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**Datasheet for the decision  
of 26 March 2021**

**Case Number:** T 2363/18 - 3.3.05

**Application Number:** 09006705.9

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**IPC:** H01M4/73, H01M4/84, H01M4/20

**Language of the proceedings:** EN

**Title of invention:**  
Reformed battery grids

**Patent Proprietor:**  
Wirtz Manufacturing Co., Inc.

**Opponent:**  
Sovema S.p.A.

**Headword:**  
Reformed battery grids/Wirtz

**Relevant legal provisions:**  
EPC Art. 123(2), 123(3)

**Keyword:**  
Amendments - added subject-matter (yes) - broadening of claim (yes)

**Decisions cited:**

G 0001/93

**Catchword:**



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Case Number: T 2363/18 - 3.3.05

**D E C I S I O N**  
**of Technical Board of Appeal 3.3.05**  
**of 26 March 2021**

**Appellant:** Wirtz Manufacturing Co., Inc.  
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**Decision under appeal:** **Interlocutory decision of the Opposition  
Division of the European Patent Office posted on  
23 July 2018 concerning maintenance of the  
European Patent No. 2124274 in amended form.**

**Composition of the Board:**

**Chairman**            G. Glod  
**Members:**            J. Roider  
                              C. Almberg

## Summary of Facts and Submissions

- I. The appeals from the patent proprietor (Appellant 1) and the opponent (Appellant 2) lie from the opposition division's interlocutory decision finding that, on the basis of the then auxiliary request 3, the patent met the requirements of the EPC.
- II. In the communication pursuant to Article 15(1) RPBA 2020 dated 21 January 2021, the board expressed the preliminary opinion that the main request (maintenance of the patent as granted, i.e. rejection of the opposition), as well as auxiliary requests 1, 3, 5 and 6, did not meet the requirement of Article 123(2) EPC, while auxiliary requests 2 and 4 were considered to infringe Article 123(3) EPC.
- III. Claim 1 of the main request reads:
- "A method of making a grid (40; 140; 240; 340; 440; 540; 640; 196; 296) for a battery plate (24, 26) of a lead-acid battery (10), comprising:*
- providing a continuous strip (64; 164; 264) of a plurality of connected grids (40; 140; 240; 340; 440; 540; 640; 196; 296) of a lead alloy each having a plurality of spaced apart wire segments (42, 50, 52; 142; 242; 342; 442; 542; 642), wherein each grid (40; 140; 240; 340; 440; 540; 640; 196; 296) has a planar surface (46, 48; 146, 148; 246, 248), and wherein the plurality of spaced apart wire segments (42, 50, 52; 142; 242; 342; 442; 542; 642) interconnected at nodes (43) to define a plurality of open spaces (44) between the wire segments (42, 50, 52; 142; 242; 342; 442; 542; 642);*
- changing the cross-sectional shape of at least some*

*of the wire segments (42, 50, 52; 142; 242; 342; 442; 542; 642) of each grid (40; 140; 240; 340; 440; 540; 640; 196; 296) to form land surfaces (54; 154; 254; 554; 654) thereon which are angled to the planar surface (46, 48; 146; 148; 246, 248) of the grid (40; 130; 240; 340; 440; 540; 640; 196; 296); and characterised in that it further comprises:*

*forming a controlled surface roughness having a not random distribution and a size of 2.54  $\mu\text{m}$  (100 microinches) to 22.86  $\mu\text{m}$  (900 microinches) Ra on at least some of the angled land surfaces of at least some of the wire segments (42, 50, 52; 142; 242; 342; 442; 542; 642) to promote adhesion to the wire segments (42, 50, 52; 142; 242; 342; 442; 542; 642) of each grid (40; 140; 240; 340; 440; 540; 640; 196; 296) of subsequently applied and dried active material paste."*

IV. Appellant 2 argues that the feature "*a not random distribution*" originated from the second sentence in para. [0023] of the patent, which corresponds to para. [0035] of the application as originally filed (AOF). However, the feature "*not random*" could not, in the view of Appellant 2, be separated from the feature "*uniform*", and moreover the AOF, para. [0035], requires both uniform size and uniform distribution.

V. Appellant 1 argues that the second sentence in para. [0035] provided for two alternatives joined with the coordinating conjunction "and", and thus the comma, which usually separates these alternatives, should be omitted.

For illustrating the language of the application, Appellant 1 referred to the AOF, para. [0047], first sentence, which disclosed that the reforming die "*may include the flat surfaces 91 and the angled surfaces*

92 ...". It would immediately be clear to the skilled person that the sentence related to flat surfaces, angled surfaces and to the combination of flat and angled surfaces. Para. [0035] of the AOF should be seen accordingly.

