Internal distribution code:

(A) [-] Publication in OJ
(B) [-] To Chairmen and Members
(C) [-] To Chairmen
(D) [X] No distribution

Datasheet for the decision of 2 September 2025

Case Number: T 0078/24 - 3.2.03

Application Number: 11772954.1

Publication Number: 2630271

IPC: C23C14/56, C23C16/54, C03C17/00

Language of the proceedings: EN

Title of invention:
MODULAR COATER SEPARATION

Patent Proprietor:
AGC Glass Europe

Opponent:
Bühler AG

Headword:

Relevant legal provisions:
EPC Art. 54, 56
RPBA 2020 Art. 12(4), 13(2)

Keyword:
Novelty - main request (no)
Inventive step - post-published evidence taken into account (yes)
Amendment to case - evidence
Amendment after summons - exceptional circumstances (no)

Decisions cited:
G 0001/24, T 1042/18, T 2027/23, T 1402/24

Catchword:

Europäisches Patentamt
European Patent Office
Office européen des brevets

Beschwerdekammern

Boards of Appeal

Chambres de recours

Boards of Appeal of the
European Patent Office
Richard-Reitzner-Allee 8
85540 Haar
GERMANY
Tel. +49 (0)89 2399-0

Case Number: T 0078/24 - 3.2.03

D E C I S I O N
of Technical Board of Appeal 3.2.03
of 2 September 2025

Appellant: (Patent Proprietor)	AGC Glass Europe Avenue Jean Monnet 4 1348 Louvain-la-Neuve (BE)
Representative:	Müller-Boré & Partner Patentanwälte PartG mbB Friedenheimer Brücke 21 80639 München (DE)
Appellant: (Opponent)	Bühler AG Gupfenstrasse 5 9240 Uzwil (CH)
Representative:	Vossius & Partner Patentanwälte Rechtsanwälte mbB Siebertstraße 4 81675 München (DE)
Decision under appeal:	**Interlocutory decision of the Opposition Division of the European Patent Office posted on 9 November 2023 concerning maintenance of the European Patent No. 2630271 in amended form.**

Composition of the Board:

Chairman	C. Herberhold
Members:	B. Goers
	F. Bostedt

Summary of Facts and Submissions

I. European patent No. 2 630 271 relates to a process and a modular coater for depositing a multi-layer coating stack on a flat glass substrate.

II. In its interlocutory decision the opposition division concluded that the patent as amended according to what was then auxiliary request 2 met the requirements of the EPC.

III. Both the patent proprietor and the opponent appealed against the decision; these designations of the parties will be retained in this decision for simplicity.

IV. At the end of the oral proceedings before the Board, the parties confirmed the following requests.

The patent proprietor requested that the decision under appeal be set aside and that the patent be maintained as granted (main request) or, in the alternative, that the patent be maintained as amended on the basis of one of auxiliary requests A, B, B1 and C to G.

Auxiliary requests A, C, E (the latter corresponding to the patent as maintained), F and G correspond to auxiliary requests submitted in the opposition proceedings by letter dated 13 January 2023. Auxiliary requests B and D were filed for the first time with the statement setting out the grounds of appeal. Auxiliary request B1 was filed during oral proceedings before the Board. Auxiliary request D includes the adapted description as filed during the oral proceedings before the Board.

The opponent requested that the decision under appeal be set aside and that the patent be revoked.

V. Documents relevant to this decision

D1: US 2004/0058293 A1
D2: US 2002/0020496 A1
D3: DE 43 13 284 A1
D12: Declaration of Mr N. Rivolta dated 8 July 2024

VI. Claim wording relevant to this decision

(a) Independent claims 1 and 9 of the main request (patent as granted) read (feature numbering added in "[]"):

Claim 1:
"[1.1] *A process for depositing a multi-layers* [sic] *coating stack on a flat glass substrate comprising*
[1.2] *depositing by sputtering under vacuum at least a first layer in a first depositing zone having a first atmosphere type and*
[1.3] *at least a second layer in a second depositing zone having a second atmosphere type*
[1.4] *which is separated from the first atmosphere type by a separation zone,*
[1.5] *wherein the flat glass substrate moves from the first depositing zone to the second depositing zone through the separation zone along a conveying path in an uninterrupted way,*
[1.6] *characterised in that a gas is injected into the separation zone in the vicinity of the conveying path in order to increase the separation factor between the two atmosphere types.*"

