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Datasheet for the decision of 16 July 2015

Case Number: T 0098/13 - 3.5.02

Application Number: 03765596.6

Publication Number: 1547443

IPC: H05B3/84

Language of the proceedings: EN

Title of invention:
Transparent heating arrangement to avoid hot spots at the end of bus bars

Patent Proprietor:
Pittsburgh Glass Works, LLC

Opponent:
Saint-Gobain Glass France

Headword:

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

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

Decisions cited:

Beschwerdekammern
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Chambres de recours

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Case Number: T 0098/13 - 3.5.02

D E C I S I O N
of Technical Board of Appeal 3.5.02
of 16 July 2015

Appellant: (Patent Proprietor)	Pittsburgh Glass Works, LLC 111 Radio Circle Mount Kisco NY 10549 (US)
Representative:	Ring & Weisbrodt Patentanwaltsgesellschaft mbH Hohe Strasse 33 40213 Düsseldorf (DE)
Respondent: (Opponent)	Saint-Gobain Glass France 18, avenue d'Alsace 92400 Courbevoie (FR)
Representative:	Jamet, Vincent Saint-Gobain Recherche Département Propriété Industrielle 39 Quai Lucien Lefranc 93300 Aubervilliers (FR)
Decision under appeal:	**Decision of the Opposition Division of the European Patent Office posted on 17 October 2012 revoking European patent No. 1547443 pursuant to Article 101(3)(b) EPC.**

Composition of the Board:

Chairman	M. Ruggiu
Members:	M. Léouffre
	W. Ungler

Summary of Facts and Submissions

I. The proprietor appealed against the decision of the opposition division, posted on 17 October 2012, to revoke the European patent No. 1 547 443 B1. The statement of grounds of appeal was received on 25 February 2013.

II. The opposition division came to the conclusion that both the European patent as granted and the claims of the first auxiliary request contained subject-matter which extended beyond the content of the application as filed, contrary to Article 123(2) EPC, and that the proposed second auxiliary request infringed Article 123(3) EPC, while the third auxiliary request prima facie did not comply with the requirements following from Articles 84 and 123(2),(3) EPC.

III. With the statement of grounds of appeal the appellant filed thirty-five auxiliary requests.

IV. In an annex to the summons to oral proceedings the board expressed the preliminary opinion that a feature, which was present in independent claims 1 and 17 of the granted patent, could contain subject-matter which extended beyond the content of the application as filed, contrary to Article 123(2) EPC and that its removal would likely infringe the requirements of Article 123(3) EPC.

V. With a letter dated 2 July 2015 the appellant filed new auxiliary requests 1, 2, 3, 16, 18 to 21, 34 and a further auxiliary request 36.

VI. Oral proceedings in front of the board were held as scheduled on 16 July 2015.

VII. The appellant (proprietor of the patent) requested that the decision under appeal be set aside and that the European patent No. 1 547 443 "be maintained in its entirety", i.e. that the opposition be rejected, or as an auxiliary measure, that the patent be maintained in amended form on the basis of the claims of one of auxiliary requests 1 to 36, the claims of the auxiliary requests 1 to 3, 16, 18 to 21, 34 and 36 having been filed with letter dated 2 July 2015, the claims of the remaining auxiliary requests having been filed with letter dated 22 February 2013.

VIII. The respondent (opponent) requested that the appeal be dismissed. The respondent further requested that the case be remitted to the first instance if one of the proprietor's request would be found not to contravene Article 100(c) EPC or Article 123(2),(3) EPC. The respondent also requested that the appellant limits their auxiliary requests to a reasonable number, in particular to a maximum of five auxiliary requests. The respondent also requested that the ten auxiliary requests filed with the letter of 2 July 2015 not be admitted into the proceedings. If any of these ten requests were admitted the respondent asked for new oral proceedings and an apportionment of costs in their favour.

IX. Claim 1 of the granted patent reads as follows:

"A heatable article (10) comprising:
a substrate (12, 14) having a major surface, peripheral edges (25), a first side spaced from and opposite a second side, a third side spaced from and opposite a fourth side with the first and second sides extending in a first direction and the third and fourth sides

extending in a second direction with the first direction transverse to the second direction;
an electric conductive member (16) on the major surface of the substrate, the electric conductive member (16) defined by a perimeter (27) with portions of the perimeter of the electric conductive member (16) spaced from the peripheral edges (25) of the first, second, third and fourth sides of the substrate (12, 14) to provide a non-conductive strip, and
a pair of bus bars (23, 24) in electrical contact with the electric conductive member with the bus bars spaced from one another, each of the bus bars comprising:
a predetermined length with the length of one of the bus bars (23) shorter than the predetermined length of the other bus bar (24);
characterized in that
the non-conductive strip is continously [sic] provided between the periphery of the electric conductive member (16) and adjacent periphery of its respective one of the sides of the substrate;
each of the bus bars (23,24) having a pair of opposite ends (28, 29, 30, 31) with one end (29, 31) of each bus bar (23, 24) in the non-conductive strip (26) between the periphery (27) of the conductive member (16) and the periphery (25) of the first side of the substrate (14) and the opposite end of each of the bus bars in the non-conductive strip (16) between the periphery (27) of the conductive member (16) and the periphery (25) of the second side, of the substrate; and
in that one of the bus bars is between the first and second sides of the substrate and adjacent the third side of the substrate; the other bus bar is between the first and second sides of the substrate and adjacent the fourth side of the substrate; the periphery of the conductive member (16) between the first and second sides of the substrate (14) does not extend beyond the