From a linguistic point of view, para. [0035] thus discloses the following alternatives:

- uniform size and distribution
- not random size and distribution
- uniform size and distribution and not random size and distribution

The claimed size range of 2.54-22.86  $\mu\text{m}$  (100-900  $\mu\text{in}$ ) expresses that the size is substantially uniform.

Appellant 1 moreover argues that the sentence in para. [0035] referred to the comparison of several grids and not to an individual grid. It also pointed to the feature "*continuous strip of a plurality of connected grids*" in claim 1. Thus, the surface roughness may (also) be not uniform in size or distribution throughout a single grid but should rather be uniform from one grid to the next.

Appellant 1 further argues that tooling inherently produced non-random surface textures. Such textures were thus inherently entailed in a tooled product. Therefore, the description relating to tooling disclosed the feature "*not random distribution*".

Appellant 1 states that the description as a whole justified the characterisation of the surface roughness as "*not random*". It argues that no new information was added by isolating this feature, and the feature "*uniform distribution*" was not necessary to carry out

the invention. Moreover, the skilled person would immediately recognise that the feature "*uniform distribution*" was of marginal importance. Also, there was no structural or close relationship between "*not random*" and "*uniform distribution*".

VI. The characterising portion of claim 1 of auxiliary request 1 was amended with respect to the main request (additions underlined), so as to read:

*"... forming, by means of tooling (90; 190; 290) with angled surfaces (92; 192; 292) having surface texturing, a controlled surface roughness having a not random distribution and a size of 2.54 µm (100 microinches) to 22.86 µm (900 microinches) Ra ..."*

Appellant 1 argues that claims 1 and 6 as originally filed provided the basis for this amendment. A tool with angled surfaces having a texture to form the grid would yield the same surface structures from one grid to the next.

Appellant 2 argues that the tool did not necessarily have a surface roughness so as to provide the surface characteristics, which were also disclosed in combination with "*not random distribution*".

The characterising portion of claim 1 of auxiliary request 2 was amended with respect to the main request (additions underlined; deletions ~~struck through~~), so as to read:

*"... forming, by means of tooling (90; 190; 290) with angled surfaces (92; 192; 292) having surface texturing, wherein the tooling (90; 190; 290) is a reforming tooling, a controlled surface roughness*



~~having a not random distribution and a size of 2.54  $\mu\text{m}$  (100 microinches) to 22.86  $\mu\text{m}$  (900 microinches) Ra ...".~~

According to Appellant 1, the feature "not random distribution" was encompassed by the amendment in auxiliary request 2, and thus the disputed feature could be deleted (G 1/93). In particular, due to the fixed surface of the reforming tooling, each grid had the same texture, and thus a non-random distribution was achieved. Therefore, the feature "not random distribution" was redundant.

Appellant 2 argues that the tool did not necessarily have a non-random surface roughness and consequently would not necessarily provide the deleted surface characteristics, which amounted to an extension of the protection the patent confers in breach of Article 123(3) EPC.

The characterising portion of claim 1 of auxiliary request 3 was amended with respect to the main request (additions underlined), so as to read:

"... forming, by means of tooling (90; 190; 290) with angled surfaces (92; 192; 292) having surface texturing, the tooling (90; 190; 290) comprises a die having a surface texture applied to the die, a controlled surface roughness having a not random distribution and a size of 2.54  $\mu\text{m}$  (100 microinches) to 22.86  $\mu\text{m}$  (900 microinches) Ra ...".

Appellant 1 argues that granted claims 1, 6 and 10 provide the basis for the amendment.

The lines of argument presented by the appellants are

similar to those for auxiliary request 1.

The characterising portion of claim 1 of auxiliary request 4 was amended with respect to the main request (additions underlined; deletions ~~struck through~~), so as to read:

*"... forming, by means of tooling (90; 190; 290) with angled surfaces (92; 192; 292) having surface texturing, the tooling (90; 190; 290) comprises a die having a surface texture applied to the die, a controlled surface roughness having ~~a not random distribution and~~ a size of 2.54  $\mu\text{m}$  (100 microinches) to 22.86  $\mu\text{m}$  (900 microinches) Ra ...".*

The lines of argument presented by the appellants are similar to those for auxiliary request 2.

The characterising portion of claim 1 of auxiliary request 5 was amended with respect to the main request (additions underlined), so as to read:

*"... forming a controlled surface roughness having a substantially uniform and not random distribution and a size of 2.54  $\mu\text{m}$  (100 microinches) to 22.86  $\mu\text{m}$  (900 microinches) Ra ...".*

Appellant 1 argues that page 9, lines 2-4 of the AOF, provides the basis for the amendment. Moreover, the size range for Ra from 2.54  $\mu\text{m}$  to 22.86  $\mu\text{m}$  provides a substantially uniform and not random size.

