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Datasheet for the decision of 29 June 2023

Case Number: T 0541/20 - 3.2.03

05022592.9 Application Number:

Publication Number: 1650517

F26B21/08, F26B9/06 IPC:

Language of the proceedings: ΕN

Title of invention:

Adsorption dehumifier for granules of plastic materials

Patent Proprietor:

Moretto S.p.A.

Opponents:

Plastic Systems S.p.A. GALLO & PARTNERS S.R.L.

Headword:

Relevant legal provisions:

EPC Art. 56, 123(2) RPBA 2020 Art. 12(6), 13(1), 13(2)

Keyword:

Inventive step - non-obvious alternative - ex post facto analysis - main request (no) - auxiliary request (yes)

Amendments - allowable (no) - extension beyond the content of the application as filed (yes)

Amendment to appeal case - amendment gives rise to new objections

Amendment after summons - exceptional circumstances (yes)

Decisions cited:

T 1480/16, T 2638/16, T 2429/17, T 0884/18, T 0914/18, T 0995/18, T 1151/18, T 2091/18, T 1857/19, J 0014/19

Catchword:



Beschwerdekammern Boards of Appeal Chambres de recours

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Case Number: T 0541/20 - 3.2.03

D E C I S I O N
of Technical Board of Appeal 3.2.03
of 29 June 2023

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Decision under appeal: Interlocutory decision of the Opposition

Division of the European Patent Office posted on 19 December 2019 concerning maintenance of the European Patent No. 1650517 in amended form.

Composition of the Board:

Chairman C. Herberhold Members: R. Baltanás y R. Baltanás y Jorge

D. Prietzel-Funk

- 1 - T 0541/20

Summary of Facts and Submissions

- I. European patent No. 1 650 517 B1 relates to an adsorption dehumidifier for granules of plastic material.
- II. Two oppositions were filed against the patent based on Article 100(c), (b) and (a) EPC in conjunction with Article 56 EPC.
- III. This appeal is against the opposition division's interlocutory decision, which found that auxiliary request 2 filed during oral proceedings fulfilled the requirements of the EPC. The opposition division also found that the subject-matter of claim 1 as granted did not involve an inventive step with regard to the combination of D1 and D2 and the common general knowledge or A3. The opposition division also considered that claim 1 of auxiliary request 1, filed during oral proceedings, did not meet the requirements of Article 84 EPC and Article 123(2) EPC.
- IV. This decision was appealed by both opponents and by the patent proprietor. Since all parties are therefore simultaneously appellant and respondent, they will be referred to herein as opponents (1 and 2) and the patent proprietor, respectively, for the sake of simplicity.
- V. In a communication pursuant to Article 15(1) of the Rules of Procedure of the Boards of Appeal (RPBA 2020), the Board indicated its preliminary opinion on the main request (claims as granted) and auxiliary requests 1 to 8, the latter having been submitted with the patent proprietor's statement setting out the grounds of

- 2 - T 0541/20

appeal. In response to this communication, the patent proprietor filed additional auxiliary requests 1A to 8A with the letter dated 9 January 2023.

Oral proceedings were held on 29 June 2023.

VI. Requests

At the end of the oral proceedings the patent proprietor requested that the decision under appeal be set aside and that the patent be maintained in amended form on the basis of the new main request submitted during the oral proceedings before the Board or on auxiliary requests 1A or 6A to 8A submitted with the letter dated 9 January 2023, or on the basis of "New auxiliary request 1A", which was filed during the oral proceedings before the Board and followed auxiliary request 1A.

The opponents requested that the decision under appeal be set aside and that the patent be revoked in its entirety. They also requested that the new main request, "New auxiliary request 1" and auxiliary requests 1A and 6A to 8A not be admitted into the proceedings.

VII. The claims of the new main request (from now on: main request) only differed from the claims as granted on account of the deletion of dependent claims 5, 10 and 11 and the corresponding adaptation of dependencies.

Claim 1 of the main request (identical to claim 1 as granted), including numbering of its features based on the numbering adopted in the contested decision, reads as follows:

- 3 - T 0541/20

- **A** A dehumidification plant for granule material provided with
- B a compressed air source,
- **C** control means (2, 31) for the flow rate of the compressed air fed by said source,
- D at least one heating chamber (G) of compressed air
- **E** which is in fluid communication with said flow rate control means (2, 31),
- **F** at least one container (16) of granular material to be dehumidified,
- **G** diffuser means (18) of compressed and hot air located inside said at least one container (16),
- **H** first temperature sensor means (15) arranged to detect the temperature of air leaving said at least one container (16),
- I at least one programmable control unit (24, 25),
- **J** at least one compressed-air dehumidifying group (21)
- K located downstream of said flow rate control means
 (2, 31),
- **L** and at least one flow rate adjusting group (22)
- **M** for dehumidified air coming from said at least one dehumidifying group (21)
- N located upstream of said at least one heating chamber (G),
- JO wherein each dehumidifying group (21) comprises:
- J1 at least one pair of molecular sieve cartridge
 units (5L, 5R),
- J2 a valve distributing means (4) having an inlet in fluid communication with said compressed air flow control means (2, 31), and having two outlets in fluid communication with said at least one pair of sieve cartridge units (5L, 5R) and an outlet (20) in communication with atmosphere, and

- 4 - T 0541/20

- **J3** a pair of unidirectional flow regulator units (6L, 6R) for at least one pair of said sieve cartridge units (5L, 5R),
- **J4** which are in fluid communication with one another through a connection duct (LR),
- J5 each unidirectional flow regulator unit being located downstream of at least one molecular sieve cartridge unit (5L, 5R),
- J6 each flow regulator unit (6L, 6R) comprising a respective check valve (6La, 6Ra);
- J7 and a respective flow regulator means (6Lb, 6Rb) connected in parallel with said check valve (6La, 6Ra),
- J8 and wherein each check valve (6La, 6Ra) is arranged to allow air to controllably flow from a molecular sieve cartridge unit (5L, 5R) while operating as an adsorbing unit to said connection duct (LR),
- whereas air flow from one sieve cartridge unit to the other can occur through said flow regulator means (6Lb, 6Rb) thereby causing an air flow pressure drop.
- VIII. Claim 1 of auxiliary request 1A is based on claim 1 of the main request, with the following features added to the end of the claim:
 - wherein the compressed air supplied by said compressed air source is fed to the dehumidifying plant through an inlet duct (0),
 - c1 wherein said flow rate control means (2, 31)
 comprise a control electric valve (2) directly
 controlled by an on/off switch (31) of the
 dehumidification plant so that, when the
 dehumidification plant is on, air can flow through

