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**Datasheet for the decision
of 31 May 2022**

Case Number: T 0221/19 - 3.2.08

Application Number: 13779742.9

Publication Number: 2780528

IPC: E06B3/663

Language of the proceedings: EN

Title of invention:

SPACER PROFILE COMPRISING A REINFORCEMENT

Patent Proprietor:

Technoform Glass Insulation Holding GmbH

Opponents:

ROLLTECH A/S
Ensinger GmbH & Co.

Relevant legal provisions:

EPC Art. 100(c), 123(2), 83, 54, 56
RPBA Art. 12(4)

Keyword:

Amendments - added subject-matter - main request (yes),
intermediate generalisation - after amendment (no)

Sufficiency of disclosure - (yes)

Novelty - (yes)

Inventive step - (yes)



Beschwerdekammern

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Case Number: T 0221/19 - 3.2.08

D E C I S I O N
of Technical Board of Appeal 3.2.08
of 31 May 2022

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Decision under appeal:

**Decision of the Opposition Division of the
European Patent Office posted on 7 November 2018
rejecting the opposition filed against European
patent No. 2780528 pursuant to Article 101(2)
EPC.**

Composition of the Board:

Chairwoman P. Acton
Members: A. Björklund
 F. Bostedt

Summary of Facts and Submissions

- I. The appeal was filed by opponents 1 and 2 (appellants 1 and 2) against the decision of the opposition division to reject the opposition filed against the patent in suit (hereinafter "the patent").

The opposition division decided that the subject-matter of the claims as granted was novel and involved an inventive step, that the patent disclosed the invention in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art, and that the subject-matter of the claims as granted and paragraph [0069] did not extend beyond the content of the application as filed.

- II. Oral proceedings were held before the Board on 31 May 2022.

As announced by letter dated 21 April 2022, appellant 2 did not participate in the oral proceedings. Pursuant to Rule 115(2) EPC and Article 15(3) RPBA 2020, the oral proceedings were held in its absence.

- III. Appellant 1 (opponent 1) requested that the decision under appeal be set aside and that European patent No. 2 780 528 be revoked.

Appellant 2 (opponent 2) requested in writing that the decision under appeal be set aside and that European patent No. 2 780 528 be revoked.

The respondent (patent proprietor) requested that the appeals be dismissed and that the patent be maintained as granted (main request) or, alternatively, that the

patent be maintained on the basis of one of Auxiliary Requests I to X, whereby Auxiliary Requests I to VI and VIII to X were filed with the reply to the statement setting out the grounds of appeal of 2 August 2019 and Auxiliary Request VII was filed by letter of 23 February 2021.

IV. Independent claims:

Claim 1 of the main request (patent as granted) reads as follows (with the feature designations used in the decision):

- 1 "A spacer profile (1) for use as part of a spacer profile frame, which is suitable for being mounted in and/or along an edge area of an insulating glazing unit (50) surrounding an intervening space (53) between glazing panes (51, 52),
- 2 the spacer profile (1) extending in a longitudinal direction (z) and having, in a cross section (x-y) perpendicular to the longitudinal direction (z), a first width (b1) in a transverse direction (x), which is perpendicular to the longitudinal direction (z), and a first height (h1) in a height direction (y), which is perpendicular to the longitudinal direction (z) and to the transverse direction (x), wherein the spacer profile (1) comprises a profile body (10) made of synthetic material, the profile body (10) comprising
- 2a an inner wall (20) extending in the transverse direction (x) and being arranged to face towards the intervening space (53) in

- the assembled state of the spacer profile frame,
- 2b an outer wall (22) extending parallel to the inner wall (20) and having a second width (b2) in the transverse direction being smaller than the first width (b1) and spaced by a first distance (d1) from the inner wall (20) in the height direction (y) smaller than the first height (h1),
- 2c side walls (24, 26) extending in the height direction and spaced by a second distance (d2) in the transverse direction (x) smaller than the first width (b1) and being connected to the inner wall (20) at inner corner portions (32, 34),
- 2d connection walls (28, 30) extending between the side walls (24, 26) and the outer wall (22) such that
- 2e a chamber (35) is formed by the side walls (24, 26), the inner wall (20), the outer wall (22), and the connection walls (28, 30), and
- 3 a diffusion barrier layer (40) firmly bonded with the profile body (10) and being made of metal material and extending, in a cross section (x-y) perpendicular to the longitudinal direction (z), in one piece on the outer surface of the outer wall (22), on the outer surfaces of the connection walls (28, 30) and on at least a part of the outer surfaces of the side walls (11, 12),
- characterized in that**
- 4 at least two reinforcements (36, 38; 42, 44) are provided in each of the inner corner portions (32, 34),

