to claim 3, whereby if the mains voltage is 230 V, the top value of the rectified mains voltage is 325 V and the nominal voltage of the motor is 200 V, the current flows approximately 60% of the time, whereby the current is generated in such a way that no current flows when the rectified mains voltage is equal to the nominal voltage, and it increases linearly in such a way that the current is 10 A when the voltage is 325 V."

X. The present decision mentions the following documents cited in the European search opinion:

D1: EP 0 982 845 A2
D2: "Power factor corrector, Application manual", 1st Edition, SGS-Thomson Microelectronics, October 1995, pages 7 to 19, XP007906468
D3: EP 0 805 548 A2
D4: US 2006/0132081 A1

D5: K. Kit Sum, "IMPROVED VALLEY-FILL PASSIVE POWER FACTORCORRECTION CURRENT SHAPER APPROACHES - IEC SPECIFICATION LIMITS", PCIM, February 1998, pages 42, 44, 47 to 51 XP000901396.

The following documents are mentioned in the introductory portion of the description of the present application as being relevant prior art:

D6: US 5,239,783
D7: EP 0 727 281 A1

The following document is mentioned in the third party observation filed on 3 February 2025 as being particularly relevant for discussing inventive step:

PL1: US 2006/0279242 A1

Reasons for the Decision

1. Auxiliary request 40c - admittance, Article 13(2) RPBA

1.1 With its submissions dated 26 February 2025, the appellant amended their appeal case by filing new auxiliary request 40b, on the basis of which, as a result of the discussion during the oral proceedings before the board, new auxiliary request 40c was filed.

Auxiliary request 40c therefore represents an amendment to the appellant's appeal case which was made after notification of the summons to oral proceedings before the board. Such an amendment can therefore only be taken into account by the board under the provisions of Article 13(2) RPBA.

1.2 The appellant argued in this respect that the third party observations filed on 3 February 2025 introduced a new aspect in the discussion of added subject-matter, which was then further discussed and developed during oral proceedings, focussing the attention, for the first time, on the embodiment of figure 7 of the application as originally filed.

This amounts to exceptional circumstances within the meaning of Article 13(2) RPBA.

1.3 The appellant's argument summarized above is convincing, for the following reasons.

In the impugned decision the examining division found that auxiliary request 42 did not meet the requirements of Article 123(2) EPC for the reasons given for claim 1 of the then main request, without any discussion on whether the additional features thereof (capacitor, 3-phase control) could have been isolated from the embodiment depicted in figure 7 of the application as originally filed.

In the statement setting out the grounds of appeal the appellant presented arguments as to why these findings of the appealed decision were not correct, to which the board, in its preliminary opinion, expressed its agreement, again without focussing on the embodiment of figure 7.

It was only with the third party observations filed on 3 February 2025 that the attention was focussed, for the first time, on the embodiment of figure 7.

The appellant had therefore no reason or opportunity to present auxiliary request 40c, addressing the concerns

raised in the third party observations and then further deepened and discussed during the oral proceedings before the board, at an earlier stage.

Accordingly the board concludes that the appellant has justified with cogent reasons why there were exceptional circumstances justifying this late amendment of its appeal case and decides that auxiliary request 40c is taken into account under Article 13(2) RPBA.

2. Auxiliary request 40c - amendments

2.1 Independent claims 1 and 3

2.1.1 Each feature of claim 1 of auxiliary request 40c is based on the method for controlling a sanding machine disclosed in the part related to the issue of power correction of the section "Brief Description of the Invention" of the original description, as follows.

A "method for controlling an electric sanding machine" is disclosed on page 3, lines 20 to 24.

That the machine comprises an "electric drive motor that is a brushless direct current motor" and that the "motor comprises neodymium, NdFeB, magnets" is disclosed on page 2, lines 22-24.

That the method comprises "rectification of the mains voltage and switched control of the motor"
and that the
"motor is dimensioned in such a way that the nominal voltage of the motor is lower than the top value of the rectified mains voltage"
is disclosed from page 3, lines 33 to page 4, line 3,

together with the feature that
"current is consumed during that part of the cycle when the voltage is higher than the nominal voltage of the motor and no current is consumed when the voltage is lower than the nominal voltage of the motor, such that different degrees of power correction are obtained depending on how much lower the nominal voltage is".

That "control of the motor is carried out electronically to be able to vary the speed of rotation, and the control is made in such a way that the speed of rotation is kept on a given level irrespective of a load of the electric sanding machine" is disclosed on page 3, lines 20-23.

Claim 1 therefore complies with the requirements of Article 123(2) EPC.

2.1.2 Independent claim 3 also complies with the requirements of Article 123(2) EPC.

An "electric sanding machine comprising a brushless direct current motor" is disclosed on page 1, lines 3-4 and page 2, lines 22-24, a "control unit configured for rectification of a mains voltage and switched motor control" on page 3, lines 33-35 and all other features have the same basis as identified above when discussing claim 1.

2.1.3 Claim 1 and 3, being based upon the description as originally filed also comply with the requirements of Article 76(1) EPC.

This is because the section "Brief Description of the Invention" of the description of the present application, as originally filed, corresponds to the

sections, named in the same way, of the descriptions of both parent applications (numbers 12 164 398.5 and 08 736 779.3) as originally filed.

2.2 Dependent claims 2 and 4

The additional features of claims 2 and 4 are based upon page 4, lines 6 to 12, which is also a passage related to the aspect of power correction extracted from the section "Brief Description of the Invention" of the original description.

Dependent claims 2 and 4 therefore also comply with the requirements of Articles 123(2) and 76(1) EPC.