- 5 - T 0541/20

- valve (2), whereas air flow is cut off when the dehumidification plant is off,
- c2 wherein said control electric valve (2) allows the compressed air to pass through it upon starting the dehumidification plant and to stop it should the electric current supply be cut off.
- IX. Claim 1 of "New auxiliary request 1A" is based on claim 1 of the auxiliary request 1A, wherein feature C1 has been replaced with the following feature (amendments marked in bold):
 - C1' wherein said flow rate control means (2, 31)
 comprise a control electric valve (2) directly
 controlled by an on/off switch (31) of the
 dehumidification plant dehumidifier so that, when
 the dehumidification plant dehumidifier is on, air
 can flow through valve (2), whereas air flow is
 cut off when the dehumidification plant
 dehumidifier is off, ...
- X. Claim 1 of auxiliary request 6A is based on claim 1 of the main request, with the following feature added to the end of the claim:
 - wherein each flow rate adjusting group (22) comprises, in sequence, reducing pressure means (9), a pair of air flow regulators (10, 11) connected in parallel downstream of said reducing pressure means (9), one flow regulator (10) of said pair of air flow regulators (10, 11) being set at a predetermined air flow value, whereas another flow regulator (11) of said pair of air flow regulators (10, 11) is adjustable, and flowmeter means (12, 13) arranged to measure air flow rate from said flow regulators (10, 11).

- 6 - T 0541/20

XI. Prior art

The following documents have been cited, both in the statements setting out the grounds of appeal and during the opposition proceedings, and are relevant to this decision:

D1: US 6,269,553 B1
D2: US 4,570,360 A

- XII. The patent proprietor's arguments can be summarised as follows:
 - (a) Admittance of the main request, auxiliary request 1A and auxiliary request 6A

Cancelling dependent claims 5, 10 and 11 was not to be considered an amendment to the appellant's case within the meaning of the Rules of Procedure of the Boards of Appeal (RPBA 2020) since it did not imply any change to the facts or legal scope of the case. Concerning inventive step, cancelling the dependent claims did not require a new analysis which differed from what had been already discussed and presented by the parties. In fact, cancelling the dependent claims reduced the complexity of the case and the issues to be discussed without opening up new points of discussion.

Even if deleting the dependent claims were considered an amendment, the Board was to apply its discretion to admit the requests in consideration of the exceptional circumstances explained above. - 7 - T 0541/20

(b) Main request - inventive step

Claim 1 of the main request differed from D1 on account of the provision of a compressed-air dehumidifying group comprising the features J and J0 to J9 "located downstream of the flow rate control means" (feature K) and on account of the at least one flow rate adjusting group being "for dehumidified air coming from said at least one dehumidifying group" (feature M). The interpretation of feature N ([flow rate adjusting group] located upstream of the at least one heating chamber) given by the Board in its communication under Article 15(1) RPBA 2020 was accepted, and therefore this feature was also disclosed in D1.

The objective technical problem addressed by the distinguishing features was to improve the desiccant capability of air, as explained in paragraph [0013] of the patent specification.

However, when taking the solution in D2 into consideration and combining the compressed-air dehumidifying group from this document with D1, the skilled person would not have arrived at the claimed invention. The only location in D1 at which the compressed-air dehumidifying group from D2 could have been arranged was upstream of the inlet and pressure reducing valve (9). This valve (9) was necessary to reduce the working pressure of the air to be used in the system. Since the inlet duct of the compressed-air dehumidifying group in D2 did not comprise any valve, and since the inlet and pressure reducing valve (9) had to be kept downstream of the compressed-air dehumidifying group to be incorporated, the dehumidifying group of the resulting device would not

- 8 - T 0541/20

be "located downstream of the flow rate control means" as defined in feature K.

It was pointed out that the inlet and pressure reducing valve (9) in D1 was a single device with two functionalities. Since this valve (9) had to be arranged downstream of the compressed-air dehumidifying group to be incorporated, both capabilities of the valve (9) would be provided at that location. The skilled person was not prompted to divide the inlet and pressure reducing valve (9) into two devices for performing each function separately at different locations. The functionality of interrupting the compressed air supply to the compressed-air dehumidifying group incorporated in D1 was carried out by simply switching on and off the compressor supplying the compressed air.

(c) Auxiliary request 1A - added subject-matter

The term "dehumidifier" in the patent application was used as a synonym for "dehumidification plant", as could be seen when comparing e.g. the title and the abstract. A comparison of paragraphs [0001], [0005], [0008], [0009] and [0021] of the A2 publication, in which "dehumidifier" is used, with paragraphs [0011] to [0015], and [0020], in which "plant" is used, could only lead to this conclusion. It was pointed out in this context that the prior art cited in the description of the patent application did not comprise any dehumidifying group. Therefore, the use of the word "dehumidifier" when commenting upon this prior art could only mean the whole dehumidification plant.

Claim 1 as originally filed included the feature "compressed-air dehumidifying group", thus excluding

- 9 - T 0541/20

the term "dehumidifier" in the description from referring to this group.

As further evidence, neither of the terms "dehumidification plant" or "dehumidifier" comprised a reference numeral in the description, thus implying that both were used as synonyms.

The fact that a high pressure was disclosed in paragraph [0029] of the patent application in connection with the "dehumidifier" had to be understood as a requirement that compressed air was necessary for the functioning of the dehumidification plant. In this same paragraph, as in paragraph [0028], the more specific term "cartridge" was used to refer to the "dehumidifying group".

Finally, Figure 2 and paragraph [0021] of the patent application disclosed that the "control electric valve" (2) belonged to the "dehumidification plant", which was referred to as the "dehumidifier" in this paragraph. The "on/off switch (31) of the dehumidifier" was disclosed in this paragraph to control the electric current supply of the plant, as disclosed in the last sentence of paragraph [0020].

Consequently, the reference to the "dehumidification plant" in the amended claim feature C1 did not extend beyond the original disclosure in paragraphs [0020] and [0021] of the application as originally filed.

(d) New auxiliary request 1A - admittance

Replacing the wording "dehumidification plant" with the literally disclosed wording "dehumidifier" resolved any possible issues with regard to the requirements of

- 10 - T 0541/20

Article 123(2). It changed nothing with respect to the meaning of the feature to the skilled person. This meaning remained the same with or without the proposed amendment in "New auxiliary request 1A". Consequently, the discussion of inventive step was not changed either. These were exceptional circumstances justified by cogent reasons within the meaning of Article 13(2) RPBA 2020, and therefore the newly filed auxiliary request was to be admitted into the proceedings.

