

Examiners' Report – Paper C 2026

Purpose and extent of the examiners' report

The examination of 2026 was the last exam before the switch to the modular EQE. The purpose of Paper C is to assess the ability to draft a notice of opposition to a European patent, see the Implementing provisions to the Regulation on the European qualifying examination (IPREE) 2019, Rule 25(1).

This requires that candidates develop and present arguments showing why an invention in a patent does not comply with the requirements of the EPC. Thus, this examiners' report is seen to be of use to enable candidates to prepare for future examinations (Regulation on the European qualifying examination for professional representatives, Article 6 (6)).

Paper C was held online and split in two parts. Technical aspects of the online exam are not part of this report.

1. Introduction

This year's paper involved discussion of novelty, inventive step, and added subject-matter, as well as considerations regarding claims comprising both technical and non-technical features (Guidelines G-VII, 5.4). Attacks based on insufficiency of disclosure (Article 100(b) EPC) are not accepted for Paper C (IPREE 2019, Rule 25(5)). Each part of the examination required dealing with the documents at hand within the allotted time.

The examination documents for part 1 contain an opponent's letter, Annex 1 (A1, the patent to be opposed) and Annexes 2 to 5 (A2 - A5). Only claims 1 to 3 of A1 are available. The opponent's letter provides information on A1, the priority document and its content relative to A1. Independent claim 1 relates to a displaceable device for purifying air. Dependent claim 2 further defines the means for displacing the device. Claim 3 contains details regarding the composition of the sound insulation material as well as regarding a navigation unit of the device.

In part 2 of the examination, the complete version of A1 is made available. A second opponent's letter gives information regarding the newly available parts of A1 and the relationship they have to the priority document. Furthermore, the opponent's letter requests the representative to cover any preferred options of the claims and mentions that claims 7 and 8 were added during examination. The examination documents for part 2 also contain, A2 to A5 of part 1 and additionally Annexes 6 and 7 (A6, A7). Independent claim 4 relates to a method for reducing dust concentration in the air of an indoor space. Independent claim 5 and dependent claim 6 relate to a computer program. Independent claims 7 and 8 are each directed to an application program and deal with commanding an air purifier to recharge.

2. General comments

All the information necessary to oppose the patent is found in the examination documents, which include A1 and the opponent's letters. Candidates shall not use any special knowledge they may have of the technical field of the invention (IPREE 2019, Rule 22 (3)).

The examination documents comprise definitions of technical nature related to claim features, aspects of the related technical effects and objective technical problems as well as motivations and hints. Accordingly, marks were awarded for use of this information and argumentation based on it.

In candidate's answers, the use of information requires citation of at least one specific reference in the relevant document (e.g. paragraph, line, claim, figure, as appropriate).
If prior art uses different terminology to the feature in a claim, a full reasoning requires an explanation why the meaning is the same, on the basis of the information provided in the Annexes.

For example, in this year's paper, the vacuum cleaner of A3 falls within the definition of "*device for purifying air*" in claim 2 of A1. This was to be established on the basis of A1[0002], which defines a device for purifying air as "*any device that draws in polluted air and discharges clean air by removing pollutants such as... dust ... from the drawn-in air*". A3 discloses that air containing dust is drawn in via the suction port (A3[0008]) and that the clean air is discharged through an air outlet (A3[0010]). Since dust is a pollutant within the meaning of A1[0002], the device of A3 is a "device for purifying air" in the sense of A1[0002].

For inventive step attacks, the candidate's answers were given marks within the structure of the problem-solution approach (see the EPO Guidelines (GL) G-VII, 5), even if an answer did not follow it.

The problem-solution approach requires *identification of the closest prior art* for each inventive step attack. A substantiated argumentation of the choice includes a reason why some prior art is chosen as the most promising starting point to argue lack of inventive step (which is not necessarily the prior art with "the highest number of common technical features").

For example, in this year's paper a possible motivation for choosing A6 as the closest prior art against claim 4 is that A6 is the only prior art disclosing a method aimed at reducing dust concentration in an indoor space using a moving air purifier and therefore relates to the same purpose as the claimed invention.

The argumentation against inventive step should clearly identify the distinguishing features of the claim compared to the closest prior art. The *technical effect* associated to this difference is an advantage which has to be identified in the patent to be opposed, and the appropriate basis must be cited.

