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Datasheet for the decision of 12 September 2025

Case Number: T 0258/24 - 3.2.01

Application Number: 11808642.0

Publication Number: 2654470

IPC: A24F47/00, A61M15/06, A61M11/04, A61M15/00, A61M16/00

Language of the proceedings: EN

Title of invention:
AN AEROSOL GENERATING SYSTEM HAVING MEANS FOR HANDLING CONSUMPTION OF A LIQUID SUBSTRATE

Patent Proprietor:
Philip Morris Products S.A.

Opponents:
1.Fontem Ventures B.V.
2.JT International S.A.

Headword:

Relevant legal provisions:
EPC Art. 100(a), 56

Keyword:
Auxiliary requests 1, 8 and 9 - Inventive step - (no)

Decisions cited:
T 2258/19

Catchword:

Europäisches Patentamt
European Patent Office
Office européen des brevets

Beschwerdekammern

Boards of Appeal

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Case Number: T 0258/24 - 3.2.01

D E C I S I O N
of Technical Board of Appeal 3.2.01
of 12 September 2025

Respondent: (Patent Proprietor)	Philip Morris Products S.A. Quai Jeanrenaud 3 2000 Neuchâtel (CH)
Representative:	HGF HGF Limited 1 City Walk Leeds LS11 9DX (GB)
Appellant: (Opponent 1)	Fontem Ventures B.V. Radarweg 60 1043 NT Amsterdam (NL)
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Party as of right: (Opponent 2)	JT International S.A. 8 rue Kazem Radjavi 1202 Geneva (CH)
Representative:	Gill Jennings & Every LLP The Broadgate Tower 20 Primrose Street London EC2A 2ES (GB)
Decision under appeal:	**Interlocutory decision of the Opposition Division of the European Patent Office posted on 21 December 2023 concerning maintenance of the European Patent No. 2654470 in amended form.**

Composition of the Board:

Chairman	G. Pricolo
Members:	S. Mangin
	O. Loizou

Summary of Facts and Submissions

I. The appeals were filed by the appellant (proprietor) and appellant (opponent) against the interlocutory decision of the opposition division finding that, on the basis of the auxiliary request 1, the patent in suit (hereinafter "the patent") met the requirements of the EPC.

II. The opposition division held that the subject-matter of claim 1 of auxiliary request 1 involved an inventive step starting from:
-D3 (US 6,234,167 Bl)
-D5 (US 2002/0079309 Al), and
-D6 (WO 2007/078273 Al).

III. Oral proceedings were held before the Board on 12 September 2025.

IV. The appellant (opponent) requested that the decision under appeal be set aside and the patent be revoked.

During oral proceedings, the patent proprietor withdrew their appeal as well as auxiliary requests 2-7.
The respondent (patent proprietor) requested that the appeal be dismissed and the patent be maintained in amended form on the basis of auxiliary request 1 (claims as maintained by the opposition division) or one of the auxiliary requests 8-9 filed with letter of 29 August 2025.

Since the patent proprietor withdrew their appeal as a consequence thereof their appeal fee is to be reimbursed at 25% under Rule 103(4)(a) EPC).

V. The first auxiliary request (patent as maintained) comprises two independent claims:

Independent claim 1 with the feature numbering used in the appealed decision reads as follows:
(1.1) An electrically operated aerosol generating system (100) for receiving an aerosol-forming substrate (115), the system comprising:
(1.2) a liquid storage portion (113) for storing aerosol-forming substrate;
(1.3) an electric heater (119) comprising at least one heating element for heating the liquid aerosol-forming substrate; and
(1.4) electric circuitry (109) configured to monitor activation of the electric heater
characterised in that
(1.5_1) the electric circuitry is further configured to estimate an amount of liquid aerosol-forming substrate remaining in the liquid storage portion
(1.5_2) based on the monitored activation,
(1.6) further comprising a capillary wick (117) for conveying the liquid aerosol-forming substrate from the liquid storage portion to the electric heater".

Independent claim 3 corresponds to independent claim 1 with instead of feature (1.6), feature (3.6)
"wherein the electric circuitry (109) is configured to monitor activation of the electric heater (119) by monitoring a temperature or resistance of the heating element over time to estimate a consumed amount of aerosol-forming substrate".

VI. The eighth auxiliary request has only one independent claim 1 being identical to claim 3 of auxiliary request 1.

VII. The ninth auxiliary request has also only one independent claim 1 corresponding to claim 3 of auxiliary request 1 with the deletion of the alternative "by monitoring a temperature of the heating element".

VIII. This decision further refers to:

D7: US 6,260,549 B1

Reasons for the Decision

1. Auxiliary request 9

Irrespective of the question of admissibility of auxiliary request 9, the subject-matter of claim 1 does not involve an inventive step starting from D5.