(e) Auxiliary request 6A - inventive step

The technical effect of the distinguishing feature "flowmeter means" in feature Q was that flow verification could be performed. The associated objective technical problem was to improve the flow rate control. The flow rate control was performed in D1 by means of the temperature sensor (column 3, line 50 to column 4, line 26). The skilled person was not prompted to provide a flowmeter for this purpose, which was just one of the several possibilities at their disposal for addressing the technical problem. In particular, they were not prompted to provide an additional control means in the claimed position.

Moreover, the flow adjustment means in D1 comprised four solenoid valves, all four of which together allowed the flow to be adjusted by setting a particular four-bit on/off setting of these valves. Controlling the flow thus required all four solenoid valves to be operable as an ensemble. Arbitrarily interpreting one of these valves as being set at a predetermined air flow value, while the other valves formed an individually adjustable flow regulator, was at odds with the control of the valves as disclosed in D1, which could not be operated individually, but only

- 11 - T 0541/20

together. Therefore, the subject-matter of claim 1 of auxiliary request 6A differed from the disclosure in D1 not only on account of the flowmeter means, but also on account of there being only a single flow regulator, and not the two having the particular claimed properties.

Concerning the compatibility of the flowmeter means with the control system in D1, the opponents' arguments based on the content of the contested patent were to be disregarded since an inventive-step attack could not be supported by a document which did not form part of the prior art before the priority date.

- XIII. Since both opponents had common views regarding the issues discussed, and since no matter had to be decided which depended on which opponent raised which particular point, both opponents' arguments will be presented together. They can be summarised as follows:
 - (a) Admittance of the main request, auxiliary request 1A and auxiliary request 6A

Deleting claims was an amendment to the patent proprietor's case and therefore Article 13(2) RPBA 2020 applied. The prima facie allowability arguments by the patent proprietor could have been relevant for the first convergence approach under Article 12(4) RPBA 2020, but not for the case at hand, which concerned the much more restrictive third stage of the convergence approach. At this stage of the procedure amendments shall not be admitted.

The request to delete dependent claims 5, 10 and 11 had been presented and later on actively withdrawn during opposition proceedings, thus depriving the opposition

- 12 - T 0541/20

division of the possibility of deciding on the Article 123(2) issue in question. Therefore, they should not be admitted by the Board after being withdrawn according to Article 12(6) RPBA 2020.

Moreover, the amendments were not foreseeable, as it was also not foreseeable that auxiliary requests 1 to 8 and 2A to 5A would have been withdrawn at the oral proceedings before the Board.

Finally, the patent proprietor did not provide any reasons as to why the requests had been filed at such a late stage of the proceedings. The objections that the amendments tried to address had been present since the beginning of the appeal proceedings and thus were not a surprise to the patent proprietor.

(b) Main request - inventive step

The fundamental question was whether the skilled person would have arranged an inlet valve upstream of the compressed-air dehumidifying group in D2 when incorporating it in D1. It was out of the question that the dehumidifying group would have been arranged at a location before any pressure reduction was achieved since it needed compressed air to work.

Figure 1 of D1 disclosed two distinct elements of the inlet and pressure reducing valve (9), a first in charge of pressure reduction and a second ensuring the inlet valve capability. The skilled person would have understood that a pressure-reducing capability was necessary downstream of the dehumidifying group, but that an inlet valve would still have needed to be provided at the entrance to the whole system, as disclosed in D1. Since the new entrance point would

- 13 - T 0541/20

have been upstream of the dehumidifying group in D2 when incorporated in D1, the skilled person would have arranged an inlet valve at that new entrance point in an obvious manner. This was the only logical position for the inlet valve functionality of the valve (9) from D1 once combined with the teaching of D2.

(c) Auxiliary request 1A - added subject-matter

The comments on the prior art in the patent application could not be used to define the use of the term "dehumidifier" in the invention since they related to the prior art and not the invention. Moreover, the last sentence of paragraph [0007] disclosed, even in the context of the prior art, that a dehumidifier was only a component of the plant. The skilled person also understood from their common technical knowledge that a "dehumidifier" was a module performing a dehumidification action, such as the dehumidifying group disclosed in the patent application.

Furthermore, paragraph [0029] provided teaching leading away from the idea of considering the term "dehumidifier" to be synonymous with the term "dehumidification plant", since the disclosed "operation pressure of the dehumidifier" of 6-8 bar was technically incompatible with any component of the dehumidification plant, with the exception of the "compressed-air dehumidifying group". This was evident from the presence of the pressure reducing device (Figure 2, reference numeral 9).

Contrary to the patent proprietor's argument, the absence of reference numerals for two different features did not imply that they corresponded.

- 14 - T 0541/20

Finally, the last line of paragraph [0020] disclosed the function of the first control electro-valve(2) in response to the electric current supply of the plant. Paragraph [0021] was to be taken at face value and it did not disclose any link between the electric current supply of the plant and the function of the disclosed "on/off switch (31) of the dehumidifier". Figure 2 did not disclose that this switch (31) controlled the electric current supply of the plant. The subjectmatter of claim 1 thus extended beyond the original disclosure.

(d) New auxiliary request 1A - admittance

The objection which the amendments tried to address had existed since the beginning of the proceedings and there was no reason to have not replied to it until the oral proceedings before the Board. The modified feature was taken from the description, and incorporating it late went against the purpose of the appeal proceedings.

Furthermore, the amendment raised *prima facie* new clarity problems, since feature C1' now comprised the term "dehumidifier", whereas feature C2 referred to the "dehumidification plant".

(e) Auxiliary request 6A - inventive step

A pair of air flow regulators as defined in feature Q were disclosed in D1. This was the case because, in a situation in which one of the solenoid valves (23) was open, this open solenoid valve corresponded to the defined flow regulator "being set at a predetermined air flow value"; consequently, the regulation of the

- 15 - T 0541/20

other solenoid valves (23) disclosed the defined "adjustable" air flow regulator.

Therefore, the only distinguishing feature was the presence of "flowmeter means" in feature Q. The alleged control of the air flow rate by the flowmeter means was not defined in claim 1, and paragraphs [0034] and [0035] of the specification of the impugned patent did not disclose this functionality either. The flowmeter means were not used in the patent to control the air flow rate, but just to measure it in order to verify it. Consequently, the objective technical problem was that of verifying if the actual flow rate was as expected. Arranging flowmeter means downstream of an air flow regulator for this purpose was obvious in view of the common general knowledge of the skilled person, who was fully aware of the general use of flowmeter means for this function.