Appellant 2 argues that the average surface roughness Ra was an average value over many peaks. It did not contain any information about the distribution of the peaks, because upon averaging, the information on the

distribution was lost. Therefore, that feature was unsuitable to provide the feature "*uniform size*", which was disclosed in combination with the feature "*not random distribution*".

The characterising portion of claim 1 of auxiliary request 6 was amended with respect to auxiliary request 5 in that the term "*substantially*" immediately prior to "*uniform*" was deleted.

The lines of argument presented by the appellants are similar to those for auxiliary request 5.

VII. Appellant 1 requests that the appealed decision be set aside and the opposition be rejected or, alternatively, that the patent be maintained on the basis of one of auxiliary requests 1 to 6 filed during the opposition proceedings.

Appellant 2 requests that the appealed decision be set aside and the patent be revoked in its entirety.

## **Reasons for the Decision**

1. Main request, Article 123(2) EPC

1.1 The literal basis for the feature "*not random distribution*" can be found in the AOF, para. [0035], which reads (emphasis added):

*"To improve adhesion between the grid 40 and the active material paste, the grid 40 may be reformed and controlled surface texturing may be provided on one or more of the surfaces of the grid according to a desired surface roughness before the paste is applied. The*

*controlled surface texturing may be provided according to a substantially uniform size and distribution over the grid and not according to random size and distribution. As used herein, the term adhesion includes the tendency for matter to cling to other matter, due to mechanical, chemical, and/or intermolecular forces. As used herein, the terminology surface roughness includes the relatively closely-spaced or small-scale unevenness of a surface, in contrast to relatively larger-scale variations or "waviness" that may be part of the geometry of the surface. Surface roughness may include a measure of pits and projections that may be measured by, for example, a profilometer or the like."*

1.2 With respect to the subject-matter of originally filed claim 1, the subject-matter of claim 1 of the patent as granted further contains, *inter alia*, the feature "*controlled surface roughness having a not random distribution*".

1.3 The feature "*a not random distribution*" cannot be isolated from the context provided by "*a substantially uniform size and distribution over the grid and not according to random size and distribution*". A skilled person reading the sentence in the AOF would understand that a surface texture having a substantially uniform size and distribution over a grid is foreseen, and not only according to a not random distribution. They would expect that uniformity and non-randomness are cumulative parameters, i.e. that a non-random distribution of the texture is not sufficient. Indeed, many non-uniform sizes and distributions are also non-random in size and distribution. The features "*uniform size and distribution*" and "*not according to random size and*

*distribution*" cannot thus be used interchangeably. In particular, a *"not random distribution"* does not imply a uniform distribution. However, a basis for other controlled surface texturing than controlled surface texturing with substantially uniform size and distribution and not according to random size and distribution could not be found in the AOF.

1.4 It is noted that the locative adverbial expression *"over the grid"* also separates the feature *"uniform size and distribution"* and the feature *"not according to random size and distribution"*. Therefore the language of para. [0035] and para. [0047] is different. The reader understands in para. [0035] that the latter feature further restricts the scope of the first feature. Even if the interpretation provided by Appellant 1 were also valid, it would rely on an ambiguous basis and thus fail to directly and unambiguously disclose the claimed subject-matter.

1.5 The language used in the application carefully distinguishes between a single grid, with the reference number 40, and a grid strip, with the reference number 64 (see e.g. AOF, para. [0034]; para. [0054], Fig. 13; para. [0060], Fig. 16).

Unlike para. [0034], nothing in para. [0035] refers to a grid strip. Indeed, AOF para. [0035] consistently refers to the grid in the singular and with the definite article and does not make reference to another grid or to grids. It specifically refers to *"uniform size and distribution over the grid"*.

Para. [0035] of the AOF also discloses parameters to improve the adhesion between the active paste and the grid. In particular, it is not apparent from

para. [0035] that a non-random distribution from one grid to the next would be essential for the adhesion, while the distribution pattern within one grid does not play a role. Rather, to the contrary, para. [0035] discloses that the specific surface texture of one grid is essential for the adhesion of the active paste. Indeed, if a specific surface texture did not improve the adhesion between the active paste and one grid, a skilled person would not expect an improvement of adhesion if that surface texture were applied to another grid. The skilled person would thus not expect anything other than what is explicitly disclosed in para. [0035].

When reading para. [0035], it is thus not apparent that the feature "*not random*" could also refer to the comparison of several grids within the grid strip.

1.6 Also, a tool, such as a die, does not inevitably produce a texturing with a uniform size and distribution over one grid and not according to random size and distribution, since the tool itself does not necessarily have that required texturing. A tool with such characteristics is not disclosed in para. [0062], which relates to the reforming machine but without any details of the texturing on a specific tool. Therefore, a basis for the amendment is not apparent from other parts of the description either.