ends of the longer one (24) of the bus bars (23, 24), and the ends of the pair of bus bars do not extend into portions of the non-conductive strip between the periphery of the electric conductive member and the periphery of the third and fourth sides (17) of the substrate (12, 14)."

X. Claims 2 to 16 are dependent on claim 1.

XI. Claim 17 reads as follows:

"A method of making a heatable article (10) comprising the steps of;
providing a substrate (12, 14) having a major surface, peripheral edges (25), a first side spaced from and opposite a second side, a third side spaced from and opposite a fourth side with the first and second sides extending in a first direction and the third and fourth sides extending in a second direction with the first direction transverse to the second direction;
applying an electric conductive member (16) on the substrate (12, 14), the electric conductive member (16) having a perimeter (27) with the perimeter of the electric conductive member (16) spaced from periphery of the first, second, third and fourth sides of the substrate to provide a non-conductive strip (26);
applying a pair of bus bars (23, 24) on the electric conductive member (16) with the bus bars spaced from one another and the bus bars comprising a predetermined length with the length of one of the bus bars (23) shorter than the predetermined length of the other bus bar (24), characterized in that one of the bus bars is between the first and second sides of the substrate and adjacent the third side of the substrate; the other bus bar is between the first and second sides of the substrate and adjacent the fourth side of the

substrate; wherein the periphery of the conductive member (16) between the first and second sides of the substrate (14) does not extend beyond the ends of the lounger [sic] one (24) of the bus bars (23, 24), and wherein each of the ends of each of the bus bars (23, 24) extends beyond the perimeter (27) of the electric conductive member (16) into the non-conductive strip (26) and terminates short of the peripheral edge (25) of the substrate (12, 14), and the ends of the pair of bus bars do not extend into portions of the non-conductive strip between the periphery of the electric conductive member and the periphery of the third and fourth sides (17) of the substrate (12, 14)."

Claim 18 is dependent on claim 17.

XII. In the auxiliary requests claim 1 is amended as indicated below.

a) Auxiliary request 1
Claim 1 corresponds to claim 1 of the main request wherein the feature "the ends of the pair of bus bars do not extend into portions of the non-conductive strip between the periphery of the electric conductive member and the periphery of the third and fourth sides (17) of the substrate (12, 14)" called **feature J** in the following, is replaced by the following feature: **"wherein the ends of the bus bars follow the shape of the bus bars which run either horizontally in a straight line or parallel to the bottom or top edge of the conductive member"**.

b) Auxiliary request 2
Claim 1 comprises all the features of claim 1 of the main request and replaces feature J by the following feature: **"wherein the one bus bar follows the shape of**

the conductive member at the third side and the other bus bar follows the shape of the conductive member at the fourth side" and adds that the one of the bus bars, which is between the first and second sides of the substrate and adjacent the third side of the substrate is **"extending along the third side of the conductive member"**, while the other bus bar is **"extending along the fourth side of the conductive member".**

c) Auxiliary request 3
Claim 1 comprises the features of both claims 1 of the auxiliary requests 1 and 2.

d) Auxiliary request 4
Claim 1 corresponds to claim 1 of the main request wherein feature J is replaced by the following feature: **"the heatable article has a vision area having a top edge and a bottom edge and wherein the conductive member has a top edge beyond or adjacent the top edge of the vision area and a bottom edge below or adjacent the bottom edge of the vision area and the top bus bar is adjacent the top edge of the conductive member and the bottom bus bar is adjacent the bottom edge of the conductive member with the bus bars outside the vision are [sic], and wherein the bottom edge of the conductive member is spaced a greater distance from the bottom edge of the vision area than the bottom bus bar and the top edge of the conductive member is spaced a greater distance from the top edge of the vision area than the top bus bar."**

e) Auxiliary requests 5 and 6
Claim 1 of auxiliary request 5, respectively auxiliary request 6, corresponds to claim 1 of the auxiliary request 4 limited to "a vehicular transparency",

respectively "a heatable windshield" rather than a "heatable article".

f) Auxiliary requests 7, 8 and 9
Claim 1 of auxiliary request 7, respectively auxiliary requests 8 and 9, corresponds to claim 1 of auxiliary request 4, respectively auxiliary requests 5 and 6, wherein the term **"adjacent"** characterising the position of the edges of the vision area with respect to the edges of the conductive member is deleted.