Providing flowmeter means did not imply an interaction or replacement of the control system in D1 based on the temperature sensor. The flowmeter means was just an addition to verify the correct functioning of this control system. In fact, the resulting system would have provided the same kind of control as in the contested patent, something which proved the compatibility of the flowmeter means with the control system in D1.

Even if the control or air flow rate were considered as the technical problem to be addressed, D1 did not disclose adequate control for the starting stage of the operation of the plant, since the temperature sensor was not able to provide proper feedback until the passing air flow reached a proper temperature after a while. Therefore, the skilled person would consider

- 16 - T 0541/20

providing flowmeter means for enabling air flow rate control right at the beginning of the plant operation.

Reasons for the Decision

- 1. Admittance of the main request, auxiliary request 1A and auxiliary request 6A Article 13(2) RPBA 2020
- 1.1 Deletion of claims is an amendment

The patent proprietor argued that the deletion of dependent claims 5, 10 and 11 from the main request and auxiliary requests 1A and 6A was not an amendment to its case since it did not imply any change in the facts or legal scope of the case.

This is not persuasive.

This Board is of the opinion that the deletion of dependent claims 5, 10 and 11 with respect to the claims as granted or with respect to the sets of claims filed as auxiliary requests 1 and 6 submitted with the statement setting out the proprietor's grounds of appeal is to be considered an amendment to the appeal case by definition, in particular following the reasons provided in T 2091/18 (point 4. of the Reasons) in the light of decision J 14/19 (point 1.4 of the Reasons).

The question of whether the amendment fulfils some of the criteria listed in Article 13(1) RPBA 2020 and whether this may have an impact on the admittance of the amendment is, as pointed out by the Board in case T 2091/18, point 4.2 of the Reasons, separate from the

- 17 - T 0541/20

question of whether an amendment within the meaning of Article 13(2) RPBA 2020 has been made at all.

Therefore, the main request and auxiliary requests 1A and 6A are amendments to the patent proprietor's appeal case within the meaning of Article 13(2) RPBA 2020.

It is noted, however, that the decision as to whether or not to admit the amended main request or auxiliary requests 1A or 6A would have been the same even if the other line in the case law were followed, according to which deleting dependent claims is not an amendment to the parties' appeal case.

1.2 Applicability of the criteria of Article 13(1) RPBA 2020

The opponents argued that the *prima facie* allowability criteria were possibly relevant for the first stage of the convergence approach under Article 12(4) RPBA 2020, but not for the case at hand, which concerned the much more restrictive third stage of the convergence approach under Article 13(2) RPBA.

This is not a convincing argument.

This Board agrees with the well-established case law according to which, at the third level of the convergent approach, the boards of appeal are free to use the criteria set out in Article 13(1) RPBA 2020 when deciding, in the exercise of their discretion in accordance with Article 13(2) RPBA 2020, whether or not to admit an amendment made at this stage of the proceedings (see Case Law, 10th edition, V.A.4.2.4.5.1, penultimate paragraph, in particular T 2429/17, point 2.2 of the Reasons).

- 18 - T 0541/20

It is pointed out that this was explicitly foreseen in the explanatory remarks accompanying the RPBA 2020 when they were issued: "At the third level of the convergent approach, the Board may also rely on criteria applicable at the second level of the convergent approach, i.e. as set out in proposed new paragraph 1 of Article 13.".

It would be at odds with one of the declared aims of the RPBA 2020, namely "to increase efficiency, by reducing the number of issues to be treated", that a board could not consider the criterion of prima facie allowability when deciding on the admittance of a request which simplifies the case in hand in a substantial manner.

1.3 Prima facie allowability of the amendment - Article 13(1) RPBA 2020

Deleting dependent claims 5, 10 and 11 does not give rise to any new legal point to be discussed. The opponents did not contest this. The objections against claim 1 of each request remain the same since this claim has not been amended in any of the requests with regard to the corresponding requests previously filed with the patent proprietor's statement setting out the grounds of appeal.

Therefore, no additional burden on the opponents or the Board can be identified.

Furthermore, the amendments reduce the complexity of the case, since the objections relating to added subject-matter with regard to dependent claims 5, 10 - 19 - T 0541/20

and 11 as granted are moot once these claims have been deleted.

1.4 Reintroduction of a previously withdrawn request - Article 12(6) RPBA 2020

Article 12(6) RPBA 2020 states that "The Board shall not admit requests [...] which were no longer maintained, in the proceedings leading to the decision under appeal, unless the circumstances of the appeal case justify their admittance."

During the opposition proceedings, the patent proprietor filed auxiliary requests 1, 3, 5, 7 and 9, in which dependent claims 5, 10 and 11 were cancelled (see submission dated 1 April 2019).

During oral proceedings before the opposition division, the patent proprietor filed new auxiliary requests 1 and 2, in which dependent claims 5, 10 and 11 were present again.

At the end of the oral proceedings before the opposition division (in which auxiliary request 2 was considered to be allowable), the patent proprietor stated that it maintained the then main request (i.e. the patent as granted) and the newly filed auxiliary requests 1 and 2.

The opponents have argued that withdrawing the auxiliary requests filed on 1 April 2019 deprived the opposition division of the possibility of deciding on the matter of the deletion of claims 5, 10 and 11.

This is not persuasive.

- 20 - T 0541/20

The opponents are right that maintaining the then main request and auxiliary requests 1 and 2 filed during the oral proceedings before the opposition division can be regarded as a withdrawal of auxiliary requests 1 (corresponding to the main request of this decision) and 2 filed on 1 April 2019. Concerning the subsequent auxiliary requests 3 to 9, there is no evidence on file of them being withdrawn.

However, the opposition division's decision would not have had to contain any new legal point in case dependent claims 5, 10 and 11 had been deleted from a maintained request. The decision contains a full reasoning regarding the objections on the grounds of Article 100(c) EPC against dependent claims 5, 10 and 11 (see point 1.1 of the Reasons of the contested decision). Maintaining a request from which these claims had been deleted would have simply meant that this reasoning would not have been provided.

Therefore, deleting dependent claims 5, 10 and 11 from the requests filed after the notification of the summons for oral proceedings on appeal does not leave the Board without a decision to be revised in this respect. Moreover, the amendment implies that no decision is necessary with regard to the allowability of the deleted dependent claims.

Therefore, the circumstances of the appeal case justify the admittance of the main request and auxiliary requests 1A and 6A even if auxiliary request 1 filed on 1 April 2019 and comprising the same amendment, i.e. the deletion of dependent claims 5, 10 and 11, was not maintained in opposition proceedings (Article 12(6) RPBA 2020).

