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**Datasheet for the decision  
of 14 July 2025**

**Case Number:** T 0824/23 - 3.2.03

**Application Number:** 16160466.5

**Publication Number:** 3070213

**IPC:** E03D11/06, E03D11/08, E03D11/13

**Language of the proceedings:** EN

**Title of invention:**  
FLUSH TOILET

**Patent Proprietor:**  
Toto Ltd.

**Opponent:**  
Geberit International AG

**Relevant legal provisions:**  
EPC Art. 100(c), 100(b), 100(a), 52(1), 54, 56, 52(2)(b)  
EPC R. 116(1)  
RPBA 2020 Art. 12(4), 13(2)

**Keyword:**

Main request - added subject-matter (no) - sufficiency of disclosure (yes) - novelty (yes) - inventive step (no) - effect not credible over the whole scope of the claim - obvious alternative

Auxiliary request 4 - admissibly raised and maintained (yes) - inventive step (yes)

**Decisions cited:**

G 0002/10, T 1762/21, G 0003/14, G 0001/03, T 1857/20,  
T 0409/91, T 2284/15, T 2729/18, T 0591/23, T 0939/92



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Case Number: T 0824/23 - 3.2.03

**D E C I S I O N**  
**of Technical Board of Appeal 3.2.03**  
**of 14 July 2025**

**Appellant:**

(Opponent)

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**Decision under appeal:**

**Decision of the Opposition Division of the  
European Patent Office posted on 22 March 2023  
rejecting the opposition filed against European  
patent No. 3070213 pursuant to Article 101(2)  
EPC.**

**Composition of the Board:**

**Chairman** C. Herberhold  
**Members:** M. Olapinski  
J. Hoppe

## **Summary of Facts and Submissions**

I. The appeal was filed by the opponent (appellant) against the decision of the opposition division rejecting the opposition against the patent in suit (the patent).

II. At the end of the oral proceedings before the Board, the requests were as follows.

The appellant requested that the decision under appeal be set aside, that the European patent be revoked and that the case be decided without a remittal to the opposition division.

The respondent (patent proprietor) requested that the appeal be dismissed and that the patent be maintained as granted (main request) or, as an auxiliary measure, that the patent be maintained in amended form based on auxiliary request 4 or one of auxiliary requests 1, 2, 3, 5 and 6 as filed with the reply, in the given order.

III. The following documents are referred to:

D9: US 6,397,405 (B1)

D10: US 2006/0010592 (A1)

D11: JP 2014-062431 (A) with machine translation (D11')

D12: JP 2015-017501 (A) with machine translation (D12')

D13: JP 2014-152468 (A) with machine translation (D13')

D14: JP 2014-058863 (A) with machine translation (D14')

D15: US 2014/028947 (A1)

D16: EP 0 011 929 (A1)

D17: US 2008/0271234 (A1)

IV. Claim 1 as granted (main request) reads (with feature denominations in square brackets; the amendment vis-à-vis originally filed claims 1 and 2 is underlined):

"A flush toilet comprising:

[a] a bowl portion (8) including a bowl-shaped waste receiving surface (44) and a rim portion (46) formed on a top edge of the waste receiving surface (44);

[b] a discharge path (10) for discharging waste, the discharge path (10) has an inlet (10a) that is connected at a bottom of the bowl portion (8);

[c] a spout portion (14) for generating a circulating current by spouting flush water to the bowl portion (8);

[d] a water conduit (14a, 114a) for supplying flush water to the water spout portion (14); and

[e] a water supply apparatus (6) for supplying flush water to the water conduit (14a, 114a);

[f] wherein the rim portion (46) comprises a rim inside wall portion (52) forming an inner perimeter of the rim portion (46), and the rim inside wall portion (52) comprises a rim inside wall upper sloped surface (52a) being positioned on a top region of the rim inside wall portion and being sloped downward toward the inner side surface, and

[g] an inner side surface (52b) extending straight in a vertical direction from a waste receiving surface top end (44a) up to the rim inside wall upper sloped

surface (52a) [*the underlined part of Feature g is denoted **g'** in the following*];

[**h**] the water supply apparatus (6) comprises a constant flow rate device for spouting a constant flow rate of flush water from the water spout portion (14),

[**i**] the rim portion (46) comprises a rim top surface portion (54) forming a top surface on the rim portion (46), and a rim outside wall portion (56) forming an outer perimeter of the rim portion (46); the rim outside wall portion (56) comprises a rim outside wall upper sloped surface (56a) in which an outside of the rim outside wall portion (56) upper region is sloped downward; and

[**j**] the horizontal distance (W1) between the upper end of the rim inside wall upper sloped surface (52a) and the lower end of the rim inside wall upper sloped surface (52a) is longer than the horizontal distance (W2) between the upper end of the rim outside wall upper sloped surface (56a) and the lower end of the rim outside wall upper sloped surface (56a)."

V. Claim 1 of auxiliary request 4 differs from claim 1 as granted by the following further features:

"[**k**] the rim inside wall upper sloped surface (52a) is formed in an arc shape;

[**l**] a bottom edge [sic] (52c) of the rim inside wall upper sloped surface (52a) is disposed above a top edge of the water spout portion (14);

[**m**] and the rim inside wall upper sloped surface (52a) is formed such that the vertical distance between the

upper end of the rim inside wall upper sloped surface (52a) and the lower end of the rim inside wall upper sloped surface (52a) is 10% to 60% of the vertical distance between the upper end (52d) of the rim inside wall portion (52) and the lower end (52c) of the rim inside wall portion (52)."

VI. The appellant's arguments can be summarised as follows.

*Main request - Article 100(c) EPC*

The subject-matter of claim 1 as granted extended beyond the content of the application as filed because the amendment taken from the description was not originally disclosed in combination with the features of original claim 1. Furthermore, it involved an unallowable intermediate generalisation of the wording of the feature in the description as well as an unallowable intermediate generalisation over the further features of the embodiment linked to the problem of avoiding splashing of flush water out of the bowl with which the application, claim 1 and the amendment were concerned.

*Main request - Article 100(b) EPC*

The patent did not sufficiently disclose the claimed invention because claim 1 lacked several features essential for a properly working flush toilet. The claimed features did not solve the problems stated in the patent. The breadth of the claim thus also covered, to a considerable extent, non-working embodiments, and the invention was not sufficiently disclosed over the whole claimed breadth. Moreover, the breadth of the claim violated the principle that the patent protection conferred had to be commensurate with the disclosed

teaching. Furthermore, it was an inherent requirement under sufficiency of disclosure of the invention that it solved a technical problem by technical means.

*Main request - Novelty*

Each of documents D9 to D15 disclosed all the features of claim 1, most of which were shown in the figures in D9 to D15. Accordingly, the subject-matter of claim 1 was not novel.

*Main request - Inventive step*

Starting from D9, D12, D16 or D17, the subject-matter of claim 1 did not involve an inventive step. The provision of Feature h for preventing splashing, if seen as a distinguishing feature, was obvious in view of the skilled person's common general knowledge. Features g and j did not credibly achieve a recognisable technical effect and thus could not support the presence of an inventive step. For this reason alone, claim 1 did not involve an inventive step.

At the oral proceedings before the Board, the appellant submitted that starting from D9, Features g and j would have been obvious for a skilled person in view of the problem of providing a design alternative. The appellant opined that this argument was not an amendment of the appellant's appeal case but a refinement in response to the Board's communication.

*Auxiliary request 4*

Auxiliary request 4 was filed after the deadline under Rule 116(1) EPC and should not be admitted.

The additional Features k, l and m of claim 1 of auxiliary request 4 were already known from D9. Even if Feature m was considered a further distinguishing feature, it did not credibly achieve a technical effect and would thus, like Feature j in claim 1 as granted, be obvious in view of the problem of providing a design alternative. Therefore, the subject-matter of claim 1 did not involve an inventive step.

VII. The respondent argued essentially as follows.

*Main request - Added subject-matter*

The passage from which the amendment originated was disclosed in combination with all features of claim 1 as originally filed. The allegedly omitted part of the wording of the feature in the description was implicitly present in claim 1. The omission of the further features linked with the problem of preventing flush water splashing was justified by the generalising disclosure in original claim 1 and because the features were not inextricably linked with the amendment.