g) Auxiliary requests 10 to 15
Claim 1 of the auxiliary request 10, respectively auxiliary requests 11 to 15 comprises all the features of auxiliary request 4, respectively auxiliary requests 5 to 9, and adds that the top bus bar is **"following the shape of the top edge of the conductive member"**, and the bottom bus bar is **"following the shape of the bottom edge of the conductive member"**, while the feature replacing feature J specifies further **"whereby the top bus bar is spaced from the top edge of the conductive member and the bottom bus bar is spaced from the bottom edge of the conductive member"**.

h) Auxiliary request 16
Claim 1 of the auxiliary request 16 comprises all the features of claim 1 of auxiliary request 13 and specifies further that the top bus bar is **"extending along the third side of the conductive member"**, and the bottom bus bar is **"extending along the fourth side of the conductive member"**.

i) Auxiliary request 17
The heatable automotive laminated transparency article claimed in claim 1 of auxiliary request 17 is characterised in that it is a heatable laminated

windshield, which comprises the features of claim 1 of auxiliary request 4 wherein the terms "conductive member" are replaced by the term "conductive **coating**" and the term "**beyond**" in the feature replacing feature J is deleted, and the following feature is added in the pre-characterising part of the claim:
"**wherein the bus bars (23, 24) have different lengths and the coating (16), especially being a continuous coating, has a top side, a bottom side, a right side and a left side with one (23) of the bus bar [sic] (23, 24) extending along the top side and the other one (24) of the bus bars (23, 24) extending along the bottom side and portions of the coating (16) between the bus bars (23, 24) do not extend beyond the ends (30, 31) of the longer bus bar (24)**".

j) Auxiliary requests 18 to 21
Claim 1 of auxiliary request 18, respectively auxiliary requests 19, 20 and 21 comprises all the features of claim 1 of the main request whereby feature J is replaced by the following feature:
"**wherein the ends of the bus bars terminate short of the peripheral edge of the substrate**" (auxiliary request 18), respectively by this former feature together with the following feature:
"**wherein the ends of the bus bars follow the shape of the bus bars which run either horizontally in a straight line or parallel to the bottom or top edge of the conductive member**" (auxiliary request 19), respectively the former feature and the following further features:
the top bus bar is "**extending along the third side of the conductive member**" and the bottom bus bar is "**extending along the fourth side of the conductive member**" and "**wherein the one bus bar follows the shape of the conductive member at the third side and the**

other bus bar follows the shape of the conductive member at the fourth side" (auxiliary request 20), respectively a combination of the features of auxiliary requests 19 and 20 (auxiliary request 21).

k) Auxiliary requests 22 to 33 and 35
Claim 1 of auxiliary request 22, respectively auxiliary requests 23 to 33 and 35 corresponds to claim 1 of auxiliary request 4, respectively auxiliary requests 5 to 15 and 17 with the following added feature: "w**herein the ends of the bus bars terminate short of the peripheral edge of the substrate**".

i) Auxiliary request 34
Claim 1 of auxiliary request 34 adds to claim 1 of auxiliary request 33 that the the top bus bar is **"extending along the third side of the conductive member"** and the bottom bus bar is **"extending along the fourth side of the conductive member"**.

j) Claim 1 of auxiliary request 36 comprises the features of claim 1 of the main request wherein feature J is replaced by the following feature: **"wherein the bus bars and ends of the bus bars are configured as illustrated in figure 1 or figure 2 of the drawings"**.

h) Each of the auxiliary requests comprises an independent method claim amended accordingly.

XIII. The proprietor argued mainly as follows:
Feature J was supported by the description and as such did not contravene Article 123(2) EPC. Actually the passage of the description at page 9, lines 27 to 30 of the original application as published (WO 2004/010738 A2) recited that "in accordance to the teachings of the invention, having the non-conductive strip provides an

area into which the end portions of the bus bar are extended". The term "extended" implied no change of direction. The bus bars were elongated elements which followed the shape of the conductive member and followed their previous shape in the defined areas between the periphery of the electric conductive member and the periphery of the third and fourth sides (17) of the substrate.

Page 10, lines 11 to 17 recited "as shown in Fig. 2, end portions 28 and 29 of the top bus bar 23, and end portions 30 and 31 of the bottom bus bar 24 extend beyond the perimeter 27 of the conductive coating 16 into the non-conductive strip 26 with the ends of the bus bar preferably terminating short of the periphery 25 of the sheet 14". This passage did not mention a change of direction either. It referred to figure 2, which corresponded to the claim since the bus bars shown therein were longitudinal elements extending along the bottom and top edges of the substrate without any bending. Page 10, lines 25 to 29 even recited "keeping the remaining parameters constant".