5 the first reinforcement of the at least two
reinforcements (36, 38; 42, 44) is made of
wire (36, 38),
6 the diffusion barrier layer (40) comprises
profiled end portions (42, 44), which are
provided in the inner corner portions (32,
34), as the second reinforcement of the at
least two reinforcements (36, 38, 42, 44),
and
7 each first reinforcement made of wire (36,
38) overlaps with the corresponding profiled
end portion (42, 44) seen in the height
direction (y) and in the transverse direction
(x), such that each first reinforcement made
of wire (36, 38) is enclosed by the
corresponding profiled end portion (42, 44)
in a direction facing away from the chamber
(35)."

Claim 1 of **Auxiliary Request I** differs from claim 1 of
the main request in that Feature 6 has been amended.
The amended feature will be referred to as Feature 6'
and reads as follows:

"the diffusion barrier layer (40) comprises L-shaped
profiled end portions (42, 44), which are provided in
the inner corner portions (32, 34), as the second
reinforcement of the at least two reinforcements (36,
38, 42, 44), and"

The further auxiliary requests are of no relevance to
the decision.

V. In the present decision, reference is made to the following documents:

E1 US 7,449,224 B2
E3(PCT) WO 2011/091986 A2
E5 WO 03/074830 A1
E6 WO 2006/027146 A1
E7 DE 198 05 348 A1
E7(US) US 6,389,779 B1
E8 DE 10 2010 006 127 A1

VI. The arguments of the appellants, where relevant to the decision, can be summarised as follows:

Main request - Article 100(c) EPC

The characteristics added to Feature 7 had been taken out of context from the specific embodiment in Figures 1 and 7, thus resulting in an unallowable intermediate generalisation.

Furthermore, paragraph [0069] of the patent suggested that Figure 5 showed an embodiment of the invention and thus had wire reinforcements contrary to page 14, paragraph 5, of the application as filed.

Auxiliary Request I - Admittance

Auxiliary Request I had been late-filed, and the respondent had not set out its entire case regarding this request.

It should therefore not be admitted into the proceedings.

Auxiliary Request I - Article 83 EPC

The patent did not disclose to the skilled person how the invention should be put into practice with the geometry defined in Feature 7.

Auxiliary Request I - Article 54 EPC

Claim 1 did not specify that the at least two reinforcements formed by the wire and the profiled end portions of the diffusion barrier layer were separate reinforcements. Paragraph [0069] of the patent supported the interpretation that the wire was part of the diffusion barrier layer.

The outer ends of the diffusion barrier layer of the spacer profiles in Figure 5a of E6 and Figure 7 of E3(PCT) and E8 were thus wire reinforcements and they overlapped with the rest of the profiled end portions of the diffusion barrier layer.

The subject-matter of claim 1 was thus not novel.

Auxiliary Request I - Article 56 EPC

The subject-matter of claim 1 of Auxiliary Request I differed from the spacer profile in Figure 11 of E1 only in that the position of the reinforcing wires was not explicitly disclosed. Positioning the wires in the inner corner was obvious in view of E1 itself and also in view of E7(US). This would result in the spacer profile according to claim 1.

Furthermore, starting from the spacer profile of Figure 1 of E7 or E7(US), it would be obvious to the skilled person to provide the spacer profile's diffusion

barrier layer with profiled end portions in order to reinforce it, as taught by E6, E3(PCT) and E8. This would result in a spacer profile according to claim 1. Conversely, it would be obvious to the skilled person starting from any of the profiles in Figures 4 to 6 of E6, or Figures 6 to 8 of E3(PCT) or E8 to provide them with reinforcing wires in the inner corners as taught by E7(US). This would result in a spacer profile having reinforcements according to Features 4 to 7.

Starting from the spacer profile in Figure 5 of E6, it would be obvious in view of common general knowledge to replace the parts of the diffusion barrier layer bent inwards from the L-shaped end portions with separate wire reinforcements. This would make manufacturing easier and would result in a spacer profile according to claim 1.

Starting from the spacer profile of E8, it would have been obvious to provide it with reinforcing wires in the inner corners also in view of the common general knowledge known from E7 or E5. This would also result in the spacer profile according to claim 1.