- 21 - T 0541/20

1.5 Foreseeable amendment

Since the amendments merely render the procedure more straightforward and do not imply any burden on the opponents or the Board, the question of whether they were foreseeable is not relevant for deciding on the admittance of the requests.

1.6 Conclusion

In view of the above, the Board considers that the prima facie allowability of the amendment and the absence of any related burden on the opponents and the Board are exceptional circumstances within the meaning of Article 13(2) RPBA 2020 which justify the admittance of the main request and auxiliary requests 1A and 6A.

- 2. Main request inventive step, Article 56 EPC
- 2.1 Disclosure of the closest prior art, D1

D1 discloses a dehumidification plant for granule material (see column 1, lines 5 to 7) (feature A) provided with a compressed air source (8) (feature B), control means (9) for the flow rate of the compressed air fed by said source (feature C), at least one heating chamber (12) of compressed air (i.e. air at "the operating pressure"; see column 3, lines 9 to 15) (feature D) which is in fluid communication with said flow rate control means (9) (feature E), at least one container (1) of granular material to be dehumidified (feature F), diffuser means (14) of compressed and hot air located inside said at least one container (1) (feature G), first temperature sensor means (18) arranged to detect the temperature of air leaving said at least one container (1) (feature H), at least one

- 22 - T 0541/20

programmable control unit (20) (feature I), and at least one flow rate adjusting group (11) (feature L).

This has been undisputed throughout the proceedings.

During the oral proceedings, the patent proprietor agreed with the interpretation of feature N ("located upstream of said at least one heating chamber") explained in the Board's communication according to Article 15(1) RPBA 2020.

Therefore, it is also undisputed that feature N is disclosed in D1 since the flow rate adjusting group 11 is located upstream of the heating chamber 12 (see Figure 1).

- 2.2 Distinguishing features, technical effect and objective technical problem
- 2.2.1 The subject-matter of claim 1 differs from D1 in that the plant is provided with:
 - J at least one compressed-air dehumidifying group
 - K located downstream of the flow rate control means,
 - wherein the at least one flow rate adjusting group is intended for dehumidified air coming from the at least one dehumidifying group
 - JO and wherein each dehumidifying group comprises:
 - J1 at least one pair of molecular sieve cartridge
 units,
 - J2 a valve distributing means having an inlet in fluid communication with the compressed air flow control means, and having two outlets in fluid communication with the at least one pair of sieve cartridge units and an outlet in communication with atmosphere, and

- 23 - T 0541/20

- J3 a pair of unidirectional flow regulator units for at least one pair of said sieve cartridge units,
- J4 which are in fluid communication with one another through a connection duct,
- J5 each unidirectional flow regulator unit being located downstream of at least one molecular sieve cartridge unit,
- J6 each flow regulator unit comprising a respective
 check valve;
- J7 and a respective flow regulator means connected in parallel with the check valve,
- J8 and wherein each check valve is arranged to allow air to controllably flow from a molecular sieve cartridge unit while operating as an adsorbing unit to said connection duct,
- yhereas air flow from one sieve cartridge unit to the other can occur through said flow regulator means thereby causing an air flow pressure drop.
- 2.2.2 The opposition division considered that two groups of distinguishing features could be defined ("feature 1": J, M, J0, J1-J9; "feature 2": K, N), and that they could be treated separately for inventive step since these two groups did not provide a synergistic effect.

However, the distinguishing features cannot be treated as two unrelated groups of features, which would allow a separate analysis of their inventive step for the following reasons. First, as is uncontested, "N" is not a distinguishing feature (see above). Second, all the distinguishing features established by the opposition division relate to the compressed-air dehumidifying group of feature J, in particular including features K and M, which, on the basis of their wording, already

- 24 - T 0541/20

require the presence of the dehumidifying group of feature J. The distinguishing features thus do not form different independent and unrelated groups which could be analysed separately.

2.2.3 The technical effect of providing a "compressed-air dehumidifying group" as in the distinguishing features is that compressed air contains less moisture.

In view of this technical effect, the Board agrees with the opponents in that the **objective** technical problem addressed by the distinguishing features is that of improving the desiccant capability of the dehumidifying air in a dehumidification plant. This is in line with the problem explained in paragraph [0013] of the patent specification and it was accepted as a valid problem by the patent proprietor during the oral proceedings before the Board.

- 2.3 Combination with D2
- 2.3.1 The patent proprietor argued in writing that D1 did not contain any motivation for further improving the drying capability of the drying gas, which was disclosed as being satisfactory in this document. The main aim of D1 was to keep costs low, and therefore the skilled person would not adopt the dehumidifier from D2 since it involved additional costs and complexity. Moreover, D2 did not discuss a system of the type in D1, and therefore the skilled person would not be aware of any drawback of the drying system from D1 which could motivate them to modify it.

The Board is not convinced by this argument.

The problem-solution approach does not require the closest prior art to contain an incentive in order to address the objective technical problem. Similarly, it does not require that a document to be combined discuss the drawbacks of the closest prior art. Even economic considerations would not hinder the skilled person according to the problem-solution approach since the aim of this analysis is to try to solve a **technical** problem. The essential questions are whether the second document under consideration discloses a way to solve the posed objective technical problem, and whether this solution would be combined in an obvious manner with the closest prior art.

2.3.2 The skilled person starting from D1 would consult D2 when trying to solve the objective technical problem since D2 also relates to a dehumidification plant for granular material (see e.g. abstract), as in D1.

D2 discloses that, in order to improve the desiccant capability of the dehumidifying air, a dehumidifying group for the compressed air (reference numerals 32 to 42) is provided, comprising:

- at least one pair of cartridge units (32, 33),
- a valve distributing means (37) having an inlet in fluid communication with the compressed air source (44),

and having two outlets (36) in fluid communication with said at least one pair of cartridge units (32, 33) and an outlet (45) in communication with atmosphere, and

- a pair of unidirectional flow regulator units (38, 39, 41) for at least one pair of the cartridge units (32, 33),

- 26 - T 0541/20

which are in fluid communication with one another through a connection duct (43), each unidirectional flow regulator unit (41) being located downstream of at least one cartridge unit (32, 33), each flow regulator unit (38, 39, 41) comprising a respective check valve (41); and a respective flow regulator means (38) connected in parallel with said check valve (41), and wherein each check valve (41) is arranged to allow air to controllably flow from a cartridge unit (32, 33) while operating as an adsorbing unit to said connection duct (43), and whereas air flow from one cartridge unit to the other can occur through said flow regulator means (38)

2.3.3 In its written submissions the patent proprietor argued for the first time that the dehumidifying material disclosed in D2 was not a molecular sieve material. This argument was not pursued any further during oral proceedings. As was explained in the communication according to Article 15(1) RPBA, the Board considered this new argument as a late-filed amendment to the case which was not to be admitted under Article 12(4) RPBA 2020 (see point 19.2.1(e) of the communication). In any case, and as was also explained in the same communication, selecting a molecular sieve material for the dehumidifying material is prima facie not inventive.

thereby causing an air flow pressure drop.