Page 11, lines 12 to 14 defined also the length and extension of the end portions. It did not specify that anything happened with the wire ends. An antenna effect had for example simply to be avoided.

The term "length" implied also that, as indicated by Wikipedia, only one direction had to be considered not two or three directions. The "length" was defined at page 14, lines 8 to 12 and page 15, lines 25 to 29, where a dimension of 6 mm was specified, whereby page 14, lines 32 to 35 recited that the width of the non-conductive strip was 16 mm.

Furthermore from feature F1 "each of the bus bars (23,24) having a pair of opposite ends (28, 29, 30, 31) with one end (29, 31) of each bus bar (23, 24) in the non-conductive strip (26) between the periphery (27) of

the conductive member (16) and the periphery (25) of the first side of the substrate (14) and the opposite end of each of the bus bars in the non-conductive strip (16) between the periphery (27) of the conductive member (16) and the periphery (25) of the second side, of the substrate", it was clear that no bending occurred. Only a straight extension of the bus bars was envisaged keeping the other parameters constant.
Feature J was actually useless because it was redundant with feature F1. Another approach would be to recognise that a further patent with bent bus bars would be novel having regard to the present disclosure.
The four portions into which the bus bars might or might not extend were defined originally in the figures by four times repetition of the same numbers 26 and 27.
The lack of definition of the corners might be a clarity problem, but clarity was not a ground of opposition as the last decision G 3/14 of the Enlarged Board of appeal confirmed.
In document D3 the extremities were extended to create an antenna, while in D5 the extremities of the bus bars extended to provide power connections. The same applied to D1. A person skilled in the art willing to solve the problem of hot spots would not have considered solutions which could bring with them further problems like injecting signals from an antenna into the electric system of the car. He would have therefore not extended the bus bars as shown in D1 (US 5 128 513 A), D3 (US 3 928 748 A) or D5 (US 5 824 994 A).

The auxiliary requests could be grouped as e. g. auxiliary requests 1 to 3 or auxiliary requests 18 to 21, but the case law did not give any limit for the number of auxiliary requests.

Concerning auxiliary request 1, the added feature "the ends of the bus bars follow the shape of the bus bars which run either horizontally in a straight line or parallel to the bottom or top edge of the conductive member" was clearly supported by figure 1 and page 11, line 33 to page 12, line 1 which defined the ends of the bus bars as generally following the shape of the top edge or the bottom edge of the conductive member as viewed in Fig.2.

This was clearer in claim 1 of auxiliary request 2 which recited that the ends of the bus bars extended along the third side and fourth side of the conductive member and followed the shape of the conductive member. This feature had to be read in combination with feature F1. So the ends could not be bent.
Claim 1 of auxiliary request 3 added further the feature added to claim 1 of the auxiliary request 1 to further limit and clarify the scope of the claim.

Auxiliary request 4 was filed with the statement of grounds of appeal. In claim 1 of this request the feature replacing feature J related to the vision area to define the position of the bus bars and therefore their ends, which, as recited in feature F1, could only terminate into the portions of the non-conductive strip between the first and second sides of the conductive member and the periphery of the substrate. Feature J was just an attempt to clarify feature F1 which already specified the ends of the bus bars as being in these portions. Since the ends of the bus bars were in the space defined by feature F1 and the bus bars were defined as being in the conductive member, the bus bars could not have ended in the corner areas.

Claim 1 of the auxiliary request 16 specified the location of the bus bars which extended along the third side and the fourth side and followed the shape of the top and bottom edges of the substrate. The term "follow" implied that the bus bars continued in the same direction after having left the conductive member. Hence it could not be that the ends were as proposed by the respondent.

The new feature of claim 1 of auxiliary request 18, namely "wherein the ends of the bus bars terminate short of the peripheral edge of the substrate" had also to be read in combination with the other features which specified the location of the ends of the bus bars, like feature F1. A person skilled in the art would have immediately understood from these features that the ends of the bus bars could not be in the portions of the non-conductive strip defined by feature J.

Claim 1 of auxiliary request 21 defined even further the location of the bus bars and their ends. The features that the bus bars extended along the third and fourth sides of the conductive member and followed the shape of the conductive member at the third and fourth sides, defined the position inside the conductive member, while the two other features "the ends of the bus bars terminate short of the peripheral edge of the substrate" and "the ends of the bus bars follow the shape of the bus bars which run either horizontally in a straight line or parallel to the bottom of top edge of the conductive member" defined the position of the ends of the bus bars outside the conductive member. These features had to be read in combination with feature F1. A man skilled in the art would have therefore immediately understood that the ends could not have been in the areas defined by feature J.