The *objective technical* problem to be solved has to be established based on the technical effect. However, the objective technical problem must not contain pointers towards the claimed solution, so, typically, the objective technical problem and the technical effect are not identical.

A comprehensive reasoning for lack of inventive step includes a substantiated argumentation *why another item of prior art would be considered*, e.g. by pointing to a specific part of another document that is related to the same purpose or the same objective technical problem.

For example, in this year's paper, the argumentation against inventive step of claim 4 involves the consultation of A5. A substantiated argument why A5 should be consulted requires citing references in A5.

The reasoning for lack of inventive step should also include a substantiated argumentation as to "*how and why*" a person skilled in the art arrives at the subject-matter of a claim when combining the teaching of items of prior art. A generic statement such as "*By combining A6 and A5 a person skilled in the art arrives at claim 4*" does not qualify as a substantiated reasoning.

In the absence of the attacks set out in the "possible solution", alternative approaches regarding inventive step may be awarded marks according to the strength of argumentation provided, in particular for motivating why and how certain modifications would be made.

Also, if an attack for an antecedent claim has not been awarded marks, the continuation of that attack in a dependent claim was still considered depending on its merits.

Marks for attacks on claims 1 to 3 were only awarded if the respective attack was made in part 1 of the examination.

3. Notice of opposition

For the opposition to be admissible it is required that the patent to be opposed as well as the opponent are identified. Payment of the opposition fee has to be indicated. It should be borne in mind that the intended opponent is the company and not the person signing the opponent's letter.

All relevant information, a statement of the extent to which the European patent is opposed, opposition grounds, evidence, facts and arguments have to be in the answers. To be awarded marks, text submitted as part of a candidate's answer has to be clearly related to a line of argumentation (this is usually not the case for feature tables or copied claim text pasted arbitrarily with a few features identified).

3.1. General (effective dates of the claims and prior art) (10 marks)

For part 1 of the exam the information provided in the first letter from the opponent was to be used to establish the effective dates of claims 1 to 3 as well as the status of A2 to A5 as prior art with respect to these claims. For part 2 of the exam the information provided in the second letter from the opponent was to be used to establish the effective dates of claims 4 to 8 as well as the status of A2 to A7 as prior art with respect to these claims.

In part 1, candidates were expected to recognise that A2 contains information indicating that a public prior use (A2a) by sale of the product "Sondy Purifier Cool" occurred before the priority date, and that this prior use is prior art under Article 54(2) EPC for all claims. For guidance on how to substantiate a prior use see GL G-IV, 7.2.

In part 2, A7 indicates a "Last update" date of 1 July 2019, which is before the effective dates of all claims; candidates were expected to recognize that this date is to be accepted as face value as the correct date (GL G-IV, 7.5.1) and thus to treat A7 as prior art under Article 54(2) EPC for all claims.

3.2. Claim 1 (16 marks)

An inventive step objection was expected, based on the public prior use (A2a) as the closest prior art and then arguing for lack of inventive step by combining A2a with A4, which discloses the distinguishing feature of a coating of the casing with a sound insulation material that provides suitability for noise-sensitive environments such as in the healthcare sector.

A4 is not a convincing starting point. Claim 1 requires that the casing comprises both a means for measuring air quality and a means for purifying air, whereas A4 discloses a system in which these functions are separated (air conditioning units 410 and pet robot 420 carrying the sensors) and A4[0012] explicitly teaches away from integrating the dust sensor and the air conditioning units into a same device.

3.3. Claim 2 (8 marks)

A novelty attack based on A3 was expected. A complete reasoning required establishing that the vacuum cleaner of A3 is a "device for purifying air" as defined in A1 and that A3 discloses the additional features of claim 2.

3.4. Claim 3 (20 marks)

For claim 3, a continuation of the novelty attack on claim 2 based on A3 in the form of an inventive step attack was expected.

A3 represents the only suitable starting point, as it is the only document disclosing a wheel-driven autonomous device for purifying air. Compared to A3, the subject-matter of claim 3 differs by the specific range of barium sulfate in the MLV and by the provision of an optical navigation unit. The expected reasoning requires a partial problems approach which should include a statement on the functional independence of the two differences. One partial problem is directed to improving the sound/thermal trade-off (solved by A4) and a second partial problem directed to improving navigation accuracy and detection of smaller obstacles (solved by A5).