Claim 9:
"[9.1] *A modular coater for the deposit of thin layers by sputtering under vacuum on a flat glass substrate*
[9.2] *having at least two depositing zones*
[9.3/4] *with a gas separation zone there between and*
[9.5] *having a conveying path for the glass substrate which passes through apertures from a depositing zone towards the other depositing zone via the separation zone in an uninterrupted way,*
[9.5] *characterized in that the gas separation zone comprises at least one gas injector in the vicinity of the conveying path.*"

(b) Auxiliary request A has the following additional features in the independent claims compared with the main request:

Claim 1:
"[1.7] *and characterised in that the gas of the atmosphere within the separation zone is aspired by means of pumping*"

Claim 8:
"[8.7] *and characterised in that the gas separation zone comprises pumping means for aspiring the gas out of the gas separation zone*"

(c) Auxiliary request B corresponds to auxiliary request A with the following amendment to claim 1 (marked in bold and strike-through):

"[1.7a] *and characterised in that the gas of the atmosphere within the separation zone is aspired by ~~means of~~ pumping means* ***comprised in the separation zone***"

(d) Auxiliary request B1 corresponds to auxiliary request B but with claims 8 to 11 directed to the modular coater having been deleted.

(e) Auxiliary requests C and D correspond to auxiliary requests A and B with the following additional features in the independent claims:

Claim 1:
"[1.8] *and in that the gas is injected between 10 mm and 100 mm of the conveying path*"

Claim 8:
"[8.8] *and in that a gas injector is disposed between 10 mm and 100 mm of each of the two depositing zones*"

VII. The opponent's arguments, where relevant to the present decision, can be summarised as follows.

(a) Main request - novelty

The subject-matter of claim 9 of the main request was not novel over the embodiment of Figure 5a of D1. Although Figure 5a is schematic, D1 disclosed that the gas injection and pumping means had the same function as the separation zone in D1 and that an aperture was required for the conveyor. The system of D1 was suitable for glass substrates.

(b) Auxiliary requests A and B - novelty

Auxiliary requests A and B should not be admitted into the appeal proceedings. In addition, claim 9 of auxiliary requests A and B was not novel over the embodiment of Figure 5a of D1 either. The separation

zone disclosed in that embodiment also included pumping means for aspirating the gas.

(c) Auxiliary request B1 - admittance

Auxiliary request B1, which was filed during the oral proceedings before the Board, should not be admitted into the appeal proceedings for being late-filed in the absence of any exceptional circumstances.

(d) Auxiliary request C - inventive step

The subject-matter of claim 1 of auxiliary request C did not involve an inventive step when starting from D3 in combination with common general knowledge. Glass was a commonly known substrate material, and the gas of the atmosphere within the separation zone was aspirated by pumping means, even if the pumps acted indirectly on the separation zone (feature 1.7). For feature [1.8] (gas is injected between 10 mm and 100 mm of the conveying path), there was no effect shown, and the selection had been arbitrarily made from a commonly known range of values.

(e) Auxiliary request D - admittance

Auxiliary request D should not be admitted into the appeal proceedings as it could and should have already been filed during the opposition proceedings.

(f) Auxiliary request D - inventive step

The subject-matter of claims 1 and 8 of auxiliary request D did not involve an inventive step when starting from D3 in combination with common general knowledge or any of D1 or D2. Nor did it involve an

inventive step starting from D1 in combination with common general knowledge. The latter objection should be admitted into the appeal proceedings as it was *prima facie* relevant.

VIII. The patent proprietor's arguments, where relevant to the present decision, can be summarised as follows.

(a) Main request - novelty

The subject-matter of claim 9 was novel over D1, which did not disclose that the coater was modular. No aperture in accordance with feature [9.5] was disclosed either. The concept for separating the zones was different in D1.

(b) Auxiliary requests A and B - novelty

Auxiliary requests A and B had never been withdrawn, and their subject-matter was novel over D1 for the same reasons as the main request.

(c) Auxiliary request B1 - admittance

Auxiliary request B1 had been filed in response to the Board's surprising conclusion that D1 disclosed the "aperture" of feature [9.5] and was thus novelty-destroying for the higher-ranking requests.

(d) Auxiliary request C - inventive step

The subject-matter of claim 1 involved an inventive step over the disclosure of D3 in combination with common general knowledge. In particular, there was a common technical problem due to the synergistic interplay of all the distinguishing features.

(e) Auxiliary request D - admittance

Auxiliary request D should be admitted into the proceedings as it was filed in response to the reasons of the decision under appeal.