Auxiliary request 36 was filed as alternative in case none of the previous requests would be allowable. Actually, the examination guidelines F-IV.4.17 allowed a reference to the figures when no acceptable formulation could be found. The added feature of claim 1 of this request read "wherein the bus bars and ends of the bus bars are configured as illustrated in figure 1 or figure 2 of the drawings" and therefore referred specifically to the bus bars. The reference to the drawings should be read in light of the whole application, in particular page 11. The main issue was to avoid hot spots at the ends of the bus bars. Hence the information to be taken from the figures concerned the position of the bus bars, not the connections. A person skilled in the art, aware of the problem to be solved, would have therefore immediately known which information to take from the figures even if those were considered as schematic. The scope of the claim was therefore clear and the subject-matter of claim 1 of auxiliary request 36 could be read on figures 1 or 2. Since the formulation of the feature referring to the figures was limited to the configuration of the bus bars, there was no issue of clarity.

XIV. The respondent argued essentially as follows:
Feature J was introduced during the examination to delimit the patent over document D1. The proprietor seemed to change opinion and considered feature J of claim 1 as redundant. This feature did however mention portions of non-conductive strip which needed to be defined. Number 26 even if repeated on a figure defined only one non-conductive strip, as the term "non-conductive strip" was always used in the singular form throughout the description. Even if the perimeter of

the substrate was referred in the figures four times by number 27, a substrate had only one perimeter. The three figures of the respondent filed with the response to the grounds of appeal showed possible definitions of these portions. Features J did therefore have a technical sense.
The term "extended" should be interpreted in its broad sense. For example, the bus bars shown in figures 1 and 3 of D3 were bent at their extremities and extended in the non-conductive strip. The same applied to the bus bars of D5 (cf. abstract).
The information according to which the ends of the bus bars did not extend into portions of the non-conductive strip between the periphery of the electric conductive member and the periphery of the the third and fourth sides of the substrate was simply not present in the application as filed.
The figures of the application were only schemes. For a windshield a 3D representation would have been necessary.
In D1 also the extremities 50, 52 extended in the non-conductive strip. Finally the original claims of the application and of the patent as granted did not exclude that the bus bars would be on the edge of the conductive strip as shown in figure 1 of D1. This was excluded by feature J, which contravened Article 123(2) EPC.

According to the proprietor, the auxiliary requests were filed with the letter of 2 July 2015 in response to the preliminary opinion of the board. But the preliminary opinion followed the opinion of the opposition division and did not bring any new argument. The proprietor did not give any reasons as to why he filed theses requests so late. The respondent would have needed time to assess the scope of these claims,

which comprised modifications which were not as minor as suggested by the proprietor. For instance, request 16 was said to correspond to request 13 plus request 2, which was simply not true. The proprietor should have indicated the tree structure of these requests. These requests should therefore not be admitted into the procedure.

The added feature of auxiliary request 1 was said to be supported by figure 1, but a windshield could only be represented in 3D. Hence the added feature was unclear and infringed the requirements of Article 123(2) EPC. In claim 1 of auxiliary request 2 there was no feature related to the ends of the bus bars. These amendments could therefore not remedy to the problem of Articles 123(2) and 123(3) EPC.
In auxiliary requests 1 and 3 the term "horizontally" had no meaning, in particular when considering a windshield which was a 3D element.

The features added to claim 1 of the auxiliary request 4 related to the middle part of the bus bars, not to their ends. Thus they could not solve the problem of Articles 123(2) and 123(3) EPC. Feature F1 should be interpreted in its broad sense. It did not specify the location of the ends of the bus bars in the portions of the non-conductive strip. Feature J was specific and its meaning was not reflected by the features of this claim.

The proprietor interpreted the feature "the top bus bar... following the shape of the top edge of the conductive member" of claim 1 of auxiliary requests 15 and 16 in the sense that the bus bars would continue to follow a direction corresponding to the shape of a conductive member after having left that conductive

member. This was not clear, and did in no way define the position of the ends of the bus bars.

With claim 1 of auxiliary request 18, the problem of Articles 123(2) and 123(3) EPC was not solved either. Even the further features included in claim 1 of the auxiliary requests 21 and 22 were juxtaposed and did not define any particular effect wich would result prima facie in the exclusion of the ends of the non-conductive strip portions defined by feature J.

Claim 1 of the auxiliary request 36 referred to figures 1 and 2. It was not clear which parts of the figures should be considered e.g. the connections? This claim related to a heatable article while figures 1 and 2 are limited to a laminated transparency i. e. a windshield. The combination of features of two different embodiments led prima facie to an infringement of Article 123(2) EPC. The claim was also prima facie not clear since it considered figure 2 as an alternative to figure 1 while the description mentioned figure 2 as a plan view of a sub-arrangement of the windshield of Fig.1. Furthermore the figures were schematic, e. g. it was not clear what part was or was not on the front plane. Therefore no feature should have been derived therefrom. This claim 1 could have been at most understood with reference to the description, and was therefore not clear. Thus, auxiliary request 36 should also not be admitted into the procedure.

