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**Datasheet for the decision
of 4 October 2007**

Case Number: T 0451/06 - 3.2.06

Application Number: 96945939.5

Publication Number: 0912266

IPC: B21D 26/02

Language of the proceedings: EN

Title of invention:

Multisheet metal sandwich structures

Patentee:

The Boeing Company

Opponent:

Airbus SAS

Headword:

-

Relevant legal provisions:

EPC R. 76(1)

EPC Art. 56

Keyword:

"Substantial procedural violation - right to be heard during
oral proceedings - (no)"

"Inventive step (yes)"

Decisions cited:

G 0001/95, T 0898/99, T 0281/03

Catchword:

-



Case Number: T 0451/06 - 3.2.06

D E C I S I O N
of the Technical Board of Appeal 3.2.06
of 4 October 2007

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Decision under appeal: Decision of the Opposition Division of the
European Patent Office posted 31 January 2006
rejecting the opposition filed against European
patent No. 0912266 pursuant to Article 102(2)
EPC.

Composition of the Board:

Chairman: K. Garnett
Members: G. Pricolo
M. Harrison

Summary of Facts and Submissions

I. This appeal is from the decision of the opposition division posted on 31 January 2006 rejecting the opposition filed against European patent No. 0 912 266 granted in respect of European patent application No. 96945939.5.

II. Independent claim 1 as granted reads as follows:

"1. A method of making an expanded metal sandwich structure (30), comprising: selecting at least two metal sheets (44, 46) having superplastic characteristics for forming a core of said sandwich structure, said core sheets having a surface area and shape at least equal to the plan size and shape of said core of said metal sandwich structure; chemically cleaning said core sheets to remove metal oxides and residues that would interfere with diffusion bonding of said sheets; placing said core sheets in a vertical stack; inserting a gas pressure line fitting (52) between said core sheets on at least one edge thereof, said fitting having a through bore communicating between the exterior of said core sheets and an interior region therebetween; welding said gas pressure line fitting to said core sheets; pressing said core sheets together and laser welding said core sheets forming a core pack (45), said welding being done along lines which will form junction lines between said core sheets when said core pack is superplastically expanded; chemically cleaning said core pack to remove metal oxides and residues that would interfere with diffusion bonding of said sheets; selecting at least two additional metal sheets having superplastic

characteristics for forming face sheets (48, 50) of said sandwich structure; chemically cleaning said face sheets to remove metal oxides and residues that would interfere with diffusion bonding of said sheets to said core pack; placing one each of said sheets on top and bottom faces of said core pack and placing an envelope gas fitting (54) between said face sheets; sealing peripheral edges of said face sheets to peripheral edges of said core pack and sealing said gas fittings between said face sheets to produce a sealed envelope pack (47) enveloping said core pack, with gas fittings into said core pack and into a face sheet zone between said face sheets and said core pack; connecting a gas supply tube from a gas supply control system to each of said fittings and purging air and moisture from said packs; pressurizing said packs to a low pressure with an inert forming gas such as argon, said core pack being pressurized to a higher pressure than said full pack; placing said full pack in an internal cavity of a heated die, said cavity having the same shape as the desired shape of the metal sandwich structure after it is expanded; raising the temperature of said full pack in said die to a temperature at which said metal exhibits superplastic characteristics; injecting forming gas through said fittings at a forming pressure sufficient to inflate said envelope pack to the interior walls of said cavity, and inflate said core pack to said envelope pack; maintaining said forming gas pressure until said core sheets are diffusion bonded to said face sheets; opening said die and removing said formed pack from said die while still at an elevated temperature above 538 °C (1000 °F); allowing said formed pack to cool while remaining connected to said gas supply system, and then removing

said gas supply lines from said gas fittings; and trimming off portions of a peripheral flange (58) holding said gas fittings from said formed pack."

III. In coming to its decision the opposition division held that the claimed subject-matter was novel and inventive over the available prior art including:

D1 : US-A-5 141 146;

D4 : US-A-4 304 821.

IV. The appellant (opponent) lodged an appeal against this decision, the appeal being received at the EPO on 16 December 2005, and simultaneously paid the appeal fee.

The grounds of appeal were partly set out in the notice of appeal and then completed with letter received by telefax on 12 June 2006.

V. In an annex to the summons for oral proceedings pursuant to Article 11(1) of the Rules of Procedure of the Boards of appeal, the Board expressed its preliminary opinion that the opposition division did not commit, as alleged by the appellant, a substantial procedural violation during the oral proceedings. As regards inventive step, the Board commented on the feature of claim 1 that the packs were pressurized before introducing them into the heated die, in respect of which the appellant had referred to D4, and the Board noted that D4 apparently did not disclose pressurizing the core pack during the purging step.

