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Datasheet for the decision of 6 May 2025

Case Number: T 0873/23 - 3.2.03

Application Number: 13829459.0

Publication Number: 2885583

IPC: F24C7/08, F24C3/12, A62C3/00

Language of the proceedings: EN

Title of invention:
COOKTOP WITH A DEVICE FOR FIRE MITIGATION AND CORRESPONDING METHOD

Patent Proprietor:
Primaira, LLC

Opponent:
EIKA, S. COOP.

Relevant legal provisions:
EPC Art. 100(c), 123(2), 114(2)
RPBA 2020 Art. 12(4), 13(2)

Keyword:
Main request - grounds for opposition - extension of subject-matter (yes)
Auxiliary requests A to E - added subject-matter (yes)
Auxiliary request E' - amendment after summons - deletion of alternatives - exceptional circumstances (no)
Auxiliary requests F to H - added subject-matter (yes)

Decisions cited:
T 0367/20, T 1473/19, G 0001/24
UPC_CoA_335/2023, Headnote 2

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Boards of Appeal

Chambres de recours

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

Case Number: T 0873/23 - 3.2.03

D E C I S I O N
of Technical Board of Appeal 3.2.03
of 6 May 2025

Appellant: (Patent Proprietor)	Primaira, LLC 30 Commerce Way Suite 300A Woburn, MA 01801 (US)
Representative:	Hoffmann Eitle Patent- und Rechtsanwälte PartmbB Arabellastraße 30 81925 München (DE)
Respondent: (Opponent)	EIKA, S. COOP. Urresolo, 47 48277 Etxebarria (ES)
Representative:	Igartua, Ismael Galbaian S.Coop. Garia Parke Teknologikoa Goiru Kalea 1 20500 Arrasate-Mondragón (ES)
Decision under appeal:	**Interlocutory decision of the Opposition Division of the European Patent Office posted on 10 March 2023 concerning maintenance of the European Patent No. 2885583 in amended form.**

Composition of the Board:

Chairman	C. Herberhold
Members:	M. Olapinski
	F. Bostedt

Summary of Facts and Submissions

I. The appeal was filed by the patent proprietor (appellant) against the opposition division's interlocutory decision finding that auxiliary request 2 filed during the oral proceedings met the requirements of the EPC.

II. The opposition division had found that the subject-matter of the patent as granted (main request) and in the form of auxiliary request 1 filed during the oral proceedings extended beyond the content of the application as originally filed (Articles 100(c) / 123(2) EPC).

III. At the end of the oral proceedings before the Board, the parties' requests were as follows.

The appellant requested that the decision under appeal be set aside and the patent be maintained as granted (main request) or, in the alternative, that the patent be maintained as amended according to one of auxiliary requests A, B, C, D, E, E', F, G and H, ranked in this order.

The respondent (opponent) requested that the appeal be dismissed.

IV. The claims under consideration are the following.

Claim 1 as granted (main request) reads (with feature denominations in square brackets):

"[1.1] A cooktop comprising a heating element and a device limiting a temperature of a cookware on the

cooktop below a predetermined oil ignition temperature, the device comprising:

[1.2] a temperature sensor (20) adjacent a bottom of the cookware; and

[1.3] a control device in combination with each of the temperature sensor and the cooktop,

characterized in that

[1.4] the control device is configured to execute an algorithm that controls the power level of the cooktop as a function of the continuously monitored and sensed temperature and a rate of change of the sensed temperature calculated continuously over predetermined time intervals to maintain a temperature of the bottom of the cookware below the predetermined oil ignition temperature and above a cooking temperature, wherein

[1.5a] a) the cooktop is an electric coil cooktop or
[1.5b] an electric glass ceramic cooktop and
[1.5x] the control device is configured to control the power level of the cooktop by turning the heating element continuously on and off; or

[1.5c] b) the cooktop is a gas burner cooktop and the control device is configured to control the power level of the cooktop by reducing the gas flow to the burner (50) without turning it off entirely."

V. The amendments in the auxiliary requests are, as far as relevant for the case in hand, recited in the passages of the reasons dealing with each request.

VI. The appellant's arguments relevant for the present decision can be summarised as follows.

Main request – Article 100(c) EPC

The objections that the expression "turning the heating element continuously on and off" in claim 1 as granted extended beyond the content of the application as filed either because further limitations were missing or when in combination with an electric coil cooktop should not be admitted.

While it was agreed that the expression was not literally disclosed in the original application, it did not extend beyond the content of the application as filed.

The expression first had to be interpreted with due consideration of the description and drawings.

There was no reason for interpreting "continuously" as in the other occurrences in claim 1, which referred to different features in different contexts. Nor was there any basis for interpreting the expression in a manner that was evidently not supported by the patent.

Rather, the term could be understood to relate either to the continuous control of the power level by turning the heating element on and off or to the control of the power level in accordance with a duty cycle, both of which were originally disclosed.

Auxiliary requests A to D, F and G – Article 123(2) EPC

The same applied to the corresponding amendments in auxiliary requests A to D, F and G.

Auxiliary request E

Auxiliary request E filed with the grounds of appeal should be admitted under Article 12(4) RPBA because the appellant could not have fully understood the opposition division's reasons until it received the written decision.

Deleting the expression "turning the heating element continuously on and off" and replacing it with the more specific steps in the algorithm for the electric coil cooktop did not extend the conferred protection by comparison with the claims as granted (Article 123(3) EPC).

Auxiliary request E' – Admittance

Auxiliary request E' filed at the oral proceedings should be admitted as a reaction to the Board's surprising findings and also because it merely concerned a deletion of subject-matter.

Auxiliary request H

The objection that the alternative of the gas burner cooktop as granted without specifying that the temperature sensor is arranged to be "in direct contact with the bottom of the cookware" infringed Article 123(2) EPC had not been presented during the opposition period or before the oral proceedings in opposition. Moreover, while the opposition division had considered this objection, it did not provide reasons for admitting it or even show that it had exercised its discretion at all. The objection thus should not be considered in the appeal proceedings.

The omission of the more specific temperature sensor arrangement was originally disclosed in claim 1 as filed and was at most an allowable intermediate generalisation as it was not inextricably linked to a cooktop of the gas burner type.

VII. The respondent argued substantially as follows.

Main request – Article 100(c) EPC

The objections that the expression "turning the heating element continuously on and off" in claim 1 as granted extended beyond the content of the application as filed because further limitations were missing and when in combination with an electric coil cooktop had already been presented in the opposition proceedings. They had been