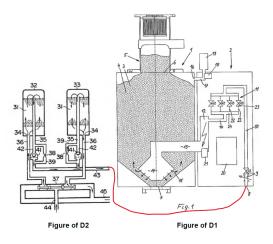
2.3.4 The patent proprietor argued in writing that the dehumidification plant in D2 required a self-balanced air pressure equilibrium that was incompatible with the air flow rate adjustment in D1, so that the implementation of the dual cartridge dryer from D2 in

- 27 - T 0541/20

the drying plant from D1 would require non-obvious substantial modifications.

This is not persuasive.

D2 teaches a dehumidifier for compressed air to the skilled person. The skilled person knows that the means to reduce the moisture in compressed air are in principle independent of the further use of the air in a particular plant. The skilled person looking for a solution to the posed technical problem would focus just on the dehumidifier in D2, which is the only means they need to solve this problem. The skilled person would recognise that the air dehumidifier in D2 can be used for reducing moisture in the compressed air supplied in D1, and would thus conclude that this dehumidifying group can be arranged at the highpressure side of the plant in D1, as the patent proprietor itself demonstrated on page 11 of its statement setting out the grounds of appeal (reproduced below).



The Board agrees with the opposition division that this is the only logical position in which the dehumidifying group could be arranged since it is the high-pressure side of the plant in D1 (i.e. upstream of the pressure

Т 0541/20

reduction valve 9) and the dehumidifier group in D2 is designed to work under high pressure.

- 28 -

2.3.5 D1 discloses an "inlet and pressure reducing valve" (9). This valve reduces the high pressure present in the "compressed air system" to the "operating pressure required for the drying apparatus" (see column 3, lines 12 to 15).

Figure 1 (see detail below) discloses the "inlet and pressure reducing valve" (9) as a double element comprising the usual graphical representations of an inlet valve and a pressure reducing valve (see the two elements indicated by each of the two lines starting at reference numeral 9).



The Board agrees with the patent proprietor that the skilled person combining the dehumidifying group in D2 with the dehumidification plant in D1 by arranging this dehumidifying group at the high-pressure side of the system in D1 would understand that the pressure-reducing capability of the valve (9) had to be kept in place downstream of the dehumidifying group in order to ensure "the operating pressure required for the drying apparatus" (see D1, column 3, lines 14 and 15).

However, D1 clearly and unambiguously discloses that the valve (9) comprises two functionalities (as an inlet valve and as a pressure reducing valve), and Figure 1 even shows these functionalities as being provided by two consecutive valves performing the two separate functions.

- 29 - T 0541/20

Furthermore, the skilled person understands that the inlet valve functionality is arranged where it is needed in D1, i.e. at the entrance of the dehumidification plant, where the plant is connected to the "compressed air system" (see column 3, lines 9 to 12); however, once the dehumidifying group in D2 has been arranged upstream of the pressure reducing valve (9) in D1 and connected to the "compressed air system" in order to address the objective technical problem, the dehumidification plant no longer has its inlet at the pressure reducing valve interposed between the dehumidifying group and the rest of the dehumidification plant, but at the entrance of the newly arranged dehumidifying group. Therefore, it is obvious to the skilled person that, once D1 and D2 are combined, the inlet valve functionality of the valve (9) in D1 has to be arranged at the **new entrance point** ("inlet") of the dehumidification plant, i.e. where the plant as a whole is connected to the "compressed air system", since this is the point at which the inlet valve capability is now required.

This is also rendered obvious by the content of Figure 1 of D1, which hints at the idea that each functionality can be provided by a separate element. Consequently, when implementing the combination of D1 and D2, the skilled person would arrange an inlet valve ("flow rate control means") at the entrance of the dehumidifying group, thus arriving at the distinguishing feature K.

In the light of the information in D1, this is the most straightforward way for the skilled person to ensure isolation of the dehumidification plant from the "compressed air system". D1 does not disclose anything

- 30 - T 0541/20

regarding performing this function by switching on and off the compressor supplying the compressed air, as proposed by the patent proprietor. Furthermore, the skilled person knows that this possibility is generally unsuitable for a "compressed air system" in which multiple working groups are simultaneously connected and operated.

- 2.4 Therefore, the subject-matter of claim 1 of the main request is rendered obvious by the combination of D1 and D2.
- 3. Auxiliary request 1A added subject-matter, Article 123(2) EPC
- 3.1 The patent proprietor argued that feature C1 had a basis in paragraphs [0020] and [0021] of the A2 publication (corresponding to the application as originally filed).

Feature C1 reads as follows:

wherein said flow rate control means (2, 31) comprise a control electric valve (2) directly controlled by an on/off switch (31) of the dehumidification plant so that, when the dehumidification plant is on, air can flow through valve (2), whereas air flow is cut off when the dehumidification plant is off

According to the patent proprietor, the term "dehumidifier" was used in the patent application as a synonym for "dehumidification plant". Therefore, paragraph [0021] of the A2 publication disclosed an on/off switch (31) of the dehumidification plant

- 31 - T 0541/20

controlling the control electric valve (2) as in feature C1.

3.2 The Board is not convinced of the alleged use of the term "dehumidifier" in the patent application as a synonym for "dehumidification plant".

The use of the term "dehumidifier" is not consistent throughout the application as originally filed.

At first, the patent application discusses prior art which does not comprise a dehumidifying group (see column 1, lines 29 to 54). Afterwards, there is a short discussion of the possibility of providing dehumidifying groups. In this last particular context, the optional dehumidifying group is referred to as a "dehumidifier" (see column 1, lines 54 to 56).

Immediately afterwards (paragraph [0008]),
"conventional small dehumidifiers" and "conventional
dehumidifiers" are discussed in which compressed air or
air fed by a blower is used for drying plastic
materials. Even if it is true that in this paragraph
the term "dehumidifier" refers to the whole
dehumidification plant, it is not specified that the
prior art discussed in that paragraph comprises a
dehumidifying group, contrary to the invention.
Similarly, paragraph [0009] discusses a prior-art
system with no dehumidifying group and refers to the
whole plant as "conventional compressed-air
dehumidifier".