VI. Oral proceedings, at the end of which the decision of the Board was announced, took place on 4 October 2007.

The appellant requested: (1) that the decision under appeal be set aside, (2) that the case be remitted to the first instance for further prosecution and that the appeal fee be reimbursed, (3) alternatively to (2), that the European patent be revoked.

The respondent (patent proprietor) requested that the appeal be dismissed.

VII. The arguments submitted by the appellant in support of its requests, insofar they are relevant to this decision, can be summarized as follows:

The opponent had stated clearly at the beginning of the oral proceedings before the opposition division that it had a main request for revocation of the patent based on lack of inventive step over D1 alone, and a subsidiary request based on lack of inventive step over D1 in combination with one or more of documents D2, D3, D4, D5 and D7. After having heard the opponent on the main request, the division interrupted the oral proceedings for deliberation. The opponent believed that the subject of the deliberation was the main request only and had no reason to think that the division intended to take a final decision on the case. To its surprise, however, the division decided to reject the opposition without inviting the opponent to present its arguments in support of the subsidiary request. This situation was analogous to that underlying decision T 281/03, in which the Board found that a procedural violation was committed by the

opposition division in announcing the decision to reject the opposition after discussing novelty but not inventive step. It followed that in the present case the opposition division had committed a substantial procedural violation which justified the reimbursement of the appeal fee and the remittal of the case.

Claim 1 did not specify the order in which the method steps were performed. It also did not specify that the step of pressurizing the packs to a low pressure was distinct from the purging step and that the pack was placed in the heated die in a pressurized state. In fact, the description of the patent in suit disclosed that purging was carried out with several cycles of alternate vacuum suction and backfilling with argon under pressure. The pressurizing step referred to in claim 1 could therefore correspond to the last cycle of purging. Document D4 explicitly disclosed purging the space between the envelope sheets and the core sheets. Although D4 was silent about purging the core pack, it was clear for a skilled person that this must also be done. It was also clear that a higher gas pressure should be used for purging the core than for purging the remainder of the pack since the space between the core sheets was very limited. Therefore, D4 suggested to the skilled person that in the method of the closest prior art D1 he should implement the feature according to which the packs were pressurized before introducing them into the heated die.

VIII. The respondent's replies to these arguments can be summarized as follows:

The course of oral proceedings before the opposition division was correctly reflected by the minutes. During the oral proceedings the opponent was given sufficient opportunity and time to present its arguments. In particular, it was clear to the patent proprietor that the opposition division adjourned the oral proceedings for deliberation in order to take a final decision on inventive step.

It would be clear to the skilled person reading claim 1 that pressurization of the packs to a low pressure took place before placing the full pack in an internal cavity of a heated die and that injecting the forming gas at the forming pressure took place after placing the full pack as pressurized in the internal cavity of the heated die. It would not make sense to pressurize the packs to a low pressure after placing the full pack in the die. D4 disclosed applying a purge gas to the full pack for removing ambient air and for ensuring an inert atmosphere within the fixture maintaining the pack. There was no hint in D4 suggesting the pressurization of the packs to a low pressure before placing them into a heated die.

Reasons for the Decision

1. The appeal is admissible.
2. *The alleged substantial procedural violation*
 - 2.1 The minutes of the oral proceedings held on 13 December 2005 before the opposition division recite (see page 3 of the minutes) that after having asked the parties to

present their requests, *"the Chairman announced that the issue to be discussed was the inventiveness of the subject-matter of claim 1 of the attacked patent with respect to the prior art, and gave the floor to the Opponent"*. In paragraph 18 of the decision under appeal, the opposition division confirms the statement made in the minutes by stating that *"the Opponent had been invited and had been given the opportunity to present all his arguments with respect to the only ground of opposition under discussion, namely inventive step"*. The appellant submitted that these statements were not facts but "opinions" of the opposition division on the conduct of the oral proceedings and as such could hardly be contested.

This argument of the appellant cannot be accepted. The statement in the minutes cannot be regarded as the mere expression of a subjective view of the opposition division, but as the record of a relevant procedural statement instructing the parties about the extent of the discussion that would take place.

The respondent has confirmed the correctness of the minutes and the appellant did not request a correction of the minutes of the oral proceedings (see e.g. T 898/99, point 2 of the reasons). In the absence of any evidence to the contrary, the Board is bound to conclude that the minutes correctly reflect the statement made by the Chairman (Rule 76(1) EPC).

- 2.2 The Board further concludes that in making this statement the Chairman told the parties that the extent of discussion should be limited to the ground of opposition of lack of inventive step but did not impose

any limitations in respect of the substantiation of the ground of opposition. Therefore, the Chairman in effect told the opponent to present **all** its objections in respect of inventive step.