*Main request - Sufficiency of disclosure*

It was not required under sufficiency of disclosure that the claimed features exhibited effects and problems only stated in the description. It was beyond doubt that a skilled person could implement a flush toilet as claimed and disclosed in the patent, just as it was clear that the claimed flush toilet solved a technical problem by technical means. Accordingly, the claimed invention was sufficiently disclosed.

*Main request - Novelty*

Documents D9 to D15 were not prejudicial to novelty because the schematic figures disclosed in them did not directly and unambiguously disclose the features of claim 1. The appellant's new argument with respect to the interpretation of the term "straight" should not be taken into account.

*Main request - Inventive step*

The subject-matter of claim 1 involved an inventive step. The appellant did not establish what the most promising starting point was, and in particular D9 and D16 did not qualify. The potential distinguishing Features g, h and j in combination synergistically provided improved cleanability of the rim by a user ("user cleanability") while also preventing flush water from splashing out of the bowl. None of the available prior art provided a prompt or motivation towards the distinguishing features to the skilled person faced with this objective technical problem. Even if no credible technical effect could be established, the appellant's objections did not follow the problem-solution approach and failed to establish how a skilled person would have arrived at the claimed subject-matter. The appellant's new argument submitted only at the oral proceedings that the problem starting from D9 was the provision of a design alternative and that any such alternative was obvious for the skilled person should not be admitted.

*Auxiliary request 4*

Auxiliary request 4 was admissibly raised and maintained in the opposition proceedings as a response

to the opponent's letter filed two months before the oral proceedings. It was thus not an amendment under Article 12(4), sentence 1, RPBA.

Features l and m could not be directly and unambiguously derived from the schematic drawings in D9. They defined a relatively large size of the inner rounding with the technical effect of improved cleanability but also provisions for maintaining a low risk of flush water splashing. There was no suggestion or motivation for the skilled person towards these features in any of the prior art, so the skilled person would not have arrived in an obvious manner at the subject-matter of claim 1.

## Reasons for the Decision

1. Main request - Added subject-matter, Article 100(c) EPC

1.1 In line with the parties' submissions, reference is made to the A-publication (EP 3 070 213 A1) of the patent application.

1.2 The parties agree that granted claim 1 corresponds to originally filed claims 1 and 2 with the additional phrase "from a waste receiving surface top end (44a)" (denoted as Feature g') in Feature g taken from the first sentence of paragraph [0065]:

*"From the waste receiving surface 44 top end 44a to the rim inside wall upper sloped surface 52a bottom end 52c, the inside surface 52b forms a vertically rising wall surface."*

1.3 The appellant submitted that paragraph [0065] did not directly and unambiguously disclose Feature g' in combination with an inner side surface "extending straight in a vertical direction" as defined in claim 1. Paragraph [0065] was not limited to an inner side surface extending straight in a vertical direction. Figure 6 even showed a rounded transition 44a belonging to (the height H3 of) the vertically rising wall surface 52b, and Figure 5 disclosed curved inner side surfaces 52b forming an overhang.

Furthermore, paragraph [0065] disclosed, more specifically than Feature g', that the inner side surface 52b extended from the waste receiving surface top end 44a "to the rim inside wall upper sloped

surface 52a bottom end 52c". The omission of the end point of the inner side surface 52b at the bottom end 52c of the surface 52a implied that the inner side surface could extend farther upwards and partially overlap with surface 52a, contrary to the original disclosure.

Moreover, adopting Feature g' in claim 1 represented an unallowable intermediate generalisation of further features of the detailed embodiment from which this amendment was taken. Paragraph [0065] was part of the detailed description of the rim portion 46 of the embodiment of Figures 1 to 6 (paragraph [0060]). This embodiment was directed to both problems of improved user cleanability of the rim portion and preventing flush water from splashing outside of the bowl/rim (paragraph [0008]). The amended Feature g' in Feature g was disclosed in this context and thus inextricably linked with the further features of the embodiment for preventing flush water splashing. Feature g' excluded steps, gaps or additional surfaces between the waste receiving surface 44 and the straight vertical inner side surface 52b (Figures 4 and 6) which affected flush water flow. Paragraphs [0066] to [0068] in conjunction with paragraph [0007] of the application disclosed that the surfaces of Features f and g were prone to flush water splashing if no compensating measures were taken. Accordingly, the omission of the further features of the embodiment necessary for preventing flush water splashing, i.e. the geometry and position of the flush spout port, the overhanging portions where the rim inside wall portion 52 was "formed in a shape which overhangs toward the inside of the bowl portion" (paragraph [0064] and Figures 2 and 5 of the application), the height ratio and the position of the two surface of the rim with respect to the flush spout

port, the rim flush water flow rate, and the definition of a further jet flush port, extended beyond the content of the application as filed. Original claim 1 could not provide a basis for generalising these features from the embodiment because it was much broader, not at the same level of abstraction as the embodiment and did not even contain all essential features of a working toilet.

For these reasons, the subject-matter of granted claim 1 extended beyond the content of the application as filed, and maintenance of the patent was prejudiced by the ground for opposition under Article 100(c) EPC.

1.4 The Board does not agree with the appellant's arguments for the following reasons.

1.5 "extending straight in a vertical direction"

While paragraph [0065] discloses that the inside surface forms a vertically rising wall, it does not mention that the inner side surface 52b extends straight in a vertical direction. However, paragraphs [0063] and [0066] disclose the inside surface 52b as "extending vertically straight to the rim inside wall upper sloped surface 52a" and "rising straight up to the rim inside wall upper sloped surface 52a". This is also shown in Figures 4 and 6, where the rounded transition below the straight vertical inner side surface 52b at reference sign 44a is the "top end" of the waste receiving surface 44 (paragraph [0065]) and thus does not belong to the straight inner side surface 52b.

It is true that the dashed base line in Figure 6, from which the heights H1 and H3 of the rim inside wall

portion 52 and of its inner side surface 52b are measured, is displayed at the level of the rounded transition 44a, not at the lower end of the straight surface 52b. However, in view of the clear and consistent disclosure in the description that the inner side surface 52b extends straight in a vertical direction (paragraphs [0063] and [0066]) and that the reference sign 44a belongs to the waste receiving surface 44 (paragraph [0065]), the skilled person unambiguously derives that it is the position of the schematic representation of the dashed base line in Figure 6 which is inaccurate.

It is also true that Figure 5 shows, yet at another position on the perimeter of the rim (see Figure 2, right part of the figure), an inner side surface 52b which does not extend straight in a vertical direction, so that the rim inside wall portion forms an overhang. This does not, however, invalidate the disclosure of paragraph [0065], which applies to the straight regions of the inner side surface. The wording of claim 1 as granted (using the term "comprises" in Feature f) does not exclude parts of the inner side surface having a different form.

- 1.6 Omission of "to the rim inside wall upper sloped surface 52a bottom end"

The omission of the feature according to which the inner side surface 52b extends to the "bottom end 52c" of surface 52a (paragraph [0065]) in Feature g' of claim 1 does not extend beyond the content of the application as filed, either. According to original claim 1, the "rim inside wall upper sloped surface" (52a) and the "inner side surface" (52b) are surfaces, not wall portions, of the common "rim inside

wall portion" (52). It is not apparent how surfaces of the same wall could be overlapping. Moreover, the inner side surface is explicitly defined as extending "up to" the upper sloped surface 52, the allegedly omitted feature thus being implicit in claim 1 as granted.

#### 1.7 Intermediate generalisation

Amended Feature g in claim 1 as granted does not involve an unallowable intermediate generalisation for the following reasons.

- 1.7.1 Amended Feature g' is taken from the detailed description of the first embodiment (paragraphs [0032] to [0109]), from the passage referring to Figures 1 to 6 regarding details of the rim portion of the flush toilet (see paragraph [0060]). Extracting only Feature g' from the combination with other features in which it was disclosed represents an intermediate generalisation of the original disclosure.

An intermediate generalisation is allowable if it is directly and unambiguously, explicitly or implicitly, derivable for a skilled person from the application as filed that the feature can be isolated from the other features, such that the omission of the other features does not add new technical information (i.e. the "gold standard", G 2/10, Reasons 4.5.1). In accordance with the established case law of the Boards, the omission is justified only if the isolated feature is not inextricably linked with the other features, or, as sometimes expressed, "in the absence of any clearly recognisable functional or structural relationship" among those features or if it is clearly recognisable that the extracted characteristics are "not closely related" to the omitted characteristics (see Case Law

of the Boards of Appeal of the EPO, 11th edn., 2025 (Case Law), II.E.1.9.1).