Reasons for the Decision

1. The appeal is admissible.

2. The contested feature, called feature J, is present in independent claims 1 and 17 of the granted patent, and reads as follows:
"the ends of the pair of bus bars do not extend into portions of the non-conductive strip between the periphery of the electric conductive member and the periphery of the third and fourth sides (17) of the substrate (12, 14)".

3. Feature J does not fulfill the requirements for a disclaimer following from decisions G1/03, G2/03 and G2/10 (cf. Case Law of the Boards of Appeal of the European Patent Office, 7th edition 2013, II.E.1.4, pages 386 and 387) for the following reasons:

3.1 Feature J is not clear, because the portions of the non-conductive strip between the periphery of the electric conductive member and the periphery of the third and fourth sides of the substrate are not defined. It is e. g. not clear if the portion at the corner of the first and fourth sides should belong to a portion between the fourth side and the conductive member 16 or a portion between the first side and the conductive member.

3.2 The appellant in the last two sentences of page 15 of the grounds of appeal admits that feature J had been introduced in claim 1 during examination to distinguish claim 1 from the disclosure of D1 (US 5 128 513). However D1 cannot be considered to be an accidental anticipation since it discloses a bus bar arrangement presenting recesses at the ends of the upper bars to prevent "hot spots" (cf. D1, column 2, lines 35 to 52), i. e. D1 proposes a solution to the same problem, which is highly relevant for the assessment of novelty and inventive step of the present invention.

Therefore, feature J does not fulfill the requirements for a valid disclaimer.

4. Feature J is not redundant with feature F1. Following feature F1 one end of the bus bars is in the non-conductive strip between the periphery of the conductive member and the periphery of the first side of the substrate, while the other end is in the non-conductive strip between the periphery of the conductive member and the periphery of the second side of the substrate. The portions mentioned therein are not defined in the original application. The repetition of the same reference numbers on figure 2 does not help defining these portions. Hence these portions may be seen as having a part in common with the portions between the periphery of the conductive member and the periphery of the third side, respectively the fourth side of the substrate. These common parts are the corners of the non-conductive strip. Hence, feature F1 does not exclude that end portions of the bus bars be located in portions of the substrate defined by feature J. Thus feature J is not considered as redundant with feature F1.

5. In an attempt to demonstrate that feature J would be supported by the original description, the appellant referred to page 10, lines 11 to 17 and 25 to 29 which read as follows: "as shown in Fig. 2, end portions 28 and 29 of the top bus bar 23, and end portions 30 and 31 of the bottom bus bar 24 extend beyond the perimeter 27 of the conductive coating 16 into the non-conductive strip 26 with the ends of the bus bar preferably terminating short of the periphery 25 of the sheet 14" (i. e. the substrate), and "Extending the ends of the bus bars into the non-conductive strip 26 while keeping the remaining parameters constant reduces the

temperature and/or area of the hot spots when compared to ends of the bus bars that terminate short of the perimeter of the coating".

According to the appellant the term "extended" implies that the direction of the bus bar does not change. However, in the view of the Board, the term "extended" does not exclude a change in direction. Hence the cited passages of page 11 do not imply feature J.

The term "extended" does not imply that the end portions follow a straight line in the plane of the windshield. The end portions could be curved in one or more directions. The feature "terminating short of the periphery of the sheet 14" i. e. the substrate, does not imply either that the end portions of the bus bars extend beyond the perimeter of the conductive coating 16 in a straight manner and end immediately after entering the non-conductive strip.

The remaining parameters of interest are defined at page 10, lines 4 to 10 of the original application and can be "the position of the ends of the bus bar relative to the perimeter of the conductive member", "the spacing between the bus bars" and "the change in horizontal distance between the sides of the conductive coating between the bus bars". These parameters even if considered as kept constant do not help interpreting the meaning of the term "extended" of the passages mentioned above in the sense of the appellant.

The appellant referred also to the passage of page 14, lines 8 to 12 which reads "The length of the bus bars is not limiting to the invention; however the length should be sufficient to extend into the non-conductive strip 26 and as discussed above, preferably terminating

short of the periphery of the sheet 14". The term "sufficient" does not limit the extension of the bus bars in the non-conductive strip, and the expression "terminating short of the periphery" does not exclude terminating short of the third side or fourth side of the periphery. It is agreed that this passage does not imply that a particular use of the ends of the bus bars is made, like an antenna or similar. But it does not exclude such a use. It simply does not define any kind of shape or position of the ends of the bus bars.

The appellant pointed also to the length of the bus bars extending into the non-conductive strip 26 which would be of 6mm (cf. page 15, lines 25 to 29). This feature, which has not been introduced into the claims, does not define bus bars which would not penetrate into the portions of the non-conductive strip defined by feature J.