1.1 The appellant (opponent) argued that D5 (figures 1 and 2) generally concerned a temperature and flow rate controlled capillary aerosol generator (CAG).

D5 disclosed features (1.1) to (1.3) of claim 1 and with reference to figure 3 also taught that, while selectively heating specific portions of an aerosol forming chamber (e.g. zone Z2, tube 616) and its fluid contents (cf. D5, Fig. 3), at the same time, a parameter such as resistance of the heater element heating the tube 616 could be measured to monitor the temperature of the tube 616, and the power used to heat the tube 616 could be measured to determine the mass flow rate of fluid flowing through the capillary aerosol generator.

In detail, a respective control method was described in D5 with reference to figure 6:
- In step 702, the temperature of the heating element heating zone Z2 was measured via resistance measurement. That is, the controller in D5 was configured to monitor activation of the electric heater (feature (1.4)).
- In step 706, the controller then compared the measured temperature value in zone Z2 (T(Z2)), and adjusted the respective voltage applied (V(Z2)), and therefore the power applied to zone Z2 (P(Z2)), to achieve a measured, target resistance in zone Z2 (r(Z2)), and therefore a target temperature in zone Z2 (T(Z2)).
- In step 708, the controller then measured P(Z2) which was needed to maintain T(Z2) at (or acceptably near) the target value, which gave a measure of the mass flow rate M of fluid flowing through the CAG.
- At step 714, the controller summed or integrated mass flow rate over time to determine the total mass (m) delivered during the cycle.

Therefore, D5 disclosed that:
(1.5_1) "the electric circuitry [controller 608] is further configured to estimate an amount of liquid aerosol-forming substrate ~~remaining in the liquid storage portion~~ consumed in one heating cycle
(1.5_2) based on the monitored activation.
(3.6) wherein the electric circuitry (109) is configured to monitor activation of the electric heater (119) by monitoring a resistance of the heating element over time to estimate a consumed amount of aerosol-forming substrate".

1.1.1 Consequently, D5 differed from claim 1 at most in that D5 did not explicitly teach:

"estimating an amount of liquid aerosol-forming substrate remaining in the liquid storage portion based on the monitored activation",
but
"estimating an amount of liquid aerosol-forming substrate ~~remaining in the liquid storage portion~~ consumed in one heating cycle based on the monitored activation".

In other words, the device according to D5 was configured, based on monitoring an activation of a heating element, to estimate an amount of liquid, namely the amount of liquid consumed per operation.

1.1.2 In view of the skilled person's knowledge, starting from the teaching of D5, there were no other possibilities when estimating the remaining amount than subtracting a consumed amount from an initial amount. To estimate the remaining amount, it was necessary and sufficient to estimate or calculate an amount consumed per heating cycle (and how to do this was described in detail in D5), and then to subtract this amount from the initial amount. Therefore, starting from D5 in combination with general knowledge, the skilled person would arrive at the subject-matter of claim 1 without an inventive step.
Such a procedure was generally described in D3 (patent of the same inventor as D5, using a quite similar device) for example, in column 7, line 51-56:
"The display device 65 may display, for example, a number of times that the aerosol generator 21 has been operated, e.g., 1 or 2 or 3, or a number of operations remaining, which may be based on, for example, the size of the source 37 of material and the amount of material dispensed each time that the valve 35 is opened and closed".

1.1.3 In any case, claim 1 lacked an inventive step in view of D5 in combination with D7.

The technical effect of the above identified difference was to enable the user to recognise when the liquid storage portion became empty (i.e., when the liquid level fell below a pre-defined threshold).

The objective technical problem was that of enhancing user experience (e.g., by allowing indicating necessity to refill).

1.1.4 Starting from D5 and confronted with the objective technical problem, the skilled person would consider document D7 because it was directed to "inhaler for dispensing medication for the respiratory system" (cf. abstract), just as document D5 (reference was made to paragraph [0004]).

In view of the objective technical problem, it was irrelevant whether D7 included a heater (or an alternative aerosol generating means), and how exactly the device was operated.

Document D7 mentioned common problems that were encountered with respective inhalers when a remaining liquid level was not known (cf. reference was made to D7, column 6, lines 35-41):

"Patients often run out of inhaler medication because they can not estimate how much medication remains in the canister. This is because they depend on inaccurate methods of estimation, such as shaking the inhalers and listening to the contents, estimating the weight of the canisters, and observing the size of the emissions".