(f) Auxiliary request D - inventive step

The subject-matter of claims 1 and 8 involved an inventive step over the disclosure of D3 in combination with common general knowledge or any of D1 or D2. Providing the gas pumping means in the separation zone improved the separation factor. The inventive-step objection starting from D1 was submitted late in the absence of any exceptional circumstances and should not be admitted.

Reasons for the Decision

1. Main request - novelty

The Board agrees with the contested decision that the subject-matter of claim 9 is not novel over D1. At least for this reason, the main request is not allowable.

1.1 Figure 5a of D1 shows an embodiment comprising a coating system comprising a separation zone 73, 74, 75 ("isolation station") between depositing zones 70 and 71 ("process stations"). The separation zone includes a gas injection means 74 as well as pumping means 73 and 75 for the aspirating of gas ("pumping systems" in the separation zone; see paragraph [0033]).

Paragraph [0085] explains that in the separation zone a gas curtain is created to prevent cross-flow of process gases ("precursors") from the depositing zones 70 and 71. According to paragraph [0047], "[t]he process station can comprise a deposition system to deposit a thin film on the workpiece such as [...] sputtering deposition". This statement from the generic part of the specification also applies to the schematic embodiment of Figure 5a. The embodiment of Figure 5a further includes a "workpiece conveyor 11" (see paragraph [0085]). The coating device of D1 is also suitable for coating glass substrates (see paragraph [0031]: "semiconductor wafer", which is a comparable substrate at least as regards the transport by a conveyor and the suitability for sputtering deposition), and the zones can be operated under vacuum (paragraph [0035]).

All of this was uncontested.

1.2 However, the patent proprietor contested that Figure 5a, which is schematic, discloses distinct zones separated by walls with apertures that prevent any kind of cross-contamination under vacuum conditions. It was thus not disclosed that the conveyor path passes "through apertures from a depositing zone towards the other depositing zone", as defined by feature [9.5]. Feature [9.5] implied structural features such as separation walls between the zones including the aperture, and the depositing zones were defined as chambers in which a vacuum could be applied. The patent proprietor further argued that D1 did not disclose a "modular" coater.

This is not persuasive.

1.3 It is true that Figure 5a is a schematic figure. It is also true that D1 focuses on a circular, carousel-like design of the conveyor having a housing with a single vacuum pump, which differs from the linear arrangement shown in Figure 1 of the patent. However, these differences are not reflected in the features of claim 9.

The functional requirements for separating the process gases in the different depositing zones in D1 are the same as in the patent: "to prevent cross flow of precursors [i.e. process gases] from [different] stations" (paragraphs [0033] and [0085]). Although boxes 73 to 75 in Figure 5a are only indicated schematically, the gap they form with the workpiece conveyor 11 is disclosed in D1 as the only connection between the depositing zones. This rules out a connection at any place other than this gap, even

though D1 does not explicitly mention any distinct means for such separation, such as physical walls. Claim 9 does not provide any further details in that respect either. Contrary to the patent proprietor's view, the term "aperture" in claim 9 does not imply the presence of a separation wall extending substantially vertically from the aperture to define the depositing zones. The aperture merely functionally determines that the the conveyor can move through a separation zone.

Feature [9.5] is thus anticipated by the gas space of the isolation station (73 to 75) through which the conveyor moves the workpiece.

1.4 The patent proprietor's understanding of the term "modular" in feature [9.1], namely that the coater is constructed with standardised units or dimensions to allow for flexibility and variety in use, has no support in the patent.

The modular coater defined by claim 9 has at least two depositing zones and a gas separation zone in between. The term "modular" as used in the description does not extend beyond this definition. The concept of a "modular coater" (see feature [9.1]) is exemplified in paragraph [0004] of the patent (emphasis added): "**One module** of a modular coater may generally comprise three (sometimes four) depositing zones associated with three pumping zones to maintain the required low level of pressure in the depositing zone."

In line with this definition, a module (i.e. a modular coater) comprises at least the three zones defined in claim 1, as exemplified in Figures 1 and 2 of the patent (see paragraph [0030]). Therefore, the three-zone embodiment shown in Figure 5a of D1, which has two

depositing zones with a separation zone in between, is also a module in that sense and therefore provides at least part of a modular coater in accordance with the invention.

The subject-matter of claim 9 is thus not novel.

2. Auxiliary requests A and B - novelty of the subject-matter of claim 8

The only additional restriction in claim 8 of auxiliary requests A and B compared with claim 9 of the main request is that "the gas separation zone also comprises pumping means for aspiring the gas out of the gas separation zone" (feature [8.7], which corresponds to claim 10 of the main request).