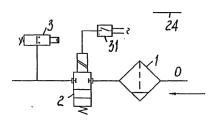
However, as soon as the patent application discusses the invention, this is referred to as a "compressed-air dehumidification **plant**" (see column 2, line 56). The disclosed invention is based on the presence of a

- 32 - T 0541/20

dehumidifying group which is first introduced as a "molecular sieve cartridge" (see column 3, line 18).

The detailed description of the embodiment again uses the term "compressed-air dehumidification plant" when referring to the whole system (see column 4, lines 4 and 5), and discloses that a "first control electrovalve" is arranged "which allows compressed air to pass through it upon starting the dehumidification plant and to stop it should the electric current supply be cut off" (see column 4, lines 14 to 17) (emphasis added).

Paragraph [0021] is the first point in the detailed description at which the term "dehumidifier" is used. The only information in this paragraph is that the "dehumidifier" has an on/off switch (31); however, the schematic Figure 2 (see detail below), which is the only figure disclosing the on/off switch (31), merely shows an isolated switch (31), it being impossible to ascertain to which other components the switch is connected or where it belongs.



The only other point at which the term "dehumidifier" is used in the description is paragraph [0029] of the A2 publication, in whichit is disclosed that "The pressure drop is equal to about the operation pressure of the dehumidifier, i. e. 6-8 bar". Since the whole dehumidification plant cannot work at the indicated pressure of 6 to 8 bar, and since this paragraph deals with the mode of operation of the dehumidifying group,

- 33 - T 0541/20

the skilled person understands that, in the context of the invention, the term "dehumidifier" is used to refer to the dehumidifying group.

The fact that claim 1 as originally filed defined a "dehumidifying group" and not a "dehumidifier" does not contradict this finding, since there is no obligation to refer to a feature in a consistent way throughout a patent application.

The reference to a "dehumidifier" in the title of the patent application ("Adsorption dehumifier [sic] for granules of plastic materials") would not be considered conclusive by the skilled person in view of the inconsistent use of the term throughout the patent application and in view of the well-established case law, according to which the title on the cover sheet and the abstract cannot be used to interpret the content of the application for the purposes of Article 123(2) EPC (see Case Law, 10th edition, II.E.1.2.2, in particular T 1437/07, point 3.1 of the Reasons).

Finally, the absence of a reference numeral for different terms in a patent application cannot generally support both terms being identical.

- 3.3 Consequently, the application as originally filed does not clearly and unambiguously disclose that the on/off switch disclosed in paragraph [0021] as belonging to "the dehumidifier" actually belongs to the dehumidification plant.
- In view of the above, the reader of the A2 publication learns from paragraph [0020] that the "control electrovalve 2" is open when the dehumidification **plant** is started (which implies electric current supply) and is

- 34 - T 0541/20

closed when an undefined electric current supply is cut off.

However, they would not understand that the on/off switch (31) disclosed in paragraph [0021] starts the dehumidification plant as in the previous paragraph, but that this switch actually belongs to the dehumidifying **group**. The reader learns from this that the "control electric valve 2" is (also) controlled by the "on/off switch" belonging to the dehumidifier, such that its operation is linked to the operation of the dehumidifier.

Neither of the two paragraphs discloses an "on/off switch" of the dehumidification plant as defined in feature C1. The only "on/off switch" originally disclosed belongs to the dehumidifier and cannot control the plant.

Furthermore, even if the "control electro-valve" is controlled such that it is opened or closed on the basis of the start of the plant or on the basis of the cutting off of the electric supply, it cannot be assumed that this is "directly" done by a switch controlling the electric supply of the plant. In fact, the wording of feature C1 means that other interpretations are still possible, such as the fact that the "on/off switch" belongs to elements of the plant other than the dehumidifier, which is not supported by the original disclosure either.

3.5 In view of the above, feature C1 of claim 1 extends beyond the original disclosure in an unallowable manner (Article 123(2) EPC).

- 35 - T 0541/20

- 4. New auxiliary request 1A admittance, Article 13(2) RPBA 2020
- "New auxiliary request 1A" was filed during the oral proceedings on appeal. Its admittance is therefore at the discretion of the Board according to Article 13(2) RPBA 2020, which states that amendments shall in principle not be taken into account unless there are exceptional circumstances, which have been justified with cogent reasons by the party concerned. The Board can use the criteria listed under Article 13(1) RPBA 2020 when taking a decision in this respect (see point 1.2 above).
- 4.2 The opposition division found that feature C1 of claim 1 of auxiliary request 1 did not comply with Article 123(2) EPC.

Claim 1 of auxiliary request 1A on appeal is identical to claim 1 of auxiliary request 1 in the contested decision, and also to claim 1 of auxiliary request 1 filed with the statement setting out the grounds of appeal.

The patent proprietor could therefore foresee that the same objection raised by the opposition division could be considered convincing by the Board when revising the contested decision. This is exactly what happened, and the Board issued a preliminary opinion according to Article 15(1) RPBA 2020 confirming this particular objection.

4.3 The patent proprietor was thus even positively aware of the Board's preliminary opinion after having received the communication issued on 18 November 2022 as an annex to the summons, but nevertheless it only filed

- 36 - T 0541/20

"New auxiliary request 1", which was intended to overcome the particular objection related to feature C1, at the last possible moment, namely during oral proceedings before the Board.

- 4.4 Besides the auxiliary request being filed late without cogent reasons, the amendments in feature C1' are not based on claims as granted and/or originally filed, but on the description. Therefore, they require an examination of compliance with Article 84 EPC and may involve an extra burden when examining the requirements of Article 123(2) EPC.
- 4.5 Furthermore, they introduce *prima facie* a clarity issue (Article 84 EPC), since, according to the patent proprietor's interpretation, the same feature is now defined as a "dehumidifier" in feature C1' and a "dehumidification plant" in feature C2.
- In view of the above, "New auxiliary request 1A" is not admitted into the appeal proceedings for being filed late and *prima facie* unallowable (Article 13(2) RPBA 2020).
- 5. Auxiliary request 6A inventive step, Article 56 EPC
- 5.1 Features from claim 1 as granted

Amended claim 1 comprises all the features of claim 1 as granted. Therefore, the same considerations as in point 2. above apply here.