3.5. Claim 4 (16 marks)

For claim 4, an inventive step attack starting from A6 as the closest prior art was expected.

A4 does not represent a suitable starting point, since it does not deal with mobile air purifiers, teaches away from integrating a dust sensor and an air treatment unit into a same device (A4[0012]) and describes the air conditioning units and the pet robot as operating interdependently (A4[0002]), which is incompatible with the claimed autonomous operation of the air purifier.

The key difference compared to A6 lies in how dust is measured: claim 4 requires measurement “by means of a moving air purifier”, while A6 relies on fixed sensing stations. The expected solution draws on A5 which addresses autonomy and the incorporation of sensors into a stand-alone mobile robot. A6 provides a motivation for the combination in view of its disclosure that the cartridge 608 can integrate further components.

3.6. Claim 5 (10 marks)

Claim 5 relates to a “mixed-type invention” comprising technical and non-technical features (the generation of a *virtual map* and its display on a screen). A separation of technical and non-technical features according to the COMVIK approach was expected.

A4 discloses dividing an indoor space into regions, receiving dust sensor data from a moving device and displaying such data. The remaining differences (the generation of the virtual map and its display) render the claim novel. However, they do not provide a technical contribution which is why subject-matter of claim 5 does not involve an inventive step.

3.7. Claim 6 (3 marks)

Claim 6 adds the step of ranking the regions according to need for purification and causing the device to move to the first-ranked region. A4 discloses these steps explicitly. Accordingly, claim 6 was expected to be attacked as lacking inventive step, essentially as a continuation of the attack for claim 5.

3.8. Claim 7 (13 marks)

For claim 7, a novelty objection based on A7 was expected, because A7 discloses an application program on a smartphone controlling a mobile air purifier and allowing the user to decide the battery level at which to send the device to recharge.

In addition, the opponent's letter explicitly required consideration of fallback positions, therefore a foreseeable restriction to the preferred threshold value had to be addressed. For this fallback

position, an inventive step attack was expected, starting from A7 and using A3 as evidence of a recharge threshold chosen to prevent deep discharges. The choice of 20%, instead of 18% as disclosed in A3, is an obvious parameter optimisation in the absence of any surprising technical effect. It is noted that a threshold of 20% does not define a range but rather a parameter to be used in the program. Therefore, an argument that 18% is within the range “below 20%” is incorrect.

3.9. Claim 8 (4 marks)

Claim 8 as added during examination does not define two alternative methods but rather a single method having one step which is performed when one of two conditions is fulfilled, ie. it formulates an “OR” in logic terms. In contrast, according to the original disclosure of A1[0026] recharging is conditional upon both low battery level and low dust concentration (i.e. an “AND” logic). Claim 8 extends beyond the content of the application as filed because of this discrepancy, not because of an intermediate generalisation.

Possible Solution – Paper C 2026

1. General (for part 1 of the exam)

Opposition is filed in the name of BreezyPeasy SARL against EP 4 150 561 B1 (Annex 1 or A1). The opposition fee has been paid.

The patent is opposed on the grounds of Article 100(a) EPC for lack of novelty and lack of inventive step. The patent is opposed in its entirety (claims 1 – 3 of part 1 of the exam).

Reference is made to A1 and the further adjoined annexes, labelled A2 to A5.

1.1. Effective Dates

A1 claims priority based on the application ES2732945 of 1110.2019.

Claim 1 was part of the priority document and of the application as filed. Hence, the effective date is 11.10.2019 (PD).

Claims 2 and 3 were not present in the priority document. The features of claim 2 are only disclosed in A1[0012] and the features of claim 3 are only disclosed in paragraphs [0015]-[0017] of A1. All these paragraphs were not present in the priority document. Thus, their effective date is 08.10.2020 (FD).

1.2. Prior art

Annex A2 was published in February 2020, after PD and before FD. Thus, A2 is prior art under Art. 54(2) EPC for claims whose effective date is FD (claims 2 and 3).