This feature is also anticipated by the system disclosed in Figure 5a of D1, which encompasses pumping systems 73 and 75 in the separation zone ("isolation station": systems 73, 74 and 75) for the same purpose (see paragraphs [0033] and [0085]).

The patent proprietor's argument that the pumping means are not disclosed as being located within the separation zone in the embodiment of Figure 5a is not persuasive.

As in the embodiment of the patent (see paragraph [0032] and Figure 1), the pumping means comprise a fluid connection between the aperture and a pump that is adapted to aspirate the gas (note that the claims use the terms "aspired" and "aspiring" which are understood to mean "aspirated" and "aspirating"). This functional concept is also described in paragraphs

[0033] and [0085] of D1. Claim 8 does not define any specific geometric requirements for the location of the pumping means within the separation zone (e.g. being positioned between the chambers of the depositing zones).

For this reason, the subject-matter of claim 8 of auxiliary requests A and B is not novel over D1. The issue of their admittance was thus immaterial.

3. Auxiliary request B1 - Admittance

Auxiliary request B1 was not admitted into the appeal proceedings.

Auxiliary request B1 was filed during the oral proceedings before the Board. The amendment made with respect to auxiliary request B is the deletion of device claims 8 to 11. This is nevertheless an amendment to the appeal case within the meaning of Article 13 (2) RPBA. For such an amendment to be admitted, there must be exceptional circumstances (see Case Law of the Boards of Appeal, 11th ed., 2025, V.A. 4.5.4(j)).

3.1 No surprising situation at oral proceedings

The patent proprietor argued that there were exceptional circumstances since it had been surprised by D1 being considered relevant to the novelty of claim 8 of auxiliary request B. This was because the difference established by the feature "aperture" (feature [9.5]) had been neither considered by the opponent in the opposition proceedings nor discussed in the Boards's preliminary opinion.

This is not persuasive. Feature [9.5] is part of claim 9 of the main request, i.e. a granted claim. In the decision under appeal, it was found that this claim was not novel over the embodiment of Figure 5a of D1. This - at least implicitly - addressed feature [9.5] as well. In its reply to the patent proprietor's appeal, the opponent reiterated this objection against the main request; this objection had been under consideration since the beginning of the opposition proceedings.

The claims in question could and indeed should have been excluded from the subject-matter much earlier, at least in response to the opponent's reply. It should also be noted that the objection was deemed persuasive in the Board's preliminary opinion under Article 15(1) RPBA, which referenced the example of Figure 5a. Therefore, there can be no surprise on the proprietor's part that the Board, at the oral proceedings, found this feature to be disclosed.

3.2 Deliberate procedural choice of the patent proprietor

In response to the Board's communication under Article 15(1) RPBA, the patent proprietor chose to argue that "[i]n the embodiment of Figure 5a the conveyor 11 does not pass through any apertures, since there are no apertures below the stations". However, even at that late stage (with any amendment to the appeal case already being subject to the requirements of Article 13(2) RPBA), the proprietor chose not to file an auxiliary request in response to the Board's communication as a fall-back position in the event that the Board ultimately agreed with the opponent's objection.

Of course, the proprietor was free to choose this approach and to defend its position by presenting arguments rather than filing a further auxiliary request. However, in doing so, it ran the risk of auxiliary request B1 not being admitted into the proceedings for being filed at the very last stage of the proceedings, namely at the oral proceedings before the Board, and at the very last opportunity to file this request during the oral proceedings, namely once the Board had concluded that the main request and auxiliary requests A and B were not allowable. Moreover, all the requests under consideration in the opposition and opposition-appeal proceedings had included both process claims and device claims. Auxiliary request B1 was the first request to include only process claims.

3.3 Alleged compliance with Article 13(1) RPBA criteria not sufficient to establish "exceptional circumstances" within the meaning of Article 13(2) RPBA

As noted above, auxiliary request B1 was filed at the very last stage of the proceedings and at the latest opportunity, namely after the Board had announced its conclusion that claim 8 of auxiliary requests A and B was not novel over D1. The fact that the Board ultimately came to a conclusion that was not in the patent proprietor's favour does not constitute exceptional circumstances within the meaning of Article 13(2) RPBA.

In this context, the patent proprietor also asserted that the claims of auxiliary request B1 were *prima facie* allowable and that the amendment contributed to procedural economy and did not give rise to new issues and. However, these are criteria that may be used for

an amendment filed under Article 13(1) RPBA, see fourth sentence. While it is possible that these criteria may be used by a board when exercising its discretion under Article 13(2) RPBA, they are, per se, insufficient to demonstrate exceptional circumstances.