These criteria do not refer to the mere "context" in which the isolated feature was presented. The decisive factor is whether the isolated features taken up in the claim are understood, by the skilled person in the art, to be inextricably linked to the omitted features to which the features taken up were linked but which were left out of the claim. This is the case if the person skilled in the art would have regarded the omitted features to be necessary for achieving the effect associated with the added features (see T 1762/21, Catchword).

- 1.7.2 The amendment (Feature g') taken up in Feature g of granted claim 1 provides the technical information that the inner side surface (52b) of the rim inside wall portion (52) extending straight in a vertical direction directly joins the top end (44a) of the waste receiving surface (44), i.e. there is no gap, step or additional surface of the rim inside wall portion in between, and the straight vertical inner side surface 52b extends to the lower end of the rim inside wall portion 52. From the terms "top", "up to" and "vertical", it is clear that Feature g' only applies to the connection in the vertical direction between these surfaces.

Moreover, claim 1 defines in Features f and g that the rim inside wall portion 52 forming an inner perimeter of the rim portion "comprises" (see above) a rim inside wall upper sloped surface 52a and an inner side surface 52b extending straight in a vertical direction up to the rim inside wall upper sloped surface. This straight and vertical inner side surface 52b need not be present around the entire perimeter (see also paragraph [0064],

"essentially vertically in the majority of regions"). Therefore, claim 1 does not exclude inner side surfaces with other shapes at other portions around the rim (forming e.g. an overhanging shape at the front side of the bowl). Feature g including Feature g' is thus independent of other laterally (horizontally) adjacent surfaces and not linked to those.

- 1.7.3 As Feature g as a whole defines that the inner side surface is straight and vertical all the way down to the bottom end of the rim inside wall portion, one effect resides in improved user cleanability of the rim inside wall portion (see paragraphs [0091] and [0092] of the patent). The direct connection of the inner side surface 52b to the "outside perimeter of the waste receiving surface" without steps, gaps and additional surfaces in between (paragraph [0077] and Figures 6 and 7 of the patent), according to the amended Feature g', adds to the same effect. The corner between the top surface and the rim inside wall portion being flattened or rounded by the rim inside wall upper sloped surface 52a (Feature f) serves the same purpose (see, e.g. paragraphs [0008] and [0032] of the patent) and is also already included in claim 1.

However, the further features submitted by the appellant regarding the flush water systems and the surfaces for guiding the flush water horizontally are not necessary for or functionally linked with the effect of improved user cleanability of the rim inside wall portion at the location of the straight vertical inner side surface.

- 1.7.4 It is true that claim 1 also encompasses embodiments in which the inner side surface 52b can be straight over

the entire perimeter of the rim portion (i.e. without overhanging portions).

However, this is also the case in originally filed claim 1. The skilled person thus understands that it is not intended and not necessary to specify the rim structure around the entire perimeter for improving user cleanability in some portions.

Indeed, Feature g without Feature g' is part of originally filed claim 1. Thus, the inner side surface extending straight in a vertical direction had already been disclosed in generalised form, independently of the other features allegedly missing from the embodiment (regarding the flush water flow or the problem of avoiding flush water splashing, etc.) in originally filed claim 1. Claim 1 as originally filed thus discloses an originally disclosed and thus allowable intermediate level of abstraction.

Feature g' only further clarifies the inner side surface as already disclosed in generalised form, without affecting the other features of the embodiment.

- 1.7.5 Indeed, Feature g' is not otherwise inextricably linked with further features or problems regarding the flush water flow and the problem of avoiding flush water splashing.

It is true that the specification of a direct connection between the straight vertical inner side surface 52b and the waste receiving surface 44 according to Feature g' excludes hypothetical additional surfaces of the rim inside wall portion between the inner side surface and the waste receiving

surface. Such additional surfaces could affect the flush water conditions around the rim.

However, the application as filed does not disclose or discuss any such additional surfaces, and it is not clear *how* such hypothetical surfaces would affect the flush water flow and which technical effect on the flush water flow could be attributed to the *absence* of *unknown* additional surfaces. Excluding hypothetical subject-matter which is not part of the disclosure of the patent cannot convey a teaching of a technical effect to the skilled person. Nor is such an effect apparent from the common general knowledge. Hence, the mere fact that Feature g' excludes subject-matter that could affect flush water flow does not support the presence of an inextricable link between Feature g' and the overall flush water flow in the bowl. This is even more so as claim 1 does not, and need not, necessarily define the structure of the bowl and rim around the entire perimeter of the flush toilet (see point 1.7.2 above).

The height relationship between the rim inside wall upper sloped surface 52a and the inner side surface 52b (paragraphs [0067] and [0068] of the application as filed) is indeed connected with the problem of avoiding splashing (paragraph [0007] of the application as filed). But it is not linked with Feature g', which merely excludes further surfaces of the rim inside wall portion below the straight vertical inner side surface 52b.

Accordingly, the specification of a direct connection in the vertical direction between the straight vertical inner side surface 52b and the waste receiving surface 44 top end 44a (Feature g') is not inextricably linked

with the configuration of the flush water spouting system(s), the structure and geometry of further surfaces involved in the flush water distribution, and the problem of avoiding splashing of flush water out of the bowl.

1.8 The above reasoning is not prejudiced by supposedly contradictory statements regarding synergistic effects between Feature g' and further features in auxiliary requests allegedly submitted by the patent proprietor regarding inventive step. First, any such statements would have to be assessed on their merits under the relevant provisions. Second, it may well be that the application as originally filed provides a basis for isolating or omitting features which, together, act synergistically. Hence, the submission by the appellant in this regard (section 1.3 in the letter of 28 November 2024) does not prove that claim 1 extends beyond the content of the application as filed, either.

1.9 Accordingly, maintenance of the patent as granted according to the main request is not prejudiced by the ground for opposition under Article 100(c) EPC.

2. Main request - Sufficiency of disclosure, Article 100(b) EPC

2.1 The appellant submitted that claim 1 merely defined a straight vertical inner side surface 52b but no overhanging portions in the front side part of the rim, these being indispensable for avoiding splashing of flush water outside the bowl. Similarly, claim 1 was not restricted by:

- the low flow rates needed to avoid splashing (paragraphs [0048], [0118] and [0128])

- an additional jet flushing system at the bottom of the bowl to compensate for the low flow rates at the rim
  - the vertical position (paragraphs [0078] and [0106]) and relative height ratio of the surfaces 52a and 52b (paragraphs [0071] and [0108])
- Those features were needed for a properly working toilet without flush water splashing.

Moreover, the relative definition of the dimensions W1 and W2 in Feature j did not sufficiently describe the objective of the invention regarding the improved user cleanability of the rim portion explained with reference to Figures 7 and 8.

The omission of these essential features implied that the subject-matter of claim 1 was considerably broader than what was disclosed to be workable. It also covered embodiments which provided the exact opposite of what was defined as the invention in the description (e.g. sharp rim edges and considerable splashing of flush water outside the bowl). The subject-matter of claim 1 was thus not sufficiently disclosed over the whole claimed breadth as in T 409/91 and also violated the general principle that the protection obtained with the patent had to be commensurate with the disclosed teaching.

The appellant further referred to T 2284/15 and T 2729/18, according to which an invention was only workable and sufficiently disclosed if it could be carried out such that it solved a meaningful technical problem. In the appellant's view, this requirement was not met in the current case without the further specifications referred to above.

Accordingly, the patent did not disclose the invention of claim 1 in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art.

- 2.2 As set out above under point 1.7.2, second paragraph, claim 1 only specifies that a straight vertical inner side surface 52b is present; it does not exclude regions with different, e.g. overhanging, shapes at other regions around the rim. Hence, the subject-matter of claim 1 is not contradictory to the embodiment in the patent.

For the Board, there is no doubt that a skilled person could put into practice the design of the toilet bowl and rim disclosed in the patent as a whole.