VII. The arguments of the respondent, where relevant to the decision, can be summarised as follows:

Main request - Article 100(c) EPC

The skilled person would understand from the application as filed that the features added to Feature 7 from the description were not linked to the specific section of the embodiment in Figures 1 and 7 or the L-shape of the profiled end portions of the diffusion barrier layer. These features concerned process reliability during manufacturing and bending but not

cold-bending properties as such. This aspect of the invention was already addressed by the features of claim 1 as filed. With regard to the L-shape, this was not a mandatory requirement of the profiled portions since Figures 3 and 9 of the patent (which represented embodiments of the invention) did not disclose L-shaped profiled portions.

Paragraph [0069] of the patent described a spacer profile which clearly was not encompassed by the claim. The skilled person would therefore not find any suggestion that this spacer profile had reinforcing wires.

Auxiliary Request I - Admittance

This request was filed in response to the objections under Article 100(c) EPC as a precaution, i.e. in case the Board departed from the opinion of the opposition division, which did not consider there to be a problem of added subject-matter in claim 1.

The request was filed as early as possible in the appeal proceedings and should thus be admitted.

Auxiliary Request I - Article 83 EPC

Appellant 2 interpreted Feature 7 incorrectly. When interpreted in the correct way, the feature defined a configuration corresponding to that of the disclosed embodiments. The skilled person would therefore have had no problem carrying out the invention.

Auxiliary Request I - Article 54 EPC

The subject-matter of claim 1 of Auxiliary Request I was novel.

None of the spacer profiles of E6, E3(PCT) or E8 had two reinforcements as required by Feature 4. Furthermore, the end of the profiled end portions of the diffusion barrier layer of these spacer profiles belonged to the diffusion barrier layer, irrespective of whether they were needed as diffusion barriers or just as reinforcements. The ends of the diffusion barrier layer could thus not be wires overlapping the diffusion barrier layer.

Auxiliary Request I - Article 56 EPC

The spacer profile of claim 1 involved an inventive step.

The spacer profile in Figure 11 of E1 did not have a diffusion barrier layer bonded to the profile body. Thus, even if the skilled person had provided it with wire reinforcements in the inner corners, this would not have resulted in the spacer profile according to claim 1.

E7/E7(US) taught the use of reinforcements in both the inner and outer corners of the cross section. E6, E3(PCT) and E8 taught to reinforce as close as possible to the inner surface of the spacer profile but not on the outer surface. The skilled person would apply the entire teaching of these reinforcing concepts but would not combine parts thereof.

It would not be obvious in view of common general knowledge to replace the parts of the diffusion barrier layer which were bent inwards from the L-shaped profile in the spacer profile in Figure 5 of E6 with wires. This would go against the teaching in paragraph [0059] of E6 and would not make manufacturing easier.

E5 showed a spacer profile which was assembled by rounded clip connectors. These did not represent reinforcement elements, and the skilled person would have no reason to include them in the integrally-formed spacer profile of E8.

Reasons for the Decision

1. Main request - Article 100(c) EPC

Omitting the "L-shape" of the profiled end portions of the diffusion barrier layer in claim 1 is an unallowable intermediate generalisation which leads to an extension beyond the content of the application as filed.

- 1.1 The appellants submitted that Feature 7, according to which "each first reinforcement made of wire (36, 38) overlaps with the corresponding profiled end portion (42, 44) [of the diffusion barrier layer] seen in the height direction and in the transverse direction (x), such that each reinforcement made of wire (36, 38) is enclosed by the corresponding profiled end portion (42, 44) in a direction facing away from the chamber (35)", represented an unallowable intermediate generalisation.

The underlined features were extracted out of context from the specific embodiment of Figures 1 and 7. The

specific wording was taken from the description of this embodiment on page 7, paragraph 4, of the application as filed. These features allegedly improved the properties of the profile when it was bent in cold conditions (cold bending), such that wrinkling could be avoided. However, this was a result not only of the transverse overlapping of the wire by the profiled end portions of the diffusion barrier layer but of the specific cross section of the spacer profile of the embodiment shown in Figures 1 and 7. Several important aspects of this section had not been included in the claim, such as the L-shape of the profiled end portions, the profiled end portions being as close to the inner surface as possible, the side walls being straight and extending at a straight angle from the inner wall, the inner wall having a convex shape, the larger wall thickness of the corner regions to permit the embedding of the reinforcements, the absence of further internal walls, and the shape of the connection walls. These features were necessary for achieving the increased stiffness and improved cold-bending properties of the spacer profile which the respondent alleged it to have. They thus were functionally linked with the features added to Feature 7. Omitting them resulted in an unallowable intermediate generalisation.