The same problem would inevitably come up for a user of the device according to D5 – irrespective of whether this problem was explicitly mentioned in D5. To solve this problem, document D7 taught a simple solution, namely, to indicate the remaining doses (cf. column 11, lines 42-48; column 12, lines 40-44):

"After each activation, a digital counter shows the number of inhalations remaining in the canister 103".

"In this manner the circuitry may indicate doses used, or doses remaining".

And D7 further taught how these remaining doses could easily be estimated or calculated (cf. column 9, lines 25-30), namely by subtracting the doses per use from the initial amount that is known:

"Canisters are manufactured with a known quantity of medication and the quantity that is dispensed during each use is also known. Therefore, it is a simple matter to calculate the remaining medication dosage".

Thus, starting from D5 and confronted with the objective technical problem, the skilled person would be prompted to consider D7, which directly hints to the solution according to claim 1, which is thus obvious and not inventive.

1.2 The respondent (patent proprietor) argued that the subject-matter of claim 1 involved an inventive step starting from D5 in combination with D7.

D5 failed to disclose the characterising portion of claim 1, at least (reference was made to 11.4.1 of the appealed decision).

The skilled person would not arrive at the subject-matter of claim 1 starting from D5 for at least the reasons provided in section 11.4.2 of the appealed decision. In particular, the devices of D5 and D7 operated entirely differently and had very different structures (the device of D7 did not even have a heater). Hence, the skilled person would not combine the teaching of D7 with the device of D5.

Further, starting from the device of D5 the skilled person would not even consider providing an estimate of the remaining amount of liquid.
D5 was a single use device in view of its construction and as concluded in decision T 2258/19 (point 5.1.5), such that the consumer had no interest in knowing the remaining amount of substance remaining in the liquid storage portion.
Furthermore, D5 supplied liquid at a constant pressure (see paragraph [0027]) and had a heating control loop to ensure that a precise amount of aerosol was delivered to a user in a specific dose. D5 was entirely concerned with what was delivered from its device.
D5 had no interest in what was delivered in previous doses or in future doses. The information about what had occurred in past doses was irrelevant. Hence, the skilled person would not consider changing the device of D5 to attempt to arrive at the subject-matter of claim 1.

Furthermore, even if the skilled person would consider D7, D7 did not give any information on how to modify the hardware of D5 to calculate the remaining substrate

in the liquid storage portion. D7 only contained a digital counter.

1.3 The Board is not convinced by the arguments of the respondent (patent proprietor).

As mentioned by the appellant (opponent) the subject-matter of claim 1 only differs from D5 by feature (1.5_1) *"the electric circuitry is further configured to estimate an amount of liquid aerosol-forming substrate remaining in the liquid storage portion".*

Indeed, in D5 (figure 6), the amount of liquid consumed in an operation is calculated, but not the remaining amount.

Estimating the remaining substrate in the liquid storage portion enables the user to know when the device will be out of order and to anticipate the necessary steps to be taken to avoid having unpleasant experience due to the lack of substrate.

Based on this difference and associated effect, the problem defined by the appellant (opponent) of enhancing user experience is correct.

The aerosol of D7, while not comprising a heater, lies in the same field as D5 and would be considered by the skilled person. As mentioned by the appellant (opponent), D7 (column 6, lines 35-41) discloses the problem of running out of inhaler medication because of a wrong estimation by the user of the remaining amount.

D7 (column 9, lines 25-31) provides a solution to this issue, namely by simply calculating the remaining amount of medication i.e. subtracting from the known

amount of medication in the reservoir the quantity dispensed during each use.

D5 supplies a precise amount of aerosol to the user in a specific dose. However, the user is still interested in knowing the remaining amount of aerosol to anticipate the measures to be taken when the aerosol generator is close to being empty.
The fact that in D5, the aerosol generator may be a single use device does not change the fact that the user is still interested in knowing when a new device is to be used to anticipate the use or the purchase of a new device.

Finally, modifying the control system of D5 such as to subtract the amount consumed to the known amount of aerosol substrate in the reservoir cannot be considered as inventive. The necessary changes in the program of the control system are minimal and straight forward.

2. Auxiliary requests 1 and 8

Claim 3 of auxiliary request 1 and claim 1 of auxiliary request 8 comprise the alternative defined in claim 1 of auxiliary request 9 which is not inventive as explained above. Therefore, the subject-matter of claim 3 of auxiliary request 1 and claim 1 of auxiliary request 8 does not involve an inventive step starting from D5 in combination with D7 for the same reasons as for claim 1 of auxiliary request 9.

3. To conclude none of the auxiliary requests 1, 8 and 9 comply with the requirements of the EPC.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The patent is revoked.

The Registrar: The Chairman:

H. Jenney G. Pricolo

Decision electronically authenticated