- 2.3 It is true that claim 1 does not specify all details of a properly working toilet, such as the features allegedly needed for avoiding flush water splashing set out under point 2.1.

However, first, this is a lack-of-essential-features objection, typically dealt with under the requirements of Article 84 EPC (see Case Law, II.A.3.3), which is not to be examined in opposition appeal proceedings (G 3/14, Headnote).

Second, this is inherent with drafting patent claims in accordance with the EPC, i.e. when attempting to cover an essential aspect of an invention in a claim without unreasonably limiting the scope of protection in other regards, as also expressed in Case Law, II.C.5.4 b):

*"Generally speaking, and in accordance with Art. 84 EPC in combination with R. 43(1) and 43(3) EPC,*

*claims only define the essential features of the invention. For every claim worded in this way, it would be very easy to find embodiments that are covered by the claim but cannot be put into practice for various reasons. This is not prejudicial as long as the skilled person is aware of this and knows how to arrive at workable embodiments according to the invention (see G 1/03, point 2.5.2 of the Reasons). There is no reason to require that the wording of a claim explicitly rules out any conceivable embodiment covered by that wording but which a person skilled in the art would immediately take to be unworkable (T 1857/20, point 9.3 of the Reasons)."*

This is the case here as the patent teaches in detail which measures can be taken to prevent splashing of flush water out of the bowl and to improve cleanability. In fact, the skilled person has known for decades how to design toilets so that flush water does not splash out and is well aware of this basic requirement and the means to achieve it. The factors to be taken into account, such as flush water flow rates and the design of the surfaces, are all part of this common general knowledge. Therefore, interpretations of the claimed subject-matter in which flush water splashes out uncontrollably, for example, due to excessive water pressure or an unpracticable rim design, must be rejected. Such technically unreasonable embodiments are not covered by the scope of the claim and therefore do not constitute examples of insufficient disclosure over the whole breadth claimed.

This is in line with the above-cited case law, in accordance with which apparently non-working and non-workable embodiments are excluded from the scope of the

claim and cannot thus violate the general principle mentioned in Case Law, II.C.5.4 f) that patent protection obtained must be commensurate with the disclosed teaching.

- 2.4 Moreover, the technical subject-matter expressed by the technical features of a claim is to be distinguished from the technical effects they exhibit - and even more so from the desired effects and the subjective technical problem stated in the patent.

The patent mentions several effects and problems to be solved by the invention, namely, to improve cleanability and to prevent splashing of flush water out of the bowl. However, these objectives or effects are not defined as part of the subject-matter defined in claim 1 and are thus not part of the claimed invention that the skilled person must be enabled to carry out. Hence, sufficiency of disclosure under Article 100(b) EPC does not depend on whether these effects and objectives are achieved when carrying out the invention (see Case Law, II.C.3.3).

- 2.5 This, *inter alia*, distinguishes the case at hand from the situation in T 409/91, where a part of the claimed subject-matter, not its effect, was found to be insufficiently disclosed and not workable. Moreover, in the case underlying T 409/91, the feature that was not workable over the full claimed breadth (the claimed particle size range) concerned the essence of the invention. In contrast, the appellant's objection in the current case is based on embodiments which are only encompassed by claim 1 but not explicitly pointed to in the patent.

2.6 In the appellant's view, a claimed invention was only sufficiently disclosed if it solved a meaningful technical problem (not necessarily the subjective technical problem stated in the patent). It referred to T 2284/15 (Reasons 19 to 26) and T 2729/18 (Reasons 14.1) in which the view is taken that an invention was only workable and sufficiently disclosed if it could be carried out such that it solved the technical problem posed in the patent (i.e. the skilled person arrived at subject-matter that solved the problem).

First, the Board is not convinced by the reasoning in the cited decisions, which contradicts the established case law. In this regard, reference is made to T 591/23, Reasons 1.10.6.

Moreover, it is beyond doubt that a flush toilet solves a technical problem by a technical means, as submitted by the respondent. Furthermore, at least some features of claim 1 in fact contribute to the solution of the problems stated in the patent, namely, the problem of improved cleanability (due to the sloped form of surface 52a and the straight vertical shape of surface 52b, Features f and g, see references in point 1.7.2) and the problem of preventing (or at least reducing the likelihood of) flush water splashing out of the bowl (due to the constant flow rate device, Feature h, e.g. paragraphs [0014] and [0017] of the patent). Accordingly, in the current case, the patent even fulfils the requirement set out in the cited decisions.

2.7 Accordingly, maintenance of the patent as granted according to the main request is not prejudiced by the ground for opposition under Article 100(b) EPC.

3. Main request - Novelty, Articles 100(a), 52(1) and 54 EPC

3.1 Document D9

D9 undisputedly discloses a flush toilet with Features a to f and i. The Board has come to the conclusion that D9 also discloses the remaining features of claim 1 except for Feature j.

3.1.1 Feature h

The patent proposes a constant flow rate device as defined in Feature h to mitigate pressure fluctuations from the water mains ("utility water supply", paragraph [0006]). The respondent submitted that D9 related to a low-water flush toilet for RVs and boats and was not connected to a water supply from the mains (column 1, lines 1 to 32).

However, claim 1 is not limited to toilets connected to the water mains. Irrespective of the water supply, column 3, lines 10 to 38 of D9 discloses a system to "limit" yet provide "enough pressure" of the flush water so that the "jets are at a desired pressure". The flow rate is thus limited to be within a certain range in the same way as in the patent (paragraph [0118]). The system in D9 therefore constitutes a "constant flow rate device for spouting a constant flow rate of flush water from the water spout portion", as required in Feature h.

3.1.2 Feature g

The appellant submitted that Figures 4 and 5 of D9 disclosed a rim with an "inner side surface" above the

ledges 20 and 22 extending substantially straight in a vertical direction from the (rounded) waste receiving surface top end (above the ledges) up to a "rim inside wall upper sloped surface" above it (where the rounding of the inner edge above the inner side surface begins). The term "vertical" covered some deviation from the exact verticality as apparent from the patent (figures and "essentially vertically" in paragraph [0067]). At the oral proceedings, the appellant further argued that the same applied for the term "straight", which was not to be understood in the strict mathematical sense but from a technical perspective. This argument was not an amendment but a refinement of the appellant's argument in response to the Board's preliminary opinion. With this understanding, Figures 4 and 5 of D9 directly and unambiguously disclosed a straight vertical inner side surface above the ledges with the same level of precision as in the patent.

The respondent submitted that the figures in D9 did not directly and unambiguously disclose the claimed characteristics. It referred to the case law regarding features and measurements taken from schematic drawings (Case Law, I.C.4.6, in particular the first and second paragraphs). The respondent agreed that "vertical" encompassed some degree of variation within the meaning of the patent. However, as to the appellant's argument that "straight" was to be understood in a more lenient way as well, this argument was presented for the first time at the oral proceedings and should not be admitted under Article 13(2) RPBA. Furthermore, the inner side surface in Figures 4 and 5 had a slight curvature, which was clearly recognisable when applying a ruler, and was thus not straight. Moreover, column 2, lines 42 to 47 of D9 referred to both the "slope" and the

"inclination" of the surfaces below and above the ledges and thus implied a curvature in these surfaces.

The Board agrees with the appellant.

Figures 4 and 5 of D9 disclose the relevant surfaces of the rim of a toilet bowl including a "rim inside wall portion". The substantially horizontally oriented "ledges" 20 and 22 (column 2, lines 42 to 47) of the bowl do not belong to the rim but to the "waste receiving surface". Above the ledges, the waste receiving surface forms a rounded transition at its "top end" into an "inner side surface" of the rim, which extends up to another region with a further rounding at the inner edge of the rim.

The "inner side surface" thus defined extends, broadly, "in a vertical direction". The parties agree that the extension "in a vertical direction" in Feature g does not require an exact mathematical verticality. From a technical perspective, and as it does not refer to "the" but "a" vertical direction, Feature g covers some angular deviation from the exact vertical direction. This is also supported by Figures 4 and 6 in the patent showing a visually recognisable inclination of the inner side surface 52b and paragraph [0067] describing the "inside surface" 52b as rising "essentially" vertically. It is, on the other hand, clear for a skilled person that the deviation from the vertical direction must be small enough to prevent splashing of the circulating flush water out of the bowl under centrifugal force (see paragraphs [0026], [0029] and [0078] of the patent). The Board considers that the extension direction of the "inner side surface" in D9 falls within this range. This can be recognised from Figures 4 and 5 with the naked eye without requiring

measurements. This characteristic is thus directly and unambiguously derivable for a skilled person from Figures 4 and 5 of D9.