Furthermore, according to paragraph [0069] of the patent, Figure 5 showed an embodiment of the claimed invention but did not show all of its features. This implied that the spacer profile in Figure 5 had wires, in conflict with the application as filed, page 14, paragraph 5, according to which Figure 5 showed an alternative embodiment which did not have a steel wire as reinforcement; rather, it only had reinforcements in the form of the profiled end portions of the diffusion layer.

1.2 However, as submitted by the respondent, it is not only page 7, paragraph 4, which describes the overlapping of the wire and of the profiled end portions of the second reinforcement element. Paragraph 3 on page 11 of the original application describes the overlapping in the transverse direction and the resulting enclosing of the reinforcing wire by the profiled end portions of the diffusion barrier layer to influence process reliability during manufacturing and bending. This effect is independent of the other geometrical features of the section of the profile in Figures 1 and 7.

Furthermore, the reinforcing effect of the profiled end portions and of the wires is not linked to the overlap in the transverse direction, but to their position in the inner corner portions. This position was already defined in the original claim 1 and is thus not a result of the amendments made by the addition of Feature 7.

The definition of the overlap in the transverse direction without a definition of the overall geometry of the section of the spacer profile of the embodiment in Figures 1 and 7 therefore does not lead to an unallowable intermediate generalisation.

On the other hand, and contrary to the respondent's submission, the language used in paragraph 4 on page 7 of the original application does not indicate that each sentence is completely independent of the preceding sentences; rather, they must be read in context. The respondent is correct in that paragraph 3 on page 7 describes that the profile end portion is formed by one or more bends and/or angles, for example. However, the application as originally filed still only discloses

profiled end portions of the diffusion barrier layer having an L-shape, which overlap the reinforcing wires. Furthermore, the shape of the profiled end portion is linked to the overlapping of the wires.

Finally, contrary to the respondent's submissions, Figures 3 and 9 do indeed show L-shaped end portions. It is correct that these figures show end portions with notches. However, this does not allow the conclusion that the end portions are not L-shaped. As described in paragraph 2 on page 16 of the application as originally filed, notches can be arranged on the L-shaped end portions. The end portions still retain their general "L-shape" despite the notches.

Hence, the omission of the L-shape of the profiled end portions of the barrier layer in claim 1 is therefore an unallowable intermediate generalisation which leads to an extension beyond the content of the application as filed.

- 1.3 Paragraph [0069] states that Figure 5 does not show all of the claimed features. Although the term "fifth embodiment" is used frequently in this paragraph, it is explicitly described that the spacer profile in Figure 5 differs from the spacer profile in the first embodiment in that reinforcements are not formed by steel wire but by the profiled end portions of the diffusion barrier only. It is therefore clear to the skilled person that the spacer profile of Figure 5 does not have reinforcement wires and thus is outside of the scope of the claimed spacer profile. This corresponds to the disclosure in paragraph 5 on page 14 of the original application.

2. Auxiliary Request I - admittance

The appellants submitted that the request was late-filed and that the respondent had not put forward its entire case regarding the request. It should therefore not be admitted into the proceedings.

Auxiliary Request 1 was filed together with the respondent's reply to the statement setting out the grounds of appeal, i.e. at the earliest point in the appeal proceedings. It contains the simple addition that the profiled end portions of the diffusion barrier layer have an L-shape and addresses one of the main objections raised by the appellants under Article 100(c) EPC. Both the appellants and the Board were thus able to consider this request without undue effort.

Furthermore, the opposition division expressed its preliminary opinion that the granted patent did not extend beyond the content of the application as filed. The respondent thus had no urgent reason to file auxiliary requests addressing the objection of extended subject-matter in the opposition proceedings.

The Board thus decided to admit the request into the proceedings under Article 12(4) RPBA 2007.

3. Auxiliary Request I - Article 123(2) EPC

The L-shape of the profiled end portions was added to Feature 6.

This overcomes the reasons for which the subject-matter of claim 1 of the main request extended beyond the content of the application as filed.