3. Clarity

The board concurs with the appellant that the final features of claim 1 of auxiliary request 40c, namely:

"wherein control of the motor is carried out electronically to be able to vary the speed of rotation, and the control is made in such a way that the speed of rotation is kept on a given level irrespective of a load of the electric sanding machine"

as well as the final features of claim 3, namely:

"wherein the control of the motor is carried out electronically to be able to vary the speed of rotation, and the control unit is made in such a way that the speed of rotation is kept on a given level irrespective of a load of the electric sanding machine"

do not contravene the requirements of Article 84 EPC.

This is because, as explained by the appellant, the skilled person knows how to adapt the electrical power provided to the motor to avoid large deviations in the speed of rotation of the motor and maintain a given level when the load varies (for example due to changes in friction with the surface being sanded, or changes in the pressure being applied), as this could, for example, be easily done by adjusting the voltage or current to be applied to the motor.

According to the established case law (see Case Law of the Boards of Appeal, 10th edition 2022, "CLB" in the following, II.A.3.4) a claim combining functional definitions limited to features, which a skilled person would have no difficulty in determining on the basis of common general knowledge, and a structural definition of the essential contribution of the applicant is not objectionable under Article 84 EPC.

4. Novelty

The board fully concurs with the position of the appellant that the subject-matter of claims 1 and 3 of auxiliary request 40c is new over the available prior art, for the following reasons.

4.1 D1 does not relate to, and therefore does not disclose, sanding machines, but merely refers to "domestic appliances" in general terms (see [0014]).

4.2 Documents D2, D3, D5 and PL1 also do not mention sanding machines at all, and are therefore also remote from the subject-matter of the independent claims of the present application.

4.3 Document D4 is also remote from the subject-matter of the independent claims of the present application, because, although mentioning power correction (paragraph [0002]) it does not focus on this aspect. D4 relates to vacuum cleaners ([0015], [0077] [0087]), does not mention sanding machines and also does not disclose neodymium magnets.

4.4 Documents D6 and D7 are closer to the claimed subject-matter as they both relate to:
"a method for controlling an electric sanding machine comprising an electric drive motor"
and
"an electric sanding machine comprising a motor and a control unit".

However these documents are not novelty destroying because they neither mention brushless direct current motors, nor power correction, nor neodymium, NdFeB magnets.

5. Inventive step

5.1 Documents D6 and D7 are the only two available documents which belong to the technical field of sanding machines and, hence, are considered as the most promising springboards towards the invention claimed in claims 1 and 3 of auxiliary request 40c.

Documents D1 to D5 and PL1 are not suitable starting points for discussing inventive step, because according to established case law (CLB, I.D.3.1) the closest prior art for assessing inventive step should be a prior art document disclosing subject-matter conceived for the same purpose or aiming at the same objective as the claimed invention and having the most relevant

technical features in common, i.e. requiring the minimum of structural modifications.

In fact, when a skilled person starts from a document disclosing a specific device different from a sanding machine, he could further develop that particular device but at the end of that development the normal result would still be a device similar to the starting one, and not a sanding machine (CLB I.D.3.6).

5.2 The features distinguishing the subject-matter of claim 1 from the methods known from D6 and D7 are that:

the electric sanding machine controlled in the claimed method comprises a brushless direct current motor as electric drive motor, the method comprises rectification of the mains voltage and switched control of the motor, wherein the motor is dimensioned in such a way that the nominal voltage of the motor is lower than the top value of the rectified mains voltage, wherein the motor comprises neodymium, NdFeB, magnets, wherein current is consumed during that part of the cycle when the voltage is higher than the nominal voltage of the motor and no current is consumed when the voltage is lower than the nominal voltage of the motor, such that different degrees of power correction are obtained depending on how much lower the nominal voltage is, and wherein control is carried out electronically, and made in such a way that the speed of rotation is kept on a given level irrespective of a load of the electric sanding machine.

The features distinguishing the subject-matter of claim 3 from the electric sanding machines known from D6 and D7 are that:

it comprises a brushless direct current motor and a control unit configured for rectification of a mains voltage and switched motor control, wherein the motor is dimensioned in such a way that the nominal voltage of the motor is lower than the top value of the rectified mains voltage, wherein the motor comprises neodymium, NdFeB, magnets, wherein depending on how much lower the nominal voltage is, different degrees of power correction are obtained, when current is consumed during that part of the cycle when the voltage is higher than the nominal voltage of the motor and no current is consumed when the voltage is lower than the nominal voltage of the motor, and wherein the control of the motor is carried out electronically, and the control unit is made in such a way that the speed of rotation is kept on a given level irrespective of a load of the electric sanding machine.

5.3 These features have the effect of providing an electric sanding machine (and a controlling method therefor) with improved power correction (see page 1, line 24 to page 2, line 9; page 3, line 20 to page 4, line 17; page 5, line 27 to page 6, line 21 of the original description).

Starting from D6 or D7, which do not even comprise a brushless direct control motor, the skilled person aiming at solving this problem would not have considered document PL1, because PL1 specifically teaching how to achieve power-optimal control of brushless direct control motors does not even relate to sanding machines or similar tools.

Similar considerations apply to the combination with documents D1 to D5, which also do not belong to the technical field of sanding machines.

This is because there is no evidence as to why the skilled person in the specific technical field of sanding machines would have considered adapting a prior-art disclosure originating from his technical field, such as D6 or D7, by implementing teachings coming from remote technical fields.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the examining division with the order to grant a patent in the following version:

   - Claims 1-4 of auxiliary request 40c filed during the oral proceedings on 27 March 2025,
   - Description: pages 1, 4, 5 and 6 as originally filed and pages 2, 3 and 7 filed during the oral proceedings on 27 March 2025,
   - Figures 1-8 as originally filed.

The Registrar: The Chairman:

G. Nachtigall G. Patton

Decision electronically authenticated