- 5.2 Added feature Q
- 5.2.1 Disclosure of D1

- 37 - T 0541/20

The opponents argued that a pair of "flow regulators" as defined in feature Q were disclosed in D1. According to the opponents' interpretation, in a situation in which one of the solenoid valves (23) was open, this open solenoid valve would correspond to the defined flow regulator "being set at a predetermined air flow value"; consequently, the regulation of the other solenoid valves (23) would disclose the further defined "adjustable" air flow regulator.

The Board is not convinced by this argument.

The feature "a pair of flow regulators" has to be read within the context of feature Q as a whole. Feature Q reads as follows:

wherein each flow rate adjusting group (22) comprises, in sequence, reducing pressure means (9), a pair of air flow regulators (10, 11) connected in parallel downstream of said reducing pressure means (9), one flow regulator (10) of said pair of air flow regulators (10, 11) being set at a predetermined air flow value, whereas another flow regulator (11) of said pair of air flow regulators (10, 11) is adjustable, and flowmeter means (12, 13) arranged to measure air flow rate from said flow regulators (10, 11)

Feature Q defines an air flow control system based on a first flow regulator being **set** at a predetermined air flow value and a second air flow regulator which is **adjustable**. This implies that the first flow regulator is set at a given value **independently** of the further adjustment of the second air flow regulator.

- 38 - T 0541/20

Contrary to this, D1 discloses a control system (flow rate setting means 11) based on four on/off solenoid valves (23) which can be opened or closed by a processor (20) in order to control the air flow (see column 3, line 64 to column 4, line 17). All four solenoid valves (23) of D1 are operated together in order to adjust the flow to a particular desired value. Therefore, all four solenoid valves are regarded by the skilled person as a single adjustable air flow regulator. It is an artificial interpretation to consider the work of a single solenoid valve in isolation when the requirements of the system determine that more than two solenoid valves have to be open in order to read a "first flow regulator" which has been set at a specific value while the other solenoid valves have to be adjusted. It is at odds with the control of the four valves in D1, in which, in use, all four on/ off solenoid valves (23) are constantly adjusted by the processor (20) without any of them being set at a given value independently of this adjustment.

Therefore, the feature "one flow regulator of said pair of air flow regulators being set at a predetermined air flow value" is missing from D1 in any case.

5.2.2 Feature "flowmeter means"

(a) Related objective technical problem

The opponents further argued that the distinguishing feature "flowmeter means arranged to measure air flow rate from said flow regulators" could not be considered as solving the problem of improving control of the air flow rate provided by the flow regulators since this was not disclosed either in the patent specification or in the claim. According to paragraphs [0034] and [0035]

- 39 - T 0541/20

of the contested patent, the flowmeter means just had the function of measuring the air flow rate to verify it.

This is not persuasive either.

Verifying an air flow rate in a position downstream of the air flow regulators must have a technical purpose. The skilled person understands that verifying is not an aim in itself, but that the data obtained in the verification step will eventually be used as a control parameter. Within the context of feature Q, the only sensible technical interpretation is that the air flow rate measurement by the flowmeter means will play some role in controlling the air flow regulators, even if the kind of control is not specified. The same applies to the disclosure in paragraphs [0034] and [0035] of the patent specification, in which the manual regulation of the (second) air flow regulator (11) (see column 5, lines 52 and 53) renders the link between this operation and the operator reading the flowmeter (see column 6, lines 1 to 3) even more evident.

Therefore, the objective technical problem addressed by the distinguishing feature "flowmeter means" is that of improving control of the air flow rate provided by the flow regulators.

(b) Combination with common general knowledge

The problem associated with the distinguishing feature "flowmeter means" is unrelated to the objective technical problem linked to the distinguishing features of claim 1 as granted (see point 2.2.3 above). Therefore, it is possible to analyse the inventive

- 40 - T 0541/20

character of this distinguishing feature separately from the other distinguishing features.

The opponents argued that it was well known to provide a flowmeter for measuring the air flow rate, and that this belonged to the common general knowledge of the skilled person.

The Board agrees that this forms part of the common general knowledge, but the question is not whether it was known to provide a flowmeter for measuring an air flow rate. The question which has to be elucidated is whether it would be obvious, starting from D1, to provide a flowmeter in the specific position defined in feature Q for solving the objective technical problem of adjusting the air flow rate provided by the flow regulators. More particularly, the question is whether it would be obvious to replace or supplement the control system in D1, in which the flow rate adjusting group (11), which uses all four solenoid valves jointly (see below), is automatically adjusted by means of the temperature sensor (18) at the outlet of the hopper by a system using the air flow rate information.

The Board cannot see any reason for the skilled person to do this. The opponent's argument that the patent specification was proof of compatibility of the automatic control in D1 with a control based on the reading of the flowmeter means cannot be accepted since the patent specification does not form part of the prior art, let alone the common general knowledge.

The reference to a starting stage of the dehumidification plant in D1 when the disclosed automatic control based on the reading of the temperature sensor (18) would still not work properly

- 41 - T 0541/20

in the absence of reliable data is mere speculation which lacks any basis in D1. Therefore, it cannot justify why and how the skilled person would adopt a flowmeter means for controlling the flow rate setting means (11) in some undefined way at that stage.

Moreover, even if a flowmeter is used to verify whether the flow downstream of the flow regulator is in accordance with the setting of the flow regulator, a possible adjustment of the flow regulator according to D1 requires all four valves to be operable as an ensemble (the flow is basically set as a four-bit setting). Operation of the flow regulator control in D1 is thus at odds with feature Q, which requires two flow regulators in parallel, one of which can be set to a predetermined air flow value while the other is adjustable. For this reason too, the combination of the teaching of D1 and D2 does not result in subject-matter falling under the definition of claim 1 of auxiliary request 6A.

5.3 Consequently, the subject-matter of claim 1 of auxiliary request 6A involves an inventive step (Article 56 EPC).

6. Description

Both parties agreed that the amendments to the claims of auxiliary request 6A do not require the patent specification to be adapted.

7. Article 101(3)(a) EPC

Since, taking into account the amendments made by the patent proprietor to auxiliary request 6A, the requirements of the Convention are met, the patent can

- 42 - T 0541/20

be maintained as amended according to Article 101(3)(a) EPC.

Order

For these reasons it is decided that:

- 1. The decision under appeal is set aside.
- 2. The case is remitted to the opposition division with the order to maintain the patent as amended in the following version:
 - claims 1 to 12 according to auxiliary request 6A filed on 9 January 2023,
 - patent specification as granted (columns 1 to 7)
 and
 - figures 1 to 7 as granted.

The Registrar:

The Chairman:



C. Spira C. Herberhold

Decision electronically authenticated