4. Auxiliary Request I - Article 83 EPC

With respect to the main request and as a ground for opposition under Article 100(b) EPC, appellant 1 submitted that Feature 7 of claim 1 specified that the profiled end portions of the diffusion barrier layer were directed away from the chamber. The wire overlapping the profiled end portion thus had to be further away from the chamber than the profiled end portion. Yet all the spacer profiles described in the patent had a wire closer to the chamber than the profiled end portions. Consequently, the patent did not disclose to the skilled person how the claimed invention should be carried out.

The same arguments apply to Auxiliary Request I under Article 83 EPC.

- 4.1 The skilled person would understand that "a direction facing away from the chamber" in Feature 7 refers to the term "enclosed", and not to "the profiled end portion". Feature 7 thus defines the relative position of the wires and the profiled end portions of the diffusion barrier layer shown in the figures of the patent.

The skilled person would therefore have had no problem in carrying out the invention. The requirements of Article 83 EPC are thus fulfilled.

5. Auxiliary Request I - Article 54 EPC

The subject-matter of claim 1 of Auxiliary Request I is novel.

5.1 The appellants submitted that Feature 4 of claim 1 did not require the at least two reinforcements to be separate. This understanding of the claim was supported by paragraph [0069] of the patent, according to which the reinforcements were not formed by steel wire but by the diffusion barrier layer. In addition, only the part of the diffusion barrier layer on the outside of the spacer profile needed to serve as a diffusion barrier and the only function of the profiled end portions was to reinforce the spacer profile.

The L-shaped parts of the profiled end portions of the diffusion barrier layer of the spacer profiles in Figure 5a of E6 and Figure 7 of E3(PCT) and E8 thus represented second reinforcements according to Feature 6. The portions at the end which were bent inside the L-shaped end portions represented a reinforcing wire according to Feature 5.

5.2 However, as already set out with respect to Article 100(c) EPC, the skilled person would not understand paragraph [0069] to be a description of an embodiment of the claimed spacer profile. Furthermore, Feature 4 specifies that "at least two reinforcements are provided", which the skilled person would understand to mean two separate reinforcements in each inner corner portion. This understanding is further supported by the fact that Feature 5 specifies that the first of the reinforcements is made of a wire and Feature 6 specifies that the L-shaped profiled end portion of the diffusion barrier layer is the second reinforcement.

Since it is undisputed that neither E6 nor E3(PCT) nor E8 discloses two separate reinforcements, they at least do not disclose Feature 4 of claim 1.

The subject-matter of claim 1 is therefore novel over the spacer profiles in E6, E3(PCT) and E8.

6. Auxiliary Request I - Article 56 EPC

The subject-matter of claim 1 of Auxiliary Request I involves an inventive step.

6.1 In view of E1 alone or in combination with E7(US)

6.1.1 The appellants submitted that Figure 11 of E1 disclosed all of the features of claim 1 apart from the positioning of reinforcing wires in the inner corners.

In particular, it disclosed Feature 3 because the wording "... mechanical fixing can be produced without additional means, such as adhesive bonding ..." in column 12, lines 52 to 55, of E1, disclosed that while it may not be necessary, an adhesive could be used in addition to the mechanical fixing of the encasement 184 to the core 182 where necessary. For example, an adhesive could be used for spacer profiles to be bent into a spacer frame, as disclosed in column 6, lines 41 to 48. The spacer profile of Figure 11 thus had a bonded diffusion barrier layer according to Feature 3.

The positioning of reinforcing wires in the inner corners solved the problem of providing an additional stiffening of the spacer profile and the solution according to claim 1 was obvious when taking into consideration common general knowledge or the teaching of E7(US).

6.1.2 However, when the passage is read in context, it states that by means of the encasement extending beyond the lateral surfaces to engage the two marginal areas of

the transverse wall [of the core], mechanical fixing can be produced without additional measures and that this is advantageous in that it facilitates the production of the section. This is not a direct and unambiguous disclosure of the encasement 184 being bonded by an adhesive to the core 182 as suggested by the appellants; on the contrary, it is a disclosure of the encasement not being bonded to the core by an adhesive. By highlighting the fact that this makes the section easier to produce, this passage dissuades the skilled person from using an adhesive bonding of the encasement to the core. Furthermore, no other passage cited by the appellants suggests a combination of mechanical fixing in the form of corners of the encasement being bent around the core and an adhesive bonding. The spacer profile in Figure 11 therefore does not have a diffusion barrier layer firmly bonded with the profile body according to Feature 3 of claim 1, nor would it be obvious to the skilled person to bond the encasement of the spacer profile in Figure 11 to the core with adhesive.