4. Auxiliary request C - lack of inventive step of claim 1

Auxiliary request C is not allowable because the subject-matter of claim 1 does not involve an inventive step starting from the disclosure of D3 in combination with common general knowledge.

4.1 Common and distinguishing features

It was undisputed that the figure of D3 discloses a coater comprising a first (3) and second (4) depositing zone (see figure) and that D3 further discloses a process for depositing multi-layer coatings on a substrate (15) by cathodic sputter deposition ("Zerstäubung", column 2, lines9 to 11) under vacuum by operating vacuum pumps 22 and 23.

However, the patent proprietor disputed that D3 disclosed the following features of claim 1 of the main request:

- a glass substrate in accordance with feature [1.1]
- a separation zone in accordance with features [1.4] to [1.6]
- the gas of the atmosphere within the separation zone being aspirated by means of pumping in accordance with feature [1.7]

In addition, claim 1 of auxiliary request C includes the following feature which is uncontestedly not disclosed in D3:

- feature [1.8]: the gas is injected between 10 mm and 100 mm of the conveying path

Thus, the distinguishing features have to be established first.

4.1.1 The glass substrate is a distinguishing feature

The conclusion in the contested decision that the mere mention of displays and solar cells in D3 (column 2, line 5) does not directly and unambiguously disclose a glass substrate is persuasive. The terms "display" and "solar cells" are, with respect to the materials of the substrates used to produce them, generic terms. While they do encompass glass substrates, they also encompass other materials such as plastic or silicone. Therefore, the generic examples of possible multilayer products obtainable by the method disclosed in column 2, line 5 of D3 cannot anticipate feature [1.1] of the process of depositing a multi-layer coating stack on a flat glass substrate defined in claim 1 (see also Case Law of the Boards of Appeal, 11th ed., 2025, I.C.5.2.6).

4.1.2 The separation zone is not a distinguishing feature

According to claim 1 (see features [1.4] and [1.6]), the separation zone separates the depositing zones using a gas injected into the separation zone in order to increase the separation factor SF (see definition in paragraph [0009] of the patent specification). An effect of this kind is also achieved in D3 by a separation wall 5 which includes an aperture

("Durchtrittsöffnung 14") with an internal gas space ("Nuten 18, 19") through which the substrate moves along a conveying path and into which a gas is injected ("Sperrgas"). According to column 3, lines 9 to 23, this prevents process gas from one of the depositing zones contaminating the process gas of the other depositing zone.

The patent proprietor argued that the term "zone" as used in the patent had a specific meaning relating to similar entities for both the depositing zones and the separation zone. Therefore, the skilled person would understand that the term "separation zone" refers to an enclosed volume in which the conditions necessary for separating the atmosphere types in the depositing zones have been created.

While the Board agrees with this general definition, it also applies to the separation zone in the figure of D3. Grooves 18 and 19 indeed form (together with the wall parts 16 and 17) an enclosed volume that is explicitly described as performing a separation function (see D3, column 2, line 65 to column 3, line 22). The patent proprietor's argument that the separation zone as defined in the claims had to have a larger enclosed volume than the separation wall of D3 is not convincing. The claims define a zone having a separation function but do not define any dimensions of the separation zone, let alone its volume. The claims thus do not define a particular size or shape of the separation zone or the volume for the injected gas. Therefore, D3 discloses a separation zone according to claim 1.

4.2 Feature [1.7] is not a distinguishing feature

4.2.1 D3 discloses two pumping means (22, 23; see the figure) which aspirate the gas located within the depositing zones and, therefore, also from the separation zone. Contrary to the patent proprietor's understanding, feature [1.7] does not define the location of the pumping means; it only defines their function, i.e. aspirating gas in the separation zone. In D3, this function is fulfilled even though the pumping means 22 and 23 are located in the depositing zones. The functional definition of feature [1.7] does not preclude the gas from the separation zone being aspirated via the vacuum created in the depositing zones.

4.2.2 The patent proprietor argued that the term "within the separation zone" was an adverb of place related to the "atmosphere", which confined it to a given location - the separation zone.

While the Board agrees with this understanding, it does not agree with the conclusion that the term also requires the pumping means to be located within the separation zone. This is because the adverb of place is not related to the pumping means. Feature [1.7] merely requires the pumping means to have the function of aspirating gas **from** inside the atmosphere of the separation zone **out of** the separation zone. It is not specified here whether this is achieved by directly providing an aspiration duct in the separation zone or by indirectly aspirating the gas via another zone.