Finally even if a person skilled in the art, aiming at applying the teaching of the original application to solve the problem of hot spots, might be tempted to avoid complicated solutions involving antenna effects, the same person might be tempted to provide connections at the ends of the bus bars and to conduct the ends to the third or fourth sides like in D1 or D5. This was not excluded, since as the original description states at page 11, lines 12 to 18, the "length of the end portions 28, 29, 30 and 31 of the bus bars 23 and 24 extending into the non-conductive strip 26 is not limiting to the invention. As long as the ends of the bus bars extend beyond the perimeter of the coating, the temperature and area of the hot spots decrease as compared to hot spots at the end portions of the bus bars terminating short of the perimeter of the conductive member". The original application teaches

that it only matters that the ends of the bus bars are extended into the non-conductive strip, not into what particular portions of the non-conductive strip they are extended.

Thus the Board shares the view of the opposition division that feature J of granted claims 1 and 17 is not directly and unambiguously derivable from the original application as filed and therefore extends the subject-matter of the patent beyond the content of the application as filed, contrary to Article 123(2) EPC. Thus, the ground of Article 100(c) EPC prejudices the maintenance of the patent unamended.

6. Auxiliary requests **4 to 15, 17, 22 to 33 and 35**

6.1 Feature J extends the subject-matter of claim 1 beyond the content of the application as filed and merely removing it would contravene Article 123(3) EPC. Hence a way-out of this so-called inescapable trap would be to replace feature J by features disclosed in the original application and providing at least the same limitation to the subject-matter of claim 1, i. e. replacing feature J by features defining the position of the ends of the pair of bus bars such that the ends do not extend into portions of the non-conductive strip between the periphery of the electric conductive member and the periphery of the third and fourth sides of the substrate.

6.2 The appellant filed therefore the auxiliary requests **4 to 15, 17, 22 to 33 and 35** with the statement of grounds of appeal. In each of these requests feature J is replaced by one of the following features or a combination of these features:

(a) **"wherein the bus bars (23, 24) have different lengths and the coating (16), especially being a continuous coating, has a topside, a bottom side, a right side and a left side with one (23) of the bus bar [sic] (23, 24) extending along the top side and the other one (24) of the bus bars (23, 24) extending along the bottom side and portions of the coating (16) between the bus bars (23, 24) do not extend beyond the ends (30, 31) of the longer bus bar (24)"** (auxiliary requests 17 and 35);

(b) **the heatable article, vehicular transparency or windshield "has a vision area having a top edge and a bottom edge and wherein the conductive member has a top edge beyond or adjacent the top edge of the vision area and a bottom edge below or adjacent the bottom edge of the vision area and the top bus bar is adjacent the top edge of the conductive member and the bottom bus bar is adjacent the bottom edge of the conductive member with the bus bars outside the vision are [sic], and wherein the bottom edge of the conductive member is spaced a greater distance from the bottom edge of the vision area than the bottom bus bar and the top edge of the conductive member is spaced a greater distance from the top edge of the vision area than the top bus bar"** (auxiliary requests 4 to 15, 17, 22 to 33 and 35);

(c) the top bus bar is **"following the shape of the top edge of the conductive member"**, the bottom bus bar is **"following the shape of the bottom edge of the conductive member"** and **"whereby the top bus bar is spaced from the top edge of the conductive member and the bottom bus bar is spaced from the bottom edge of the conductive member"** (auxiliary requests 10 to 15); and

(d) **"whereby the ends of the bus bars terminate short of the peripheral edge of the substrate"** (auxiliary requests 22 to 33 and 35).

6.3 Feature (a) does not exclude that the ends of the bus bars extend into the portions of the substrate mentioned in feature J. It does not exclude either that the bus bars could be running along the topside and bottom side of the conductive member or coating but at least partly in the portions defined by feature J.

6.4 This last possibility is excluded by feature (b) (with or without the term adjacent) which defines the position of the bus bars as being inside the conductive member. Feature (b) does not however mention the ends of the bus bars and does not exclude that the ends of the bus bars extend into the portions of the non-conductive strip that are specified in feature J.

6.5 Feature (c) does not add anything to features (a) and/or (b). This feature defines that the bus bars follow the edges of the conductive member. It does not define the ends of the bus bars and does not therefore exclude that the ends of the bus bars extend into the portions of the non-conductive strip defined by feature J.

6.6 Feature (d) does not define which side of the periphery the bus bars terminate short of, and therefore does not exclude the third of fourth sides of the periphery.

6.7 Since none of these features define a straight extension of the bus bars up to their ends in the areas of the non-conductive strip between the conductive member and the first or second sides of the substrate, any combination of these features would also not be reflecting the meaning of feature J. Therefore, feature

J having been removed from claim 1 of each of **auxiliary requests 4 to 15, 17, 22 to 33 and 35**, these requests do not meet the requirement of Article 123(3) EPC.