The appellant's argument that the same understanding should also apply to the term "straight" was explicitly presented for the first time at the oral proceedings before the Board. However, the appellant had already, with its grounds of appeal, argued that the rim inside wall in D9 was straight in the sense of the patent, which implies the same understanding of the term "straight". Hence, this argument was not an amendment of the appellant's appeal case - as argued by the respondent - but a mere refinement of the appellant's argument in response to the Board's preliminary opinion explicitly discussing "straightness" for the first time. As such, it is not subject to non-admittance pursuant to Article 13 RPBA.

Moreover, the Board agrees with this argument. Also, the term "straight", which qualifies the extension "in a vertical direction", is to be understood from a technical perspective, not in a strictly mathematical sense. The term is thus to be read as "substantially" straight and covers a similar degree of variation as the extension "in a vertical direction" to which it applies. With this understanding, the inner side surface in Figures 4 and 5 of D9 directly and unambiguously discloses a "substantially straight" extension in a vertical direction.

The respondent submitted that the inner side surface in D9 exhibited a slight curvature and was thus not straight. This was also derivable from column 2, lines 42 to 47 in D9. This is not persuasive. First, column 2, lines 42 to 47 refers to the orientation of the

ledges compared to the surfaces above and below. The fact that this passage refers to "inclination" and "slope" has no bearing on the shape of the "inner side surface" even farther away (not to mention that the use of both terms together does not imply a curvature). The alleged deviation from the exact straightness in the figures referred to by the respondent is not immediately apparent to the eye but only on closer inspection when focusing on this aspect. It is clearly perceivable only when comparing the line with a ruler, as submitted by the respondent. Such a small deviation, if any, from the exact straightness is covered by the expression "extending straight in a vertical direction" with the understanding set out above.

Accordingly, D9 also discloses Feature g.

### 3.1.3 Feature j

The appellant submitted that the "rim inside wall upper sloped surface" in D9 included, in addition to the rounded edge, the inclined surface denoted by reference sign 14 in Figures 4 and 5. The latter surface fulfilled all criteria required for the rim inside wall upper sloped surface as it was an "upper" surface that was inclined ("sloped") to the "inside". It could thus be regarded as part of the "rim inside wall" and could, in the appellant's view, be "read onto" claim 1, whereas it was irrelevant whether surface 14 could instead also be assigned to the rim top surface portion. The description also did not disclose a clear distinction between the rim top surface portion 54 and the rim inside wall upper sloped surface 52a according to paragraphs [0080] and [0085] to [0087] (of the patent; the appellant's references to paragraph [0077] (lines 18 to 21) and [0082] to [0084] appeared to refer

to the application as published). With the above feature assignment, the horizontal width of the rim inside wall upper sloped surface was considerably larger than the width of the corresponding outer sloped surface as required by Feature j. In addition, the rounding at the back side of the bowl in Figure 4 was more pronounced than the outer rounding to the right of reference sign 50.

This is not persuasive for the following reasons.

For determining whether D9 discloses Feature j, it is not decisive what "can be read onto the claim", as submitted by the appellant, but how a skilled person objectively understands the claimed subject-matter and the disclosure of D9.

Features g and i define that the "rim portion" 46 comprises three major wall portions, a "rim inside wall portion" 52, a "rim top surface portion" 54 and a "rim outside wall portion" 56, before specifying in more detail the sloped and straight subsurfaces of the inside and outside wall portions. Looking at Figures 4 and 5 in D9, the skilled person immediately identifies the surface with reference sign 14 as the "rim top surface portion" of the three major wall portions, "forming a top surface on the rim portion" and connected by rounded edges to the substantially straight vertical inner and outer wall portions. The skilled person understands that "top surface" does not refer to the uppermost *point* in the cross-section but to a substantially horizontal *surface*. This is also supported by the patent disclosing that the rim top surface portion (termed "rim upper surface portion" in the description) may itself be inclined (paragraph 80), as submitted by the appellant.

It is true that the rim top surface portion according to the description of the patent may even be curved or "formed as a part of a sloped surface in which the top end of the rim inside wall upper sloped surface 52a is extended to the outside" (paragraph 80) and that the sloping/rounding/curvature of the rim upper wall may "change continuously" (paragraphs [0085] to [0087]) and "gradually connect" the inner and upper wall portions (paragraphs [0072] and [0074]), so that a clear distinction between the top surface and the sloped surface may not always be possible. However, this is not the case in D9, where the transition point between the flat top surface and the rounded sloped surface is well recognisable. Moreover, the skilled person would not adopt an interpretation of the claim features that effectively renders the definition of the distances W1 and W2 arbitrary, even if the description contains a correspondingly broad disclosure regarding the shape and transition of the top and sloping surfaces. It is thus not convincing to consider only the topmost point of the rim or, as shown in the drawing on page 17 of the grounds of appeal, an arbitrary surface around this point instead of the entire surface with reference sign 14 in Figures 4 and 5 of D9 as the "rim top surface portion".

The respective "sloped surfaces" (rounded edges) between the main walls are of a similar width. It cannot be directly and unambiguously inferred from the schematic drawings in Figures 4 and 5 that the horizontal width of one of them is larger than that of the other. Not only would this require a comparative measurement. As the rounding of the corners of the rim is not addressed in D9, it cannot even be assumed that the figures contain a realistic representation of their

properties. Accordingly, a comparison of the relative widths and their proportions is not directly and unambiguously derivable from Figures 4 and 5 in D9 (see Case Law, I.C.4.6).

The rounding to the right of reference sign 50 in Figure 4 of D9 does not belong to the rim portion of the toilet and is thus irrelevant for Feature j.

Therefore, D9 does not disclose Feature j.

3.1.4 Accordingly, the subject-matter of claim 1 differs from D9 by Feature j alone and is thus novel over D9.

3.2 Document D10

3.2.1 It is common ground that D10 (as to the structure of the rim, see Figure 1) discloses a flush toilet with Features a to f, h and i.

3.2.2 Feature g

The appellant submitted that the point on the rim inside wall portion in Figure 1 to which the arrow of reference sign 14 pointed represented a vertical surface.

This is not persuasive.

The surface identified by the appellant may have a vertical tangent, but it does not extend straight in a vertical direction. The straight inclined surface above the arrow, on the other hand, deviates too much from the exact vertical direction to still be considered "extending straight in a vertical direction" in the sense set out above. Furthermore, the inner side

surface at the back side of the bowl in Figure 1 does not clearly disclose rounded corners (a rim inside wall upper sloped surface and a rim outside wall upper sloped surface). Accordingly, D10 does not disclose Feature g.

### 3.2.3 Feature j

As there are either no upper sloped surfaces which could be compared (back side of the bowl) or at least no straight vertical inner side surface 52b (front side of the bowl) in D10, the references to these surfaces and their upper and lower ends are not well defined in D10. For this reason alone, D10 does not disclose Feature j as defined in claim 1.

3.2.4 Accordingly, D10 does at least not disclose Features g and j, and the subject-matter of claim 1 is novel over D10.

### 3.3 Document D11

At the front side and both lateral sides of the bowl (Figures 4 and 5 of D11), the inner edges have 180° roundings, which appear more pronounced than the roundings on the outer edge. However, in terms of the radius of curvature and the "horizontal distance" as defined in Feature j, the roundings are of comparable dimensions. At the back side of the bowl, the upper sloped surface curves forward and then back again to the extent that the horizontal distance of the end points of this surface according to Feature j is close to zero. For the same reasons as set out for D9 above in view of the schematic nature of the figures, D11 does not directly and unambiguously disclose Feature j.

Accordingly, the subject-matter of claim 1 is novel over D11.

#### 3.4 Document D12

It is common ground that D12 discloses a flush toilet with Features a to e. The Board also agrees with the appellant that the figures in D12 disclose a rim with top surface, inside and outside wall portions, and rounded upper sloped surfaces at the inner and outer edges (Features f and i).