4.2.3 The patent proprietor also referred to decision G 1/24 and the finding that "the description and drawings shall always be consulted to interpret the claims when

assessing the patentability of an invention [...] and not only if the person skilled in the art finds a claim to be unclear or ambiguous when read in isolation". The patent proprietor argued that consulting the description would lead the skilled person in the case in hand to the understanding of feature [1.7] with pumping means within the separation zone.

This is not persuasive.

According to G 1/24, the whole specification, i.e. the description and any drawings, has to be consulted or referred to when interpreting the claims. However, the Enlarged Board did not find that a narrower disclosure of subject-matter found in the description (for example, in an embodiment) had - always - to be applied to the claims, irrespective of a claim's scope and wording. This is in line with other recent decisions (see T 1402/24, reasons 2.5.2 with reference to T 2027/23, reasons 3.5.4, both citing G1/24), according to which a claim should not be interpreted, on the basis of features set out in embodiments of an invention, in such a way as to render the subject-matter narrower than the wording of the claim as understood by the person skilled in the art.

In the case in hand, claim 1 does not specify the location of the aspirating pumping means. This is true even though the patent does not describe an embodiment of the invention in which the pumping means are not located outside the separation zone.

4.2.4 In conclusion, the distinguishing features of claim 1 of the main request are that D3 does not directly and unambiguously disclose a glass substrate according to

feature [1.1] and the dimensions defined by feature [1.8].

4.3 Effect(s), technical problem(s) and obviousness

4.3.1 The patent proprietor argued that the glass substrate and the dimensions of the separation zone (features [1.1] and [1.4] to [1.7]) had a synergistic effect. Their interplay minimised the leakage of gas between the depositing zones through the gaps between glass substrates in the wall of D3, which diminished the effectiveness of the gas injection for the separation. This was because the separation zone of claim 1 was an enclosed space large enough to form a distinct zone between the corresponding depositing zones. This prevented instabilities being generated due to fluctuating cross-contamination between the depositing zones, as there was still sufficient length within the enclosed space on each side of the gap (upstream and downstream) to ensure good separation.

This is not convincing, however. The argument relies on the dimensions of the zones and of the substrates, but these are undefined in claim 1. Thus, the technical problem suggested by the patent proprietor - "how to provide a sputtering coating process under vacuum having an improved separation factor for flat glass substrates" - does not build on the distinguishing features.

Therefore, no single objective technical problem can be formulated for both distinguishing features, contrary to the patent proprietor's proposal. Each distinguishing feature has to be considered in relation to partial technical problems.

4.3.2 The partial technical problem related to a glass substrate is selecting a suitable material for the substrate.

The Board agrees with the conclusion in the decision under appeal that, for the skilled person, selecting glass as a substrate is obvious in view of the two product groups "displays" and "solar panels" mentioned in D3 (column 2, lines 4 to 9). It is common technical knowledge that glass is a common substrate material suitable for sputter coating in both product groups. Glass is thus an obvious selection among equal alternatives.

Therefore, selecting a glass as the substrate material does not involve an inventive step.

4.3.3 Feature [1.8] defines a location of the gas injection along the conveying path in the separation zone. The wording of feature [1.8] - "gas is injected between 10 mm and 100 mm of the conveying path" - corresponds to a distance relative to the entrance of the conveying path in the conveying direction into this zone.

The patent proprietor argued that the technical effect of providing the gas injector within the claimed distance was to improve the interplay with the pumping means. This was achieved by ensuring that there was sufficient amount of gas close to the apertures connecting the depositing zones to the separation zone (which is where the conveying path with the substrates passes through), while the amount of gas farther away from the depositing zones was aspirated by the pumping means.

However, this alleged effect is not supported by the patent specification, nor is it credible on the basis of common general knowledge, as was also concluded in the decision under appeal ("no effect").

Apart from the fact that feature [1.8] does not define the distance to the depositing zone located downstream in the conveying direction, claim 1 does not specify the length of the depositing zone or any other dimension of the modular coating device. In addition, claim 1 does not define the location of the pumping means, in particular not relative to the location of the gas injection. Therefore, it is not credible that the location of the gas injection according to the range in feature [1.8] improves the interplay with the pumping means. In fact, the selected range of feature [1.8] is an arbitrary selection from a range of feasible distances. An arbitrary selection of this kind cannot be considered to involve an inventive step.

Therefore, feature [1.8] does not involve an inventive step.