An opposition against a European patent is based on one or more of the grounds of opposition referred to in Article 100 EPC. In the present case the opposition was based on the ground of lack of inventive step (Article 100(a) EPC; see the notice of opposition), which represents an individual legal basis for objection to the maintenance of the patent within the collection of different legal objections provided for in Article 100 EPC (see G 1/95, point 4.6). In accordance with Rule 55(c) EPC, the notice of opposition must contain, in addition to a statement of the extent to which the European patent is opposed and of the grounds on which the opposition is based, an indication of the facts, evidence and arguments presented in support of these grounds. The wording of paragraph (c) shows clearly the distinction made between the grounds, meaning, as in Article 100(a) EPC, the legal reasons or legal bases, and the substantiation (see G 1/95, point 4.5). Since the statement of the Chairman to discuss "*the inventiveness of the subject-matter of claim 1 of the attacked patent with respect to the prior art*" only mentioned the ground of opposition of lack of inventive step and did not refer to the substantiation, it could not be interpreted as imposing on the extent of the discussion any limitation other than that in respect of the ground of opposition.

2.3 The appellant submitted that it had filed a main request, based on D1 alone, and an auxiliary request, based on D1 in combination with one or more of documents D2, D3, D4, D5 and D7. It is usual practice for patent proprietors to file with the competent EPO department one or more auxiliary requests for **maintenance** of a patent in amended form (Article 102(3) EPC; Rule 57a EPC), the auxiliary request(s) corresponding to a form of the patent which is different from the form in accordance with the main request. The situation for an opponent is different because there are no different forms of **revocation**, even if the request for revocation is based on different grounds of opposition and on different substantiations of a same ground of opposition (e.g. lack of novelty in view of a prior art document D1 and lack of novelty in view of another prior art document D2). Accordingly, the "main and auxiliary requests" of the opponent could, objectively, only be understood to mean a main line of substantiation and a subsidiary line of substantiation of the same ground of opposition of lack of inventive step.

The Chairman's invitation to present all the objections in respect of inventive step was therefore in effect an invitation to the opponent to present both its "main and auxiliary requests".

2.4 The appellant submitted that the opposition division, having heard only arguments in respect of D1 from the opponent, should have invited the latter to present its "auxiliary" case based on D1 and the documents D2, D3, D4, D5 and D7 as previously announced. Furthermore, document D7, which had been filed late by the opponent,

had been admitted into the proceedings after a lengthy discussion at the beginning of the oral proceedings and the opposition division should have realized that the opponent would also have objections based on this document.

The Board considers that there was no duty on the opposition division to make this further invitation because after the initial statement of the Chairman that the issue to be discussed was lack of inventive step (see point 2.1 above), the substantiation of the ground of opposition was exclusively the responsibility of the opponent. Moreover, it is not disputed that documents D2 to D7 were discussed by the patent proprietor during the oral proceedings (see page 5 of the minutes of oral proceedings). The appellant did not dispute that it was given the floor after the patent proprietor was heard, as stated on page 6 of the minutes, but only that page 6 of the minutes did not correctly reflect the order of the various events. However, irrespective of the order of the events, the opponent could have reacted to the patent proprietor's submissions in respect of D2 to D7 when it was given the floor again. The fact that the opponent believed that its "main request" only was to be discussed does not mean that it did not have to remain vigilant during the oral proceedings. The opponent could have noticed that the opposition division had not objected to the patent proprietor submitting arguments relating to the subsidiary line of argumentation and could have reacted e.g. by drawing the opposition division's attention to the apparently premature submissions of the patent proprietor.

2.5 The appellant further submitted that since during the oral proceedings the opposition division had considered it appropriate to inform the patent proprietor that the moment for filing an auxiliary request had arrived, it should also have reminded the opponent that the moment had also arrived to present its subsidiary line of argument, in view of the principle of equal treatment of the parties.

Irrespective of any obligations deriving from the principle of equal treatment, it is apparent from the minutes of the oral proceedings (page 6) that it was in response to the patent proprietor's announcement of its intention to present an auxiliary request that the Chairman stated that such request should be filed in writing before a decision on its main request was taken. In doing so, the opposition division did not assist or help the patent proprietor but merely informed it of the necessary formal aspects for the request to be taken into consideration.

2.6 Finally, the appellant referred to decision T 281/03 in which Board 3.5.01 found that the right of the opponent to be heard was violated by not giving it the opportunity to comment on inventive step on the basis of the opposition division's finding with respect to novelty before deciding against the opponent (see points 13 to 15 of the decision).

Decision T 281/03 presents a situation which is substantially different from the present one: in the case underlying T 281/03 the opposition division failed to give the opponent an opportunity to comment on lack of inventive step, thereby depriving the opponent of

any possibility of substantiating a ground of opposition (see G 1/95). By contrast, in the present case the opponent was given the opportunity to substantiate the ground of opposition of lack of inventive step. Accordingly, the reasoning of T 281/03 cannot be applied by analogy to the present case.