The appellant further referred to the inner side surface in Figure 5, left side, and in Figure 3, left side, behind the cutting plane. In Figure 5, the inner side surface clearly extended straight in a vertical direction, and the inner rounding was more pronounced than the outer rounding, meaning that Feature j was disclosed. In Figure 3, behind the cutting plane, where the rim was closed, there was a straight vertical surface below the base of reference sign 31. Above it, there was a surface that was more inclined with respect to the vertical direction. The latter could, together with the rounded edge, be considered the rim inside wall upper sloped surface which thus had a larger horizontal width than the outer rounded edge. Accordingly, D12 disclosed Features g and j in both figures. Feature h was derivable from paragraph [0031], number 2, in D12' disclosing a valve for providing water directly from the water supply source and thus at a constant pressure.

The Board does not agree.

Figure 3 discloses a cross-sectional view of the toilet through plane A in Figure 2. In addition, lines from a

side view on the structures behind the section plane are inserted. According to this view, the inner side surface below the base of reference sign 31 appears to be steeper, more vertical than the inside wall portion in the section plane. According to the appellant, the rim inside wall portion behind the sectional plane thus had a bend (and the upper part could be considered to belong to the rim inside wall upper sloped surface). The Board is not convinced that the disclosure of the side view behind the actual section plane is accurate and actually discloses a kink in the side wall. At least it is not unambiguous as such a kink is not visible in Figure 5 (cut in a different section plane) nor disclosed anywhere else in D12. It thus may well be that the lines representing the inner side wall behind the section plane in Figure 3 are accidentally misaligned or that the straight continuation of the inner side wall above the open rim inside wall portion in the sectional plane has been omitted (like other structures at the back side of the toilet that are not drawn). Therefore, Figure 3 does not unambiguously disclose the structure of the rim inside wall portion behind the sectional plane and thus does not disclose Feature g. Furthermore, the width of the roundings at the inside and outside of the rim on the left side of Figure 3 are comparable, and the same reservations as to the comparison of their horizontal distances in the schematic figure discussed for D9 apply. Thus, Figure 3 of D12 does not directly and unambiguously disclose Feature j either.

Figure 5 is a perspective view with a section at a different plane, between planes A and B in Figure 2. It is not clear from the perspective view whether the rim inside wall at the left side of this figure extends in a direction qualifying as "vertical" in the sense

discussed above, whereas it appears to be straight. Also, the discrepancies regarding the straight extension between Figures 3 and 5 are inconsistent with a direct and unambiguous disclosure of Feature g in D12. Likewise, while the inner rounding on the left side of Figure 5 appears to be less pronounced than on the outside and thus larger in the horizontal direction, this impression is not confirmed on the right side of Figure 5. The Board thus concludes that the schematic drawing in Figure 5 does not directly and unambiguously disclose Features g and j either.

The fact that paragraph [0031] of D12 mentions the alternative that flush water may be directly supplied from a water supply source via an on-off valve does not amount to disclosure of a constant flow rate device (Feature h). According to the appellant's argument, any such valve provided a more constant flow rate than flush water provided by gravity from a water tank because of the constant mains system pressure of the water supply. However, according to this argument, the constant flow rate is not due to the valve but to the input pressure, and for a skilled person the valve thus does not represent a constant flow rate device.

Accordingly, D12 does not disclose Features g, h and j, and the subject-matter of claim 1 is novel over D12.

### 3.5 Document D13

It is common ground that D13 discloses a flush toilet with Features a to f and i.

As set out for D12, the Board does not consider a disclosure of Feature h by the mere presence of a flush "valve" (paragraph [0015]).

Therefore, the subject-matter of claim 1 is novel over D13.

### 3.6 Document D14

It is common ground that D14 discloses a flush toilet with Features a to f and i.

The rim portions in D14 are similar to those of D11. Hence, as set out with respect to D11, the "horizontal distance" of the roundings of the edges is similar in the front and lateral sides of the bowl and close to zero between the ends of the curved upper surface at the back side of the bowl (Feature j). Moreover, D14 does not disclose Feature h, either, for the same reasons as set out for D12.

Hence, the subject-matter of claim 1 is novel over D14.

### 3.7 Document D15

It is common ground that D15 discloses a flush toilet with Features a to f and i.

However, the rim edges of D15 are, again, similar to those of D11, in particular regarding the 180° degree rounding at the inner edge. Hence, for the same reasons as set out for D11, D15 does not disclose Feature j. Likewise, Feature h is not disclosed for the same reasons as set out for D12.

Accordingly, the subject-matter of claim 1 is novel over D15.

3.8 For the above reasons, the subject-matter of claim 1 as granted is novel over the flush toilets disclosed in each of D9 to D15. Therefore, the ground for opposition under Article 100(a) EPC in conjunction with the requirement of novelty under Articles 52(1) and 54 EPC does not prejudice the maintenance of the patent as granted.

4. Main request - Inventive step, Articles 100(a), 52(1) and 56 EPC

4.1 Selection of the closest prior art

The respondent submitted that applying the problem-solution approach from different starting points was only required if it had been convincingly shown that different starting points were equally valid springboards. The appellant had not set out why each of D9, D12, D16 and D17 could be considered the most promising and equally valid starting point. In view of the technical field and similarity of purpose or effect, D9 and D16 did not qualify as the most promising starting points as they related to mobile, low-water flush toilet systems for RVs, boats or mobile homes.

However, the Board concurs with the established case law that the rationale of the problem-solution approach requires that the invention be assessed - within reasonable limits depending on the individual case - relative to all possible routes, i.e. routes starting from different documents, which might lead a skilled person to the invention before an inventive step can be acknowledged (Case Law, I.D.3.3). As there is no absolute metric of "closeness" of a prior art to an invention, it can often only be determined

retrospectively which prior art is a promising starting point, let alone the most promising starting point, and which are "equally valid" springboards. In the current case, the Board does not see a reason to exclude any of the submitted documents D9, D12, D16 and D17 as the closest prior art *a priori*, i.e. before having considered the submitted route in substance at least to some extent. In particular, the subject-matter of claim 1 does not exclude flush toilets for use in RVs, boats or mobile homes, such as in D9 or D16.

#### 4.2 Inventive step starting from D9

As set out above, the subject-matter of claim 1 as granted differs from the toilet of D9 by Feature j alone.

##### 4.2.1 According to the introductory part of the patent, one aspect of the invention concerns "significantly rounding the corners on the inside perimeter surface of the rim top portion", which improves user cleanability of the rim portion (paragraph [0008]) and provides a wider appearance of the waste receiving surface compared to conventional bowls, thus "imparting a sense of confidence regarding the ease with which a user can discharge urine into the bowl portion" (paragraph [0009]).

According to paragraphs [0013] and [0032], both effects, "improved user rim portion cleanability" and "user visibility" respectively wider appearance (see also paragraph [0077]), are already achieved by providing a rim inside wall upper sloped surface sloping downward (Feature f). The same effects, i.e. further improvements, are attributed to Feature j (paragraphs [0015] and [0016]). The effect of

particularly efficient cleaning is attributed to the preferable option of an arc-shaped sloped surface (paragraphs [0018] and [0019]) with a radius of the arc conforming to a user's hand (paragraphs [0023], [0075], [0076], [0080] and [0089] to [0092]; Figures 7 and 8).

4.2.2 The appellant argued that the relative size of the horizontal distances  $W1$  and  $W2$  in Feature  $j$  did not define the size of rounding of the inner sloped surface relevant for improved cleanability. The requirement  $W1 > W2$  of Feature  $j$  could, for example, be achieved by reducing the outer rounding, which did not facilitate cleaning. Accordingly, Feature  $j$  did not solve any technical problem and did not make any technical contribution - this being a prerequisite for recognising an inventive step. For this reason alone, the subject-matter of claim 1 did not involve an inventive step.

At the oral proceedings, the appellant further submitted that in the absence of a technical effect of Feature  $j$ , a less ambitious objective technical problem could be seen in how to provide a design alternative for the rim. Such alternatives were obvious for the skilled person. Thus, the skilled person would have arrived at subject-matter of claim 1 in an obvious way.

According to the appellant, the latter line of argument was not an amendment of the appellant's appeal case but merely a refinement along the lines of the appellant's previous submissions triggered by the Board's communication under point 9.1. Such a refinement in response to a point raised in the Article 15(1) RPBA communication was clearly permissible.