5. Auxiliary request D

Auxiliary request D is admitted into the appeal proceedings and its subject-matter involves an inventive step.

5.1 Admittance of auxiliary request D

The opponent requested that auxiliary request D not be admitted. However, the Board admitted auxiliary request D into the appeal proceedings by exercising its

discretion under Article 12(4) RPBA, for the following reasons.

5.1.1 Auxiliary request D was first filed with the statement setting out the grounds of appeal and is therefore an amendment within the meaning of Article 12(4), first sentence, RPBA. Compared with auxiliary request C, the amendment consists of the additional specification in claim 1 that the gas of the atmosphere within the separation zone is aspirated **by pumping means comprised in the separation zone** (see feature [1.7a]).

5.1.2 The patent proprietor's arguments put forward in favour of admitting auxiliary request D were convincing.

First, the introduced amendment is consistent with the embodiments and is not complex. Second, it is a direct reaction to the reasons of the decision, in particular with regard to the understanding of feature [1.7]. This topic had first been raised at the oral proceedings before the opposition division. During the written opposition proceedings, the opponent interpreted feature [1.7] (dependent claim 2 of the patent as granted) to also cover the location of the pumping means within the separation zone, in line with the patent proprietor's understanding of this feature. The amendment thus addresses the conclusion in the decision that feature [1.7] was disclosed in D3.

5.2 Non-admittance of the objection of lack of inventive step starting from D1

For the first time during oral proceedings before the Board, the opponent raised an objection of lack of inventive step starting from D1 against claim 8 of

auxiliary request D. This objection was not admitted by the Board.

The new objection constitutes an amendment to the opponent's appeal case under Article 13(2) RPBA. This is true even though D1 was used in attacks against other, higher-ranking requests (see T 1042/18, Catchword 2 and reasons 4.9).

Auxiliary request D had already been filed with the patent proprietor's statement setting out the grounds of appeal.

There are no exceptional circumstances that justify the admittance of the new objection against this request, which was submitted at the latest possible stage of the appeal proceedings, namely the oral proceedings, and for which neither the proprietor nor the Board could prepare.

5.3 Claims 1 and 8 - inventive step starting from D3

The subject-matter of claims 1 and 8 involves an inventive step in view of D3 as the starting point in combination with any of D1 and D2.

As features [1.7a] and [8.7] do involve an inventive step, there is no need to comment on the possible contribution of further distinguishing features.

5.3.1 Effect(s) related to the distinguishing features [1.7a] and [8.7] and the associated objective technical problem(s)

With respect to the effect and technical problem of features [1.7a] and [8.7], the patent proprietor relied

on the conclusion in the decision under appeal that the effect of providing the gas aspiration pump in the separation zone was to improve the separation factor defining the separation of atmospheres between the two depositing zones (see definition in the patent, paragraph [0009]). The patent proprietor further concluded that achieving this effect was also the objective technical problem.

To support this argument, the patent proprietor submitted evidence D12, which provided a quantitative comparison of the separation factor of systems according to the invention with that of the system of D3. The comparative examples in the patent either have no gas injection at all (comparative example 1) or use a device that is structurally different from that in D3 (example 2: "Von Ardenne type"; see also paragraph [0008]).

The Board took D12 into account. The admittance of this document was not contested. In addition, it merely complements the patent proprietor's arguments regarding an improvement to the separation factor compared with the system of D3. This document D12 shows a "setup 1" in which the gas injection is located within the separation zone and the gas aspiration pumps are operating solely within the depositing zones - a gas flow configuration which corresponds schematically to that of the coating device disclosed in D3. The separation factor determined for setup 1 is compared with the gas flow setups 2 and 3, which are in accordance with the invention. D12 shows that the separation factor in setups 2 and 3 is improved compared with that in setup 1.

D12 thus supports the purported effect mentioned as the object of the invention in paragraph [0013] of the originally filed description at least qualitatively (D12 states that the results may vary quantitatively depending on the dimensions and materials used). The additional evidence D12 further supports the effect which is encompassed by the technical teaching and which embodies the same invention disclosed at the filing date from the application as originally filed (see G 2/21, reasons 93).

In view of the above discussion, the technical problem proposed by the opponent of providing an alternative aspiration of the injected gas (see the opponent's reply, point 4.1: "eine veränderte Absaugung des Sperrgases vorzusehen") is not appropriate as it does not take into account the aforementioned technical effect.

Hence, the objective technical problem of how to improve the separation factor when starting from D3 is persuasive.