A3 is a US application published after the priority date but before the filing date of A1. Therefore, A3 is prior art under Art. 54(2) EPC for claims whose effective date is the FD (claims 2 and 3).

A4 and A5 were published before the PD and are thus prior art according to Art. 54(2) EPC for all claims.

Additionally, A2 refers to the air purifier “Sondy Purifier Cool” which was available to the public in the form of a public prior use (hereinafter, “A2a”) during the spring of 2019 (A2[0001]), before the priority date of the patent (11.10.2019). According to the GL G-IV, 7.2, when dealing with an alleged prior use the following details have to be determined:

- (i) When: Spring 2019
- (ii) What: Sondy Purifier Cool as described in A2
- (iii) Circumstances relating to its use: more than 20,000 items were sold within the first 3 weeks ([0001] of A2)

The sale of mass-produced consumer goods to anonymous customers is not bound by confidentiality, and since all the features of the product could be ascertained by the skilled person by investigating the device and are therefore directly and unambiguously disclosed by the sale of the product (G1/23). Thereby it is established that the “Sondy Purifier Cool” device described in A2 was publicly available before 11.07.2019.

The public prior use A2a is therefore prior art under Art. 54(2) EPC for all claims.

2. Claim 1 – Lack of inventive step (A2a + A4)

A2a is the closest prior art because it deals with the purpose of purifying air by means of a movable (that is to say, displaceable) device.

A2a discloses a device for purifying air (air purifier A2[0001]), comprising:

- rotating means for displacing the device
(wheels, A2[0007]; wheels are rotating means according to A1[0012]); and
- a casing
(casing, A2[0002], which however is not coated with a sound insulation material);
- a means for measuring air quality
(the formaldehyde sensor of A2 measures formaldehyde which is a pollutant, A2[0003]; A1[0004] explains that air quality is related to the amount of pollutants; therefore a sensor for measuring a pollutant measures air quality);
- a means for purifying air
(the catalytic filter breaks down the formaldehyde molecules, A2[0004], thereby removing them; removing pollutants is purifying air, see A1[0002]); and
- a control unit
(smart unit, A2[0005]; a smart unit is a control unit, see A4[0014])
configured to control the device based on data received from the means for measuring air quality (A2[0005]: in the automatic mode the smart unit fully controls the device based on sensor readings, thus including the formaldehyde sensor).

The casing comprises all these components (the casing of A2a defines the external appearance and protects all its components, and therefore houses them, see A2[0002]).

Therefore claim 1 differs from A2a in that the casing is coated with a sound insulation material.

The technical effect of the distinguishing feature is to lower the operational noise level to 45 dB, see A1[0008]. Therefore, the objective technical problem starting from A2a is to provide a purifying device suitable for use in noise-sensitive environments such as in the healthcare sector (see A1[0009]).

The person skilled in the art would consult A4, which also belongs to the technical field of air purification (A4[0007]) in noise sensitive environments (A4[0002] and [0008]).

A4 discloses in [0008] that to render the unit suitable for use in such an environment, the inner surface of the casing can be coated with a sound-absorbing material to reduce the noise generated by the fan during operation.

The skilled person is prompted to apply the teaching of A4 to that of A2a because A2[0001] states that the air purifier has a noise level of 60 dB and A4[0008] discloses that the use of air conditioning units in hospitals and clinics requires a maximum noise level of 45 dB. Therefore, the feature of coating a casing with a sound-absorbing material is described in A4 as solving the technical problem mentioned above, such that the skilled person would be motivated to implement the solution suggested by A4.

The air conditioning units of A4 may be configured to operate in an air purification mode (A4[0007]) and are thus compatible with the air purifier of A2a.

The person skilled in the art would therefore be prompted by this teaching to coat the casing of the device of A2a with the sound-absorbing material disclosed in A4 and find no obstacle in employing the solution.

Therefore claim 1 lacks inventive step (Art. 56 EPC) in view of A2a+A4.

3. Claim 2 – Lack of novelty (A3)

A3 discloses a device for purifying air (an air purifier is any device which draws in polluted air and discharges clean air by removing pollutants, which comprise dust, see A1[0002]; in A3 air containing dust is drawn in from the floor A3[0008] and clean air current is finally directed towards an air outlet A3[0010]; therefore, the device of A3 is a device for purifying air).