- 2.7 The Board therefore judges that none of the alleged substantial procedural violations occurred during the oral proceedings held before the opposition division.

As a consequence, since the occurrence of a substantial procedural error is a prerequisite for allowing the appellant's requests for remittal of the case to the opposition division (Article 10 Rules of Procedure of the Boards of Appeal) and for reimbursement of the appeal fee (Rule 67 EPC), these requests are refused.

3. *Inventive step*

- 3.1 Document D1 indisputedly represents the closest prior art.

- 3.2 The Board agrees with the analysis of D1 made by the opposition division (see points 7 to 9 of the decision under appeal), according to which D1 does not disclose, in particular, the following steps of claim 1 of the patent in suit:

"pressurizing said packs to a low pressure with an inert forming gas such as argon, said core pack being pressurized to a higher pressure than said full pack; placing said full pack in the internal cavity of a heated die".

The Board further agrees with the opposition division (see point 14 of the decision under appeal) that these steps imply that the *pressurized* full pack is placed in the die. In the Board's view, this is the proper reading of the claim by a skilled person. Indeed defining a pressurization step which follows a purging step (see the wording of claim 1) and precedes a step of placing the full pack in a heated die only makes sense if the full pack is introduced in the die while under pressure. Moreover, this reading is fully consistent with the description of the patent in suit (see par.[0034]).

The appellant contested that all the steps of claim 1 were to be carried out in the order in which they were recited. Without entering into the details of each of the steps recited by claim 1, the Board notes that there is no reason for a skilled person to interpret claim 1 as referring to a different sequence of steps than (1) purging the packs, (2) pressurizing the packs to a low pressure and (3) placing the full pack in an internal cavity of a heated die. In fact, a different ordering of these steps would not make sense.

According to D1, heating of the die and pressurization of the packs is performed after the packs are introduced into the die (see col. 4, lines 35 to 40; claim 1). Therefore the above-mentioned distinguishing steps are in effect not known from D1.

- 3.3 Irrespective of the other features distinguishing the claimed subject-matter from the method of D1, these distinguishing steps by themselves justify the presence

of an inventive step, as also found by the opposition division in the decision under appeal (see page 15).

As explained in the patent in suit (see column 11, lines 42-55), these distinguishing steps provide the technical effect of avoiding contact and premature diffusion bonding between the facing surfaces of the sheets. Accordingly, the pack can be introduced into a die which is hot (e.g. having a temperature at which diffusion bonding could occur), whereby an increased production rate and lower production cost can be achieved (see par. [0004] and [0006] of the patent in suit). The distinguishing steps thus effectively contribute to the solution of the problem underlying the patent in suit of providing an improved process for forming multisheet expanded metal sandwich structures (see col. 3, lines 31 to 33, of the patent in suit).

- 3.4 The appellant substantiated the obviousness of these distinguishing steps by reference to document D4 only.

D4 discloses a step of purging a pack (see Fig. 11) consisting of envelope sheets 10, 13 and core sheets 11, 12, during which a purge gas is forced through purge tube 55 in the space between the core sheets 11, 12 and the face sheets (see col. 7, line 67 to col. 8, line 11). D4 is silent about purging the space between the core sheets. This space is sealed and can only be accessed via tube 26 (see col. 5, lines 40 to 50). However, even assuming the correctness of the appellant's assertion according to which the purging of the space between the core sheets is implicit in the method of D4, there is in D4 no disclosure of the feature that the core pack should be pressurized to a

higher pressure than the full pack, nor any indication suggesting it. (The "full pack" undisputedly means in the corresponding passage of claim 1 of the patent in suit "the remainder of the pack").

The appellant submitted that the skilled person would consider applying a higher pressure in the core pack because in D4 the space between the core sheets was very limited as compared to the space between the core sheets and the envelope sheets. Although this reasoning might apply to D4, it does not apply to the method of the closest prior art D1, where the sheets of the pack 38 are all in close contact (see Fig. 4) and the spaces between the various sheets are substantially identical. Therefore, even if the skilled person would consider purging the pack of D1 in the light of the teaching of D4, he would have no reason to provide a higher gas pressure in the core pack, the application of gas pressure having in such case the function of purging substantially equal spaces and not of keeping the sheets apart so as to avoid premature diffusion bonding.

- 3.5 It follows that the appellant's submissions have not persuaded the Board that the opposition division's finding in respect of the inventiveness of the above-mentioned distinguishing steps was not correct.
4. Accordingly, the opposition division's decision to reject the opposition must be confirmed.

Order

For these reasons it is decided that:

1. The requests for remittal of the case to the opposition division and for reimbursement of the appeal fee are refused.

2. The appeal is dismissed

The Registrar:

The Chairman:

M. Patin

K. Garnett