5.3.2 Non-obviousness of features [1.7a] and [8.7]

(a) Common technical knowledge

The opponent's assertion that features [1.7a] and [8.7] were obvious from D3 alone (i.e. by applying common technical knowledge) is not substantiated. The Board sees no indication of any such modification in D3. In fact, D3 describes the aspiration of the injected gas ("Sperrgas") in the depositing zones as an essential part of the invention (see column 2, line 51 to column 3, line 8 and claim 1).

(b) The skilled person would consider D1 and D2

The patent proprietor's view that the person skilled in the art would not consider combining D3 with D1 or D2, since they concern deposition techniques substantially different from deposition by sputtering according to D3, is not convincing (D1 discloses atomic layer deposition ALD, and D2 discloses chemical vapour deposition CVD). Both D1 (see paragraph [0047]) and D2 (see paragraph [0011]) disclose sputtering as a possible deposition technique. Moreover, the effectiveness of a separation zone with a supply of a gas between the depositing chambers depends predominantly on the flow distribution in the zones, not on the deposition method selected.

(c) Combination with D2

D2 does not provide any indication pointing the skilled person towards the claimed solution to the objective technical problem.

The passage in paragraph [0023] of D2 (embodiment of Figure 4) does mention "buffer chambers" which are "independent vacuum zones". However, while this discloses that gas is aspirated in these zones, it does not disclose that gas is also injected in these zones. In paragraph [0023], it is merely mentioned that "material gas" (argon and oxygen) is introduced "through connection tubes into the buffer chamber", i.e. together with the substrates. Figures 3 and 4 show that the mixed gas is supplied to tubing between a separation zone and the depositing zones.

In D3, the process gas is injected into the depositing chambers separately from the inert gas ("Sperrgas"),

which is injected directly into the separation zone. Even if the skilled person were to consider changing the configuration in D3 such as to use only a single mixed-gas supply as in D2 (although it is not apparent why this would improve the separation factor), D2 teaches that this gas is injected **not into** the separation zone **but between** the separation and depositing zone.

(d) Combination with D1

Figure 5a of D1 shows a device and process in which two depositing zones ("process stations": 70, 71) are separated by a separation zone ("isolation station": 73, 74, 75). In this separation zone an inert gas is injected (74), and the gas is removed together with process gases from the depositing zones by pumping means (73, 75). These measures create a "purging system" providing a "gas curtain" for "isolation purpose" (see paragraph [0085]). Similar embodiments are shown in Figures 5b to 5d. The injected gas is, as in D3, a non-reactive or inert gas (see D1, paragraph [0033]). In paragraph [0033], it is explained that the purpose of the isolation stations in D1 is "to **minimize** cross contamination between the process stations" (emphasis added).

D1 does not give the skilled person any indication that arranging the pumping means differently would lead to an improvement with respect to the separation factor. While paragraph [0033] generally mentions improved "isolation" of the depositing zones, no reference for comparison is mentioned.

However, even if the skilled person were to consider the teaching of D1, it would not be apparent how the

pumping means could be comprised in the separation zones of D3, which have only a relatively small groove ("Nuten 18, 19") into which the gas is injected. Directly aspirating the gas from this same groove is technically not expedient from a skilled person's perspective since no gas curtain can be formed to prevent the cross-flow of gas between the depositing zones as suggested in D1 (see paragraph [0085]). Even though the claims of the patent do not define the relative location of the gas injection with respect to the aspirating means in the separation zone, the embodiment of D1 has distinct locations for the gas injection and aspiration. Thus, the additional provision of a pumping means for aspirating the gas to create a gas curtain as in D1 cannot be addditinally provided without substantially re-designing the coater disclosed in D3.

5.3.3 As none of the opponent's inventive-step objections against auxiliary request D is persuasive, the subject-matter of claims 1 and 8 involves an inventive step.

5.4 The opponent had no objections against the adapted description and the Board has none either.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the opposition division with the order to maintain the patent as amended in the following version:

Claims:
- No. 1 to 10 of auxiliary request D filed with the statement setting out the grounds of appeal

Description:
- Paragraphs [0014], [0016], [0017], [0018], [0021], [0047], the heading before paragraph [0050], and paragraph [0052], as filed during the oral proceedings before the Board
- Paragraphs [0001] to [0013], [0015], [0019], [0020], [0022] to [0046], [0048] to [0049], [0050] to [0051], [0053] to [0057] of the patent specification

Drawings:
- Figures 1 and 2 of the patent specification

The Registrar: The Chairman:

C. Moser C. Herberhold

Decision electronically authenticated