Thus, even if the skilled person had provided the spacer profile in Figure 11 of E1 with reinforcing wires in the corners below the L-shaped profiled end of the encasement, they would not have arrived at a spacer profile according to claim 1. This applies irrespective of whether E1 is considered alone or in combination with E7(US).

6.2 E7 or E7(US) in combination with E6, E3(PCT) or E8

6.2.1 According to the appellants, the spacer profile of claim 1 differed from the spacer profile in Figure 1 of E7 or E7(US) in Features 2b, 2d, 6 and 7.

Features 6 and 7 solved the partial problem of improving cold-bendability in order to reduce wrinkle formation when the spacer profile was bent, and this was achieved by increasing the rigidity of the inner corners as described in paragraphs [0026] and [0027] of the patent in suit.

Paragraphs [0020] to [0023] of E6 described that providing profiled end portions on the diffusion barrier layer in the inner corners solved the same problem. These profiles should be positioned as close as possible to the inner side of the spacer profile, as also described in paragraphs [0052] and [0054] of E6. The skilled person was thus taught that providing the diffusion barrier layer of the spacer profiles of E7 or E7(US) with profiled end portions would solve the problem of reducing wrinkle formation. Providing the diffusion barrier layer of the spacer profile in Figure 1 of E7(US) with such profiled end portions would result in a spacer profile having Features 6 and 7.

- 6.2.2 As pointed out by the respondent, column 3, lines 53 to 58, of E7 and of E7(US) describe that providing reinforcement at least in the areas of both ends of the lateral walls increases bending resistance, thus leading to better cold-bendability. These documents thus teach to reinforce both the inner and outer corners of the spacer profile, as seen in cross section.

This is at odds with the teaching of E6. Paragraphs [0020] to [0023] of E6 describe that a profile or elongation portion on the diffusion barrier layer significantly increases the mass of diffusion barrier film in a specific area of the spacer profile. This results in a displacement of the bend line, which

further results in a reduction of wrinkle formation. Paragraphs [0052] and [0054] of E6 describe that the elongation portion is preferably positioned as close as possible to the inner side of the spacer profile, as also shown in the embodiments in Figures 4 to 6. The teaching of E6 is thus to reinforce only the inner corner such that the bend line is shifted towards the inner side of the profile and this results in reduced wrinkling.

The spacer profiles of E3(PCT) and E8 are similar to the spacer profile of E6, differing essentially in that they have an additional reinforcing element in the inner wall between the profiled end portions of the diffusion barrier layer. This can be seen in Figures 6 to 8 of E3(PCT) and E8 as reference 40c. These documents also describe that the profiled end portions and increased mass of the diffusion barrier layer shift the bend line towards the inner side of the profile and reduce wrinkle formation, see the paragraph bridging pages 16 and 17 of E3(PCT) and paragraph [0101] of E8. These paragraphs refer to the embodiments shown in Figures 6 to 11, which all have the profiled end portions and reinforcements very close to the inner surface of the spacer profile. The concept of reinforcing only the inner side of the profile is thus also used for the profiles described in these documents.

Documents E7/E7(US) and E6, E3(PCT) and E8 thus teach different and incompatible reinforcing concepts for the profiles, with both the inner and the outer side being reinforced in E7/E7(US), and only the inner side being reinforced in E6, E3(PCT) and E8. When applying the teaching of one document to another, the skilled person will consider the entire teaching concerning the

reinforcements in the respective document and not just selected parts thereof. Since the teaching in E6 goes against the teaching in E7/E7(US), the skilled person would not be motivated to try to combine the two teachings. Furthermore, it would not be obvious to pick only one part of the self-contained reinforcing concept of E6, E3(PCT) or E8, namely the profiled end portions of the diffusion barrier layer, and transfer this to the spacer profile of E7/E7(US).

The skilled person starting from the spacer profile in Figure 1 of E7/E7(US) and taking into consideration the teaching in E6, E3(PCT) or E8 would thus not arrive at a spacer profile having Features 6 and 7 without the involvement of inventive skill.

6.3 E6, E3(PCT) or E8 in combination with E7 or E7(US)

Similar reasoning applies when starting from any of the above-mentioned profiles in E6, E3(PCT) and E8. The appellants are correct in saying that the spacer profile of claim 1 differs from these profiles in the wire reinforcements in the inner corner portions, i.e. essentially in Features 4, 5 and 7.