The device of A3 comprises:

- rotating means for facilitating displacement of the device (wheels 303, 304, 305, A3[0005]; wheels are rotating means according to A1[0012]);
- a casing (casing 307, A3[0007], claim 1) coated with a sound insulation material (MLV is provided for sound insulation, A3[0011]).

The casing of the device of A3 further comprises:

- means for measuring air quality (air pollution sensor 314 is located in the cyclonic separation chamber 309, A3[0009], which according to figure 2 of A3 is in the casing 307; A1[0004] explains that air quality is related to the amount of pollutants; therefore a sensor for measuring a pollutant measures air quality);
- means for purifying air (the cyclonic separation chamber 309 removes dust from air, A3[0008]; according to A1[0002] dust is a pollutant and removing pollutants is purifying air; the cyclonic separation chamber 309 is in the casing 307, see figure 2);
- a control unit (smart unit 315, A3[0010]; smart unit 315 is in the casing 307, see figure 2)
- configured to control the device based on data received from the means for measuring air quality (the smart unit 315 adjusts the speed of the fan 310 based on the air pollution sensor 314, A3[0010]);
- wherein the rotating means for facilitating displacement of the device comprise two wheels (A3[0005] and figures show three wheels, thereby disclosing at least two wheels)
- and a wheel driving unit (wheel motors 303a, 304a, A3[0005]).

Thus, claim 2 lacks novelty (Art. 54(1), (2) EPC) in view of A3.

4. Claim 3 – Lack of inventive step (A3 + A4 + A5)

A3 is the closest prior art because it is the only document disclosing a wheel-driven autonomous device for purifying air.

In addition to the features of claim 2, A3 discloses that the sound insulation material with which the casing is coated is a mass loaded vinyl (A3[0011] or claim 2; MLV stands for mass loaded vinyl, see A1[0013]). A3 also discloses a navigation unit with an ultrasonic component (A3[0004]).

A3 does not disclose that:

- (a) the loaded particles comprise barium sulfate in a range from 19 to 27 wt % based on the total weight of the mass loaded vinyl; and that

(b) the device comprises an optical navigation unit instead of the ultrasound navigation unit.

The technical effect of difference (a) is that the operational noise level is lowered to 35 dB without impairing the evacuation of heat, see A1[0015].

The technical effect of difference (b) is the detection of smaller objects, such as toys on the floor, see A1[0017].

These technical effects (thermal/sound insulation vs. object detection) are different and do not achieve a combined technical effect which is greater than the sum of the technical effects of the individual features. Therefore, the two differences are not synergistically linked and the partial problem approach may be applied (GL G-VII 5.2, 6, 7).

The objective technical problem linked to difference (a) could be seen as to improve the trade-off between sound insulation and thermal conductivity (see A1[0015]).

For the solution of this objective technical problem, the person skilled in the art would consult A4, since this document also relates to air conditioning units used in environments such as hospitals and clinics (i.e. healthcare environments) where noise levels are strictly regulated (A4[0002]) and deals with the trade-off between sound insulation and heat dissipation (A4[0009]-[0010]).

A4 teaches that a MLV loaded with barium sulfate in a concentration ranging from 20 to 25 wt% provides optimal compromise of sound and thermal insulation (A4[0010]), i.e. it is described as solving the objective technical problem, such that the skilled person would be motivated to implement this solution by the teaching of A4.

The range of claim 3 is anticipated by A4[0010] since both endpoints and/or the entire range (20-25 wt%) of A4 falls within the claimed range 19-27% (GL G VI-8). The skilled person would not find any problem in applying this teaching to the coating of MLV disclosed in A3, since the coating of A3 comprises calcium carbonate, and A4 discloses that several components can be loaded into the MLV coating, including calcium carbonate or barium sulfate. Thus, the teaching of A4 is compatible with the coating disclosed in A3.

The objective technical problem linked to difference (b) could be seen as to achieve a more accurate movement of the air purifier (see A1[0017]).

A3[0001] explicitly identifies the need to effectively navigate spaces and A3[0004] explains that its ultrasound unit only enables the device of A3 to avoid large obstacles such as sofas and walls. Thus, the skilled person is prompted to seek improvement.