4.2.3 The respondent submitted that the appellant did not follow the problem-solution approach correctly. It did not set out why the skilled person would have been prompted to implement Feature j. It was not convincing that Feature j had to be ignored for inventive step merely because it allegedly did not solve the problem stated in the patent. Moreover, it did solve a problem as the combination of Features f, g, i and j collectively enabled comfortable use (by virtue of the waste receiving surface appearing wider) and easy cleaning (where a user's hand can be simply placed to wipe the rim portion without applying a strong force). Feature j was not obvious because the skilled person would not have modified ledges 20 and 22, which were essential for uniformly wetting and cleaning the waste receiving surface below them (column 2, lines 59 to 64).

The appellant's submission that Feature j solved the objective technical problem of providing a design alternative and that any such alternative was obvious constituted a considerable amendment of the appellant's appeal case which should not be admitted under Article 13(2) RPBA as there were no exceptional circumstances. Moreover, the amendment had the potential to change the Board's opinion and the outcome of the proceedings, whereas the parties should be able to rely on the Board's preliminary opinion.

4.2.4 Technical effect of Feature j

The Board observes that the patent teaches that the cleanability of the rim portion of the toilet by a user improves gradually (and the bowl appears gradually wider) the more pronounced the sloping/rounding of the inner edge of the upper rim area is as less force is

required to press the hand flat against the top surface, the inner side surface and the inner edge and to wipe those surfaces simultaneously with one hand. Accordingly, a slightly wider inner sloping or rounding of the rim inside wall upper sloped surface alone improves user cleanability.

However, this effect as disclosed in the patent depends on the absolute size of the inner sloped surface (for example, the horizontal distance  $W_1$ ). Feature j, on the other hand, requires a relative difference in size between the horizontal distances of the inner and outer sloped surfaces ( $W_1 > W_2$ ). This feature is not necessarily linked with an increase in size of the inner sloped surface. It can, for example, be fulfilled by making only the outer sloping/rounding smaller. The size of the outer sloping (which serves as the reference in Feature j) has no effect on cleanability as the outer sloped surface does not come into contact with the hand during cleaning (see Figures 7 and 8). Accordingly, Feature j does not, at least not over its whole breadth, exhibit the effect of improved user cleanability of the rim portion of the toilet (nor of a wider appearance).

Accordingly, Feature j does not credibly achieve the technical effect stated in the patent over the whole scope of the claim. The respondent did not submit any other technical effect, and the Board is not aware of another technical effect achieved by Feature j. The Board thus agrees with the appellant that no credible technical effect of Feature j has been submitted that could be taken into account for the formulation of the objective technical problem (Case Law, I.D.4.1 and subsections).

#### 4.2.5 Admittance of the appellant's new arguments

In its communication under Article 15(1) RPBA, the Board set out that if Feature j did not achieve the technical effect attributed to it in the patent, a less ambitious objective technical problem could "at least be seen in the provision of an alternative construction of a flush toilet", based on which obviousness starting from a particular prior-art would have to be considered.

In view of the above, the appellant submitted at the oral proceedings that the objective technical problem resided in the provision of a design alternative and that the provision of a rim portion fulfilling Feature j was obvious in view of this problem as the skilled person, considering various variations of the design of a toilet, would have arrived at designs falling within the scope of claim 1 in an obvious way.

In the Board's view, this is in line with the appellant's previous submissions. In the written submissions, the appellant stressed that Feature j lacked absolute quantitative definitions and that even minor differences in the horizontal distances of the rim upper sloped surfaces would be encompassed by Feature j such that it would not be apt to solve the problem of improved cleanability. This implies that minor variations in the construction or design of a toilet made by the skilled person would lead to the claimed subject-matter. The appellant merely fitted this into the framework of the objective technical problem of "providing an alternative of the construction of the flush toilet", which was set out by the Board in its communication under Article 15(1) RPBA and is thus not subject to Articles 12 and 13 RPBA.

Moreover, even if the new arguments were to be considered an amendment of the appellant's appeal case under Article 13(2) RPBA, its admittance would at least be justified by exceptional circumstances in view of the problem formulated in the Board's communication as submitted by the appellant.

4.2.6 Inventive step in view of the problem of providing a design alternative

Under the established case law, if the objective technical problem resides in the mere provision of an alternative, in the current case an alternative flush toilet, the skilled person would take into account alternatives known in the underlying technical field, unless the closest prior art teaches away from these alternatives (Case Law, I.D.4.5). The Board considers that modifications of the rim shape as defined in Feature j are within the skilled person's common general knowledge. No teaching away from this feature in D9 has been established, and the Board is not aware of anything that argues against this modification either.

This does not change if the problem is directed to a design alternative as submitted by the appellant, i.e. an alternative that is made to provide a different aesthetic design. The additional aim to provide a different design, which refers to a non-technical field (Article 52(2)(b) EPC), is provided to the skilled person as a constraint that does not render the modification of Feature j more or less obvious.

4.2.7 Accordingly, starting from D9, the subject-matter of claim 1 of the main request does not involve an

inventive step. Therefore, the ground for opposition under Article 100(a) EPC in conjunction with the requirement of inventive step under Articles 52(1) and 56 EPC prejudices the maintenance of the patent as granted.

4.3 The appellant has further submitted attacks of lack of inventive step starting from D12, D16 or D17. These objections against the main request were found unconvincing. They are nevertheless discussed in the following given that they were also submitted in the written proceedings against auxiliary requests 4 dealt with below.

4.4 Inventive step starting from D12

As set out above (see point 3.4), claim 1 as granted differs from D12 by Features g, h and j. In this regard, the Board concurs with the opposition division's findings in the decision under appeal.

At the oral proceedings, the appellant merely referred to its written submissions with regard to lack of inventive step starting from D12. However, its submissions at the oral proceedings regarding the obviousness of Feature j when starting from D9 are nevertheless, to the appellant's benefit, taken into account. Accordingly, the Board agrees that Feature j does not, over its whole breadth, exhibit the effect of improved user cleanability of the rim portion asserted in the patent and was obvious in view of the problem of providing a design alternative (see points 4.2.4 and 4.2.6 above). There is thus also no synergistic effect between Features g and j. It is further assumed, only for the sake of argument to the appellant's benefit, that Feature h is obvious. Inventive step of the

subject-matter of claim 1 starting from D12 thus hinges solely on the assessment of Feature g.

In the written proceedings, the appellant criticised the objective technical problem in the decision under appeal and submitted that no recognisable technical effects and problems had been established for Feature g in the opposition proceedings. The subject-matter of claim 1 did thus not involve an inventive step already because the distinguishing features did not make a technical contribution - this being a prerequisite for recognising an inventive step.

However, Feature g is of a technical nature, contributes to an understandable technical purpose (e.g. user cleanability as discussed with respect to Article 100(c) EPC, see the Board's communication, point 6.6.2; and point 1.7.3 above) and is thus not arbitrary. Under these circumstances, the alleged lack of a technical effect of the distinguishing feature is not sufficient to substantiate a lack of inventive step. It would still have to be considered whether it would have been obvious for a skilled person to arrive at the claimed subject-matter in view of a less ambitious objective technical problem (Case Law, I.D.4 and I.D.4.4), the "minimalist" one being the "mere provision" of an alternative (see T 939/92, Reasons 2.5; Case Law, I.D.4.5).

However, the appellant did not submit such an objective technical problem for Feature g and did not explain why and how, based on which additional teaching (e.g. common general knowledge or a document as a secondary reference), it would have been obvious for a skilled person starting from the flush toilet of D12 to arrive at the claimed subject-matter as regards Feature g.

The appellant's submissions therefore do not put into question inventive step of the subject-matter of granted claim 1 starting from D12.

#### 4.5 Starting from D16 or D17

The appellant submitted that the rim portion 18 of the flush toilet in Figure 1 of D16 disclosed a straight vertical inner side surface, a rounded inner edge on top of it and an outer rounding which had, according to visual judgement, a considerably smaller radius of curvature than the inner rounding. However, the schematic figure does not unambiguously disclose Feature j. In addition, it cannot be unambiguously derived from the coarse schematic figure alone that the inner side surface is straight (Feature g).