1.7 Whether or not it is apparent for the skilled person that the feature "*uniform distribution*" is of marginal importance or that the isolation does not raise questions of how to carry out the invention, these are questions which do not relate to Art. 123(2) EPC. The question to be assessed is whether a skilled person would derive the feature directly and unambiguously

from the whole of the AOF (see Case Law of the Boards of Appeal, 9th edition 2019, II.E.1.1, page 432).

Already in view of para. 1.3, *supra*, it is not apparent that the description as a whole justifies a characterisation of the surface roughness without requiring, *inter alia*, a uniform size and distribution. Consequently, defining the distribution of the surface roughness merely as non-random is an intermediate generalisation of the embodiment disclosed in para. [0035].

Only para. [0035] of the AOF discloses a feature "not according to *random* size and distribution". It is thus the only part of the AOF on which the amendment of claim 1 can be based. No other part of the description, nor the AOF as a whole, has the potential to directly and unambiguously disclose a basis for this feature. In para. [0035] this feature is directly linked to the feature "*substantially uniform size and distribution*". However, a skilled person reading that information and having in mind the purpose of that feature, which is to improve adhesion between the active paste and the grid (see para. [0035]), would not expect that only one of uniform size or uniform distribution or non-random size or non-random distribution would provide that effect alone. It is recalled that Appellant 1 considers the effect of that feature, i.e. improved adhesion, to form the core of the invention, as apparent from the characterising portion of the subject-matter of claim 1. Whether or not the adhesion according to the invention can still be achieved with only a part of the features disclosed in para. [0035] is uncertain and subject to speculation.

- 1.8 The subject-matter of claim 1 of the main request therefore does not comply with the requirements of Article 123(2) EPC.
2. Auxiliary request 1, Article 123(2) EPC
- 2.1 As apparent from para. 1.6, *supra*, tooling cannot provide the features which would allow the isolation of the disputed feature in the subject-matter of claim 1. Moreover, as stated in para. 1.5, *supra*, it is not apparent that the feature "*not according to random size and distribution*" used in para. [0035] relates to the repeatability of the grids, i.e. the comparison of two grids.
- 2.2 The subject-matter of claim 1 of auxiliary request 1 therefore does not comply with the requirements of Article 123(2) EPC either.
3. Auxiliary request 2, Article 123(3) EPC
- 3.1 As apparent from the consideration in para. 1.6, *supra*, tooling does not necessarily provide a not random distribution of the surface roughness. The conditions of G 1/93, Headnote 1, for replacing the feature under debate by a different feature hence do not apply, and the deleted features cannot be replaced by the features added in claim 1.

The deletion of the feature "*a not random distribution*", which is essential for the adhesion of the active paste, thus extends the protection that the subject-matter of claim 1 confers.



3.2 The subject-matter of claim 1 of auxiliary request 2 therefore does not comply with the requirements of Article 123(3) EPC.

4. Auxiliary request 3, Article 123(2) EPC

4.1 As apparent from para. 1.6, *supra*, tooling with a die cannot provide the features which were disclosed in conjunction with the feature "*a not random distribution*". Also, as stated in para. 1.5, *supra*, it is not apparent that the feature "*not according to random size and distribution*" used in para. [0035] relates to the repeatability of the grids, i.e. the comparison of two grids.

4.2 The subject-matter of claim 1 of auxiliary request 3 therefore does not comply with the requirements of Article 123(2) EPC.

5. Auxiliary request 4, Article 123(3) EPC

5.1 The subject-matter of claim 1 does not comply with the requirements of Article 123(3) EPC for the same reasons as auxiliary request 2. The additional amendment, with respect to auxiliary request 2, does not address and cannot therefore overcome the deficiencies of auxiliary request 2.

6. Auxiliary requests 5 and 6, Article 123(2) EPC

6.1 As apparent from para. 1.3, *supra*, the isolation of the feature "*not random distribution*" was done from a broader context than from that of "*substantially*

*uniform distribution*" or "*uniform distribution*". The size of 2.54  $\mu\text{m}$  to 22.86  $\mu\text{m}$  cannot be considered to represent a uniform size. Ra is the absolute value of surface height averaged over the surface (para. [0024]), which allows for considerable differences in the surface height. Furthermore, the upper end value of the range given in claim 1 is nine times higher than the lower end value, which means that considerable variations of the surface height are allowed, which in turn does not qualify the surface height as uniform.

- 6.2 The subject-matter of claim 1 of each of auxiliary requests 5 and 6 therefore does not comply with the requirements of Article 123(2) EPC.
  
7. With no allowable claim request on file, the patent must be revoked.

## 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:



C. Vodz

G. Glod

Decision electronically authenticated