For the solution of the objective technical problem, the person skilled in the art would consult A5 because it deals with the purpose of navigating accurately. A5[0007] teaches that its laser navigation unit 502 (which is an optical navigation unit according to A1[0016]) surpasses conventional ultrasound units in accuracy, as it enables the robot to detect small objects, ensuring it navigates the greenhouse without damaging the plants.

To obtain the advantages of a laser navigation unit as taught by A5 it would be obvious for the skilled person to replace the ultrasound unit of A3 with an optical navigation unit, since in A3 the navigation unit is provided in the front of the casing (A3[0004]), just as in A5 (see figure).

In summary, the skilled person would find it obvious to apply the teachings of A4 and A5 to the device disclosed in A3 to solve the two partial problems mentioned above, thereby arriving at the subject-matter of claim 3 which cannot be considered inventive.

As a consequence, the subject-matter of claim 3 lacks inventive step (Art. 56 EPC) in view of the combination of A3+A4+A5.

5. General (for part 2 of the exam)

5.1. Effective Dates

Claims 4 and 5 were part of the priority document and of the application as filed. Their effective date is 11.10.2019 (PD).

Claim 6 was not present in the priority document. The features of claim 6 are only disclosed in A1[0023], which was not present in the priority document. Thus, the effective date is 08.10.2020 (FD).

Claims 7 and 8 were added during examination.

Claim 7 is based on paragraph [0025] of the description, which was not in the priority document. Thus, its effective date is 08.10.2020 (FD).

Claim 8 adds subject-matter, contrary to Art. 100(c) EPC (see below).

5.2. Prior art

The status of A2, A2a, A3, A4 and A5 is the same as in part 1:

- A2 and A3 are prior art under Art. 54(2) EPC for the claims whose effective date is FD (claims 6 and 7);
- A2a, A4 and A5 are prior art under Art.54(2) EPC for all claims.

A6 was published on 05.07.2017, before the effective dates of all claims, and is therefore prior art under Art. 54(2) EPC for all claims.

A7 is a screen capture from AppShop downloaded and printed on 20.02.26. It reports a date of last update of App and text on 01.07.2019 (see line 25); this date is accepted as face value as correct (GL, G-IV, 7.5.1) and is before the effective dates of all claims. Accordingly, A7 is prior art under Art. 54(2) EPC for all claims.

6. Claim 4 – Lack of inventive step (A6 + A5)

A6 is the closest prior art because it concerns air treatment and has the purpose of removing dust in an indoor space via a moving air purifier.

A6 discloses a method for reducing dust concentration in the air (A6[0003] or claim 1, air purifier with HEPA filter; HEPA filters are particularly effective in reducing dust concentration, see A4[0006]; hence, the purification steps disclosed in A6[0010]-[0011] inevitably results in reducing dust concentration; see F-IV 4.13.3) of an indoor space (see A6[0002]).

The method comprises the steps of:

- measuring dust concentration in the air of the indoor space
(A6 uses wall-mounted sensing stations monitoring the conditions of the air in the room in which the station is located A6[0005]; the particle sensor of each sensing station detects particles ranging in size from 1 to 100 µm A6[0006], which satisfies the definition of dust given in A4[0006]);
- based on the measured dust concentration, controlling the movement of the moving air purifier
(the movement of the air purifier 600 is based on the AQI, A6[0010], which is based also on dust concentration measured by the particle sensor, A6[0007]).

Therefore claim 4 differs from A6 in that the dust concentration of the indoor space is measured by the moving air purifying device. In A6, air quality is measured by wall-mounted sensing stations 650 located in separate rooms of the indoor space (see A6[0005]); i.e. the sensors are fixed.

The technical effect of the distinguishing feature is to allow the detection of contaminants throughout the entire space to be purified, without the need to interact with sensors external to the air purifier (see A1[0020]). Therefore, the objective technical problem starting from A6 is to increase the flexibility of use of the air purifier, specifically by providing autonomous operation (see A1[0020]).

The person skilled in the art would consult A5 as it also deals with air treatment (A5[0001]) and relates to an autonomous robot (A5[0005]) which overcomes the constraints resulting from the fixed placement of sensors (A5[0004]).