7. In claim 1 of the auxiliary requests **1 to 3, 16, 18 to 21 and 34** filed with the letter dated 2 July 2015, feature J is replaced by one of the following features or a combination thereof:

(aa) **"wherein the ends of the bus bars follow the shape of the bus bars which run either horizontally in a straight line or parallel to the bottom or top edge of the conductive member"** (auxiliary requests 1, 3, 19 and 21);

(bb) **"wherein the one bus bar follows the shape of the conductive member at the third side and the other bus bar follows the shape of the conductive member at the fourth side" (**auxiliary requests 2, 3, 20 and 21**)** and the one bus bar is **"extending along the third side of the conductive member"** and the other bus bar is **"extending along the fourth side of the conductive member"** (auxiliary requests 2, 3, 16, 20 and 34);

(cc) **"wherein the ends of the bus bars terminate short of the peripheral edge of the substrate"** (auxiliary requests 18 to 21, 34 and 35);

(dd) the one bus bar is **"following the shape of the conductive member at the third side"** and the other bus bar is **"following the shape of the conductive member at the fourth side"** (auxiliary requests 20 and 21);

(ee) **"the heatable windshield has a vision area having a top edge and a bottom edge and wherein the conductive member has a top edge beyond the top edge of the vision area and a bottom edge below the bottom edge of the vision area and the top bus**

bar is adjacent the top edge of the conductive member and following the shape of the top edge of the conductive member and the bottom bus bar is adjacent the bottom edge of the conductive member and following the shape of the bottom edge of the conductive member with the bus bars outside the vision are [sic], and wherein the bottom edge of the conductive member is spaced a greater distance from the bottom edge of the vision area than the bottom bus bar and the top edge of the conductive member is spaced a greater distance from the top edge of the vision area than the top bus bar, whereby the top bus bar is spaced from the top edge of the conductive member and the bottom bus bar is spaced from the bottom edge of the conductive member (auxiliary requests 16 and 34)."

7.1 Feature (aa) attempts to define the shape of the ends of the bus bars with respect to the shape of the bus bars. The term "shape" is vague and could encompass e. g. the width or section of the end portions of the bus bars which would follow the width or section of the bus bars. The term shape in this feature cannot immediately be understood as referring to the horizontal or straight form of the bus bars. This feature does not exclude the ends of the bus bars being not aligned with the other parts of the bus bars. Therefore this feature does not define the ends of the bus bars as not extending into the portions defined by feature J.

7.2 Feature (cc) does not exclude that the ends of the bus bars terminate short of the periphery of the substrate on the third or fourth sides which are portions excluded by feature J.

7.3 Features (bb), (dd) and (ee) do not mention the ends of the bus bars and therefore cannot help replacing feature J even in combination with one of the features (aa) and (cc).

8. The appellant filed a thirty-sixth auxiliary request wherein feature J is replaced by the following expression: **"wherein the bus bars and ends of the bus bars are configured as illustrated in figure 1 or figure 2 of the drawings".**
It is agreed with the appellant that this feature refers specifically to the bus bars and their ends and that the reference to the figures should be read in the light with the application. Following the reasoning of the appellant the features which should be taken from the figures should be features of the bus bars which help solving the problem of hot spots. With respect to the solution of this problem the original description at page 9, lines 27 to 30, recites that "in accordance to the teachings of the invention, having the non-conductive strip provides an area into which the end portions of the bus bar are extended". At page 11, lines 12 to 18, the description further states that the "length of the end portions 28, 29, 30 and 31 of the bus bars 23 and 24 extending into the non-conductive strip 26 is not limiting to the invention. As long as the ends of the bus bars extend beyond the perimeter of the coating, the temperature and area of the hot spots decrease as compared to hot spots at the end portions of the bus bars terminating short of the perimeter of the conductive member".
Thus, the original application teaches that it only matters that the ends of the bus bars are extended into the non-conductive strip, not into what particular portions of the non-conductive strip they are extended. Thus, taking account of the description a person

skilled in the art would have read out of the figures that the bus bars should extend into the non-conductive strip as taught in the application, not unambiguously that they should terminate shortly beyond the perimeter of the conductive member as suggested by the appellant. A person skilled in the art would not have unambiguously derived from the figures that he should not extend the ends of the bus bars into the portions defined in *feature* J. Furthermore, with the added feature of claim 1 of auxiliary request 36, it is unclear if the scope is restricted to bus bars presenting the connections shown in figures 1 and 2 even if these connections are indicated only schematically. The scope of claim 1 of auxiliary request 36 is therefore unclear.

8.1 Auxiliary requests 1 to 3, 16, 18 to 21, 34 and 36 were filed with the letter of 2 July 2015. None of the claims 1 of these requests comprises features which would exclude that that the ends of the bus bars extend in the portions of the non-conductive strip defined by feature J. Hence these auxiliary requests, which are considered as late filed and infringing Article 123(3) EPC, were not admitted into the proceedings.

9. Since the main request contravenes Article 100(c) EPC and the auxiliary requests either contravene Article 123(3) EPC or have not been admitted into the proceedings, the appeal has to be dismissed.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

U. Bultmann M. Ruggiu

Decision electronically authenticated