However, as set out above under point 6.2.2, the reinforcing concept for the spacer profiles of E6, E3(PCT) and E8 is incompatible with that of E7/E7(US). The latter documents teach the reinforcement of all of the corners, contrary to the teaching in E6, E3(PCT) and E8, which teach the reinforcement of the inner corners to achieve a displacement of the bend line further towards the inside. It would not be obvious to the skilled person to extract from its context of reinforcing both inner and outer corners the teaching from E7/E7(US) of using reinforcing wires in the inner

corners and to provide the spacer profiles of E6, E3(PCT) or E8 with additional reinforcements in the form of wires.

The skilled person starting from the spacer profiles in E6, E3(PCT) or E8 and taking into consideration the teaching in E7/E7(US) would thus not arrive at a spacer profile according to claim 1 without the involvement of inventive skill.

6.4 E6 in combination with common general knowledge

6.4.1 Appellant 2 submitted that it was part of the knowledge of the skilled person that the extra bend of the diffusion barrier layer bent inwards from the L-shaped end portion made the manufacturing of the spacer profile in Figure 5 of E6 more complicated.

It would be obvious to the skilled person to remove the part of the diffusion barrier layer which was bent inwards from the L-shaped end portion and replace it with a separate reinforcement element in the form of a flat or round wire in the same position. This would make the spacer profile cheaper to manufacture and would result in a profile having reinforcement wires enclosed by profiled end portions of the diffusion barrier layer, as required by claim 1.

6.4.2 However, as put forward by the respondent, manufacturing a spacer profile with multiple separate reinforcements is also complicated. Furthermore, paragraph [0059] of E6 describes that the encapsulation of the material of the spacer profile body on three sides by the L-shaped diffusion barrier layer with an extra part bent inwards results in an incompressible volume element. This provides a high degree of

stiffness and this effect would be lost if the part of the diffusion barrier layer bent inwards from the L-shaped end portion were removed.

It would therefore not be obvious to the skilled person in view of their common general knowledge to replace the bent part at the end of the L-shaped end portion of the diffusion barrier layer in the spacer profile in Figure 5 of E6 with wires. Thus, they would not arrive at a spacer profile according to claim 1 without the involvement of inventive skill.

6.5 E8 with common general knowledge as exemplified by E5 or E7

As set out above, the subject-matter of claim 1 differs from the spacer profile disclosed in Figure 6 of E8 in Features 4, 5 and 7.

6.5.1 Appellant 1 submitted that it would be obvious to provide the spacer profile in Figure 6 of E8 with reinforcing wires in the corners in order to solve the objective technical problem of increasing the stiffness of the spacer profile, in view of common general knowledge, as exemplified by the spacer profile in Figure 1E of E5 and in Figure 1 of E7.

6.5.2 However, patent documents generally do not constitute evidence of common general knowledge.

Furthermore, as already set out above, E7 teaches reinforcing both the inner and outer corners, which is in conflict with the teaching in E8 of reinforcing the inside of the spacer profile. For the reasons set out above, E7 does not provide any teaching which would render it obvious to the skilled person to provide the

spacer profile in E8 with wire reinforcements in the inner corners.

The spacer profile of Figure 1E of E5 has wires 100 on the metal side wall 97, which serve as connectors to which the inner and outer walls 98, 99 can be snapped, see page 13, paragraph 4. These wires are not described as reinforcements. The skilled person would have no reason to consider this spacer profile, which has a rectangular cross section made up of side walls and inner and outer walls which are clipped together, as solving a problem relating to an extruded profile. Moreover, they would certainly not have any reason to provide the spacer profile of E8, which is co-extruded directly into its final shape, with wire-shaped connectors for connecting different walls into a spacer profile.

Thus, the skilled person starting from the spacer profile in Figure 6 of E8 and taking into consideration documents E7 or E5 would not arrive at a spacer profile according to claim 1 without the involvement of inventive skill.

Order

For these reasons it is decided that:

The decision under appeal is set aside. The case is remitted to the opposition division with the order to maintain the patent with the following claims and a description to be adapted thereto:

Claims:

No. 1 to 11 according to Auxiliary Request I filed by letter of 2 August 2019.

The Registrar:

The Chairwoman:



C. Spira

P. Acton

Decision electronically authenticated