The robot of A5 has an embedded humidity sensor but can be provided with one or more sensors of the types commonly employed in air conditioning systems for monitoring environmental conditions (A5[0010]) (these sensors are, according to A4[0011], temperature, humidity and dust sensors). A skilled person is prompted to apply this teaching of A5 to that of A6 because A5 recognises the limitation of fixed sensors (A5[0004]) and teaches that the incorporation of a sensor into a stand-alone compact mobile robot enables the robot to be fully autonomous and operate on its own (A5[0005] or [0011]).

A6[0009] indicates that the cartridge 608 is sufficiently large to accommodate additional components. A6[0005] states that a "small box" is sufficient to hold several sensors, one of which is the particle sensor. This indicates that a particle sensor would be compatible to be fitted into the cartridge as a further electrical component.

Thus, the skilled person would not hesitate to combine the teachings of these two documents and incorporate a dust sensor into the cartridge of the air purifier of A6 to solve the identified objective technical problem and arrive at the claimed subject-matter without exercising inventive skill.

Therefore claim 4 lacks inventive step (Art. 56 EPC) in view of A6+A5.

7. Claim 5 – Lack of inventive step (A4) {COMVIK}

The computer program has technical character, because it produces a further technical effect going beyond the normal physical interactions between the program and the computer, namely in that a device is controlled (GL G-II, 3.6).

The subject-matter of the claim comprises technical features and non-technical features; the "mixed type invention" approach applies (GL G-VII, 5.4 or T641/00 (COMVIK) or G1/19).

The features of claim 5 which contribute to the technical character of the invention are:

- (i) controlling the movement of a device (100);
- (ii) for each of the regions, receiving dust concentration data measured by the device (100);
- (iii) causing the screen of a user interface to display information.

With a focus on the features contributing to the technical character, A4 is the closest prior art because it deals with measuring dust concentration via a moving device and discloses the display of data to a screen.

A4 discloses a computer program (computer program, A4[0015]) comprising instructions which, when the program is executed by a computer, cause the computer to carry out the following steps:

- dividing an indoor space into a plurality of regions (A4[0015]);

- controlling the movement of a device
(controlling the movement of the pet robot, A4[0015]);
- for each of the regions, receiving dust concentration data measured by the device
(pet robot 420 collects and transmits environmental data as it moves, the environmental data comprising data collected by the dust sensor 424, see A4[0011]; therefore the environmental data the smart unit receives from the pet robot in A4[0015] comprises dust concentration data);
- causing a screen of a user interface to display sensor data in unspecified form
(the air conditioning units include a screen displaying sensor data received from the pet robot, A4[0005], thus including dust sensor data).

Therefore claim 5 differs from A4 in that the computer program:

- a) generates a virtual map of the dust concentration in the indoor space; and
- b) causes the screen to display the generated virtual map (whereas A4 discloses displaying sensor data in unspecified form).

7.1. Difference (a)

Generating a virtual map of the dust concentration in the indoor space in the context of the invention does not produce a technical effect serving a technical purpose and is therefore not technical. The generation of the virtual map is not inherently limited to technical uses (G1/19); on the contrary, it is only used to be displayed in a screen for user convenience (A1[0022]), which is not technical.

Thus, difference (a) cannot contribute to inventive step.

7.2. Difference (b)

The screen displaying the generated virtual map relates only to the manner in which the information is presented (i.e. the "how" of GL G-II, 3.7). This choice of the one or other manner of displaying data does not have a technical effect as the alleged effect depends on subjective criteria. Additionally, the displaying of the virtual map does not assist the user in performing a technical task because such presentation is merely for user convenience (A1[0022]).

Thus, difference (b) deals with presentation of information which in the context of the invention does not produce a technical effect serving a technical purpose (GL G-II, 3.7).

As neither of the differences (a) and (b) makes a technical contribution to the prior art, claim 5 lacks an inventive step in view of A4 without requiring a further document (Art. 56 EPC, Guidelines G-VII, 5.4 (iii)(b)).

8. Claim 6 – Lack of inventive step (A4) {COMVIK}

A4 is the closest prior art for the same reasons as for claim 5, i.e. because it deals with measuring dust concentration via a moving device and discloses the display of data on a screen.