As to D17, the Board does not share the appellant's view that D17 disclosed a straight vertical inner side surface on the left side in Figure 1. Moreover, a sloped upper surface is also not apparent at this location. Indeed, the schematic figure does not unambiguously disclose rounded edges according to Feature j on the front side of the rim (right side in Figure 1). Accordingly, claim 1 differs from the flush toilet in D17 at least by Features g and j (and - undisputedly - by Feature h as well).

The appellant's submissions with respect to inventive step starting from D16 or D17 do not address the obviousness of Feature g. With the same considerations as set out under point 4.4 above when starting from D12 and for the same reasons, the objections of lack of inventive step starting from D16 or D17 are not convincing, either.

Accordingly, inventive step of the subject-matter of claim 1 as granted is not prejudiced by the appellant's objections starting from D16 or D17, either.

5. Auxiliary request 4

5.1 Admittance

Auxiliary request 4 was first filed on 16 September 2022, that is, 11 days before the oral proceedings in opposition and after expiry of the time limit set pursuant to Rule 116(1) EPC.

In its letter of that date, the patent proprietor (now respondent) submitted that claim 1 of auxiliary request 4 corresponded to the combination of granted claims 1, 2, 3 and 5 and that it was filed as a response to the opponent's (now appellant's) submission of 27 July 2022 and to address the objections based on Article 123(2) EPC. The respondent submitted that the auxiliary request was thus admissibly raised and maintained and was thus part of the appeal proceedings.

The appellant requested that auxiliary request 4 filed after the deadline under Rule 116(1) EPC not be admitted as it was not apparent that it was a response to a point raised only in the opponent's letter of 27 July 2022, and this request could and should have been filed earlier.

The Board notes that although auxiliary request 4 was filed after the deadline of Rule 116(1) EPC, its admittance would have been within the opposition division's discretion (if it had become necessary for the decision under appeal). It is credible that the

patent proprietor filed this request in response to the objections against the previous auxiliary requests raised in the opponent's letter of 27 July 2022. As claim 1 of auxiliary request 4 is based on a combination of granted claims (with the dependent claims corresponding to claims as filed), there are no additional objections under Article 123(2) EPC, and the requirements of Article 84 EPC are not to be examined (see G 3/14). Moreover, being directed to a combination of granted claims, auxiliary request 4 is within the scope of the original opposition case and represents a foreseeable response to the opposition. Considering that auxiliary request 4 was filed as a replacement of a previous request, its filing was also beneficial to procedural economy. In the Board's view, auxiliary request 4 was thus admissibly raised and maintained in the proceedings leading to the decision under appeal and is thus not an amendment within the meaning of Article 12(4), sentence 1, RPBA. It thus has to be considered in the appeal proceeding and is not subject to admittance under the Board's discretion.

5.2 Sufficiency of disclosure, added subject-matter, novelty and inventive step starting from D12, D16 or D17

The appellant did not submit further objections with respect to sufficiency of disclosure or added subject-matter against auxiliary request 4 in addition to those against the main request dealt with above. It was, moreover, common ground that the reasoning set out for the main request regarding novelty and regarding inventive step starting from D12, D16 or D17 also applies to claim 1 of auxiliary request 4, which contains the same features.

5.3 Inventive step starting from D9

Accordingly, lack of inventive step starting from D9 was the only remaining objection against claim 1 of auxiliary request 4 that required further discussion.

5.3.1 Claim 1 of auxiliary request differs from claim 1 as granted by the additional Features k, l and m (see section V.).

5.3.2 The appellant submitted that Features k and l were already known from D9 (Figures 4 and 5). As to Feature m, Figure 4 of D9 also disclosed that the height of the rounded inner rim edge exceeded 10% of the overall height of rim inside wall portion from the straight vertical inner side surface to the rim top surface portion. Hence, claim 1 of auxiliary request 4 lacked inventive step for the same reasons as claim 1 as granted.

Even if Feature m was considered a further distinguishing feature, it only related to relative sizes like Feature j and thus did not define an absolute shape that fitted to a user's hand. Accordingly, Feature m also did not solve the problem of improved cleanability. The combination of distinguishing features was thus also obvious in view of the problem of providing a design alternative.

5.3.3 The respondent submitted that Features l and m could not be directly and unambiguously derived from the schematic drawings in D9. As to their technical effects, it referred to paragraphs [0021], [0025] and [0026] of the patent. Feature m defined a rim with a comparatively large rim inner wall upper sloped surface which improved user cleanability but also ensured a

minimum height of the straight vertical inner side surface which reduced the risk of flush water splashing. As there was no motivation or incentive for these features in the prior art, the skilled person would not have arrived at the subject-matter of claim 1.

- 5.3.4 It is undisputed that D9 discloses Feature k. The Board agrees with the appellant that Figure 4 unambiguously discloses Feature l as well, as the water spout portion behind cover 40 is located considerably below the "bottom edge" (or bottom end) of the rim inside wall upper sloped surface.

However, although the height of the rounded edge portion may appear to be larger than 10% of the overall rim inside wall portion to the eye, Feature m is not directly and unambiguously derivable. The reason is that the rounding of the edges is not discussed in D9, and the height of the roundings inferred from the schematic drawings is thus not directly and unambiguously disclosed by the figures.

The subject-matter of claim 1 of auxiliary request 4 thus differs from the flush toilet in D9 by the combination of Features j and m.

- 5.3.5 As set out above, Feature j alone does not define a more pronounced inner rounding as it can also be fulfilled by reducing the width of the outer edge. Thus, no credible technical effect could be established for Feature j alone.

However, in combination with Feature m, it becomes clear that these features are about the inner edge, not the outer edge. Accordingly, the arc-shaped (Feature k)

upper sloped surface on the inner edge must have a larger horizontal width than that of the outer edge (Feature j) and a vertical height of at least 10% of the overall rim inside wall portion (consisting of the upper sloped surface and the straight vertical surface). Read together with a mind willing to understand, the skilled person would thus not consider that these features could be implemented by making the outer corner sharper and reducing the height of the straight vertical surface (and the overall height), but by making the inner rounding more pronounced. This is what brings the rounding closer to conformity with the shape of the user's hand and thus achieves the effect of a gradual improvement of user cleanability of the rim.

Moreover, the upper height limit of 60% ensures a certain - albeit relative - height of the straight vertical inner side surface. It is true that the question of whether flush water will or will not splash out of the bowl depends on many factors, such as the absolute height of the straight vertical surface, its vertical position with respect to the water spout portion (see Feature k), the flow rate of flush water and, not least, the overall shape of the rim with or without overhanging portions. Therefore, the upper limit alone does not *prevent* splashing. But it may be considered to *reduce the risk* of splashing. As set out in the previous paragraph, the skilled person would understand that Feature m in combination with Feature j does not relate to a reduction of the overall height of the rim. The upper limit of 60% thus maintains a minimum height of the straight vertical surface that allows construction of a flush toilet such that the splashing of flush water is prevented. As disclosed in paragraphs [0010] and [0011] of the patent, there is a

trade-off between the effects of improved cleanability and prevention of flush water splashing. In the Board's view, the upper limit in Feature m thus credibly contributes to the effect and problem of reducing the risk of splashing.

Accordingly, the distinguishing Features j and m in combination provide the credible technical effects set out above and solve the objective technical problem of improving user cleanability of the rim portion while at the same time reducing the risk of splashing of flush water outside the bowl.

5.3.6 In this situation, the question of obviousness is no longer governed by the objective to find any alternative but to find a solution to a particular problem. As submitted by the respondent, the available prior art does not provide the skilled person faced with this objective technical problem with any suggestion or motivation for modifying the rim structure of the flush toilet in accordance with Features j and m. They would thus not have arrived at the subject-matter of claim 1 in an obvious manner.

5.3.7 Therefore, starting from D9, the subject-matter of claim 1 of auxiliary request 4 involves an inventive step.

## 6. Summary

In view of the above, the subject-matter of the claims according to auxiliary request 4 meets the requirements of the EPC.

## Order

### For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the opposition division with the order to maintain the patent in amended form on the basis of the claims 1 to 5 of auxiliary request 4 filed with the letter dated 29 November 2023 and a description to be adapted where appropriate.

The Registrar:

The Chairman:



C. Spira

C. Herberhold

Decision electronically authenticated