In addition to the features identified with respect to claim 5, A4 discloses the steps of:

- ranking the plurality of regions according to their need for purification based on the dust concentration data received from the device
(A4[0016], "hierarchy of purification priority" implies a ranking; although A4[0016] only ranks the regions for which purification is the most appropriate mode, the "plurality of regions" of

the claim may be interpreted as limited to those regions; i.e., the fact that there may also be unranked regions is irrelevant);

- causing the device to move to the first ranked region (A4[0016], the pet robot is directed to the highest-priority region, which is the first-ranked region in the terms of the claim).

Thus, as no differentiating features which would make a technical contribution are present, claim 6 lacks an inventive step in view of A4 for the same reasons as claim 5 (Art. 56 EPC, GL G-VII, 5.4 (iii)(b)).

9. Claim 7 – Lack of novelty (A7)

The application program has technical character for the same reasons as claim 5.

The first threshold of 20%, being a preferred option, does not limit the claim as granted (GL F-IV, 4.9).

A7 discloses an application program comprising

- instructions which, when executed by a smart device (smartphone, A7 line 10 {EN, 11 FR and DE}; a smartphone is a smart device according to A1[0022]),
- commands a mobile air purifier (A7 line 7 {EN, 8 FR and DE}) to recharge (*"by connecting...to your smartphone app, you can...send the mobile air purifier to recharge"* in lines 10+12 {EN, 11+15 FR, 11+13 DE} indicates that it is the application program which gives the command to recharge) when the battery level is below a first threshold (*"decide the battery level at which to send the mobile air purifier to recharge"*, A7 line 12 {EN, 15 FR, 13 DE}).

Thus claim 7 lacks novelty (Art. 54(1), (2) EPC) in view of A7.

10. Claim 7 (preferred option) – Lack of inventive step (A7 + A3 + common general knowledge)

In the event that the patent proprietor restricts claim 7 to the preferred first threshold of 20%, claim 7 lacks an inventive step.

A7 is the closest prior art because it deals with an application program comprising instructions for recharging a mobile air purifier depending on a battery level.

A7 discloses the mandatory features of claim 7 (see novelty attack above). Therefore, the differentiating feature is that the first threshold is 20%. Instead, in A7 the threshold is decided by the user.

The technical effect of the distinguishing feature is that deep discharges are prevented (A1[0025]). Therefore, the objective technical problem starting from A7 is to extend battery lifespan (see A1[0025]).

A person skilled in the art would consult A3 because it deals with a battery-powered mobile device and specifically mentions the technical problem of extending battery lifespan (A3[0006]).

The skilled person is prompted to apply the teaching of A3 to that of A7 because A3[0006] mentions that the prevention of deep discharges extends battery lifespan and that this is an important issue for autonomous devices in general. This means that the teaching of A3 can be successfully translated to any autonomous device. Furthermore, A7 lines 22-23 {EN, DE 23-24, FR

25-27} mentions tips to maximize battery performance, thereby implying the need for improvements in battery management.

The selection of 20% instead of 18% falls within the realm of arbitrary parameter optimisation, which is considered obvious since no surprising technical effect is demonstrated.

A person skilled in the art would therefore encounter no obstacle in implementing the teaching of A3 into A7 and adapting the MyAirQuality app by incorporating an instruction that commands the air purifier to recharge when the battery level drops below 20%.

As a consequence, claim 7 according to the preferred option lacks inventive step (Art. 56 EPC) in view of A7+A3 and the common general knowledge of a skilled person.

11. Claim 8 – Extension of subject-matter

Claim 8 was added during examination.

The originally filed application in A1[0026] describes making recharging conditional upon both low battery level and low dust concentration (i.e. an “AND” logic). In contrast, claim 8 is drawn to commanding a mobile air purifier to recharge when one of two conditions is fulfilled, ie. it formulates an “OR” in logic terms.

As a consequence, claim 8 as granted includes a command to recharge in conditions which were not originally disclosed, these are:

- recharge in case of battery level below the first threshold, for any measured dust concentration (ie. also when it is above the second threshold);
- recharge in case of dust concentration below the second threshold, for any battery level (ie. also when it is above the first threshold).

Therefore, claim 8 extends beyond the content of the patent application as originally filed (Art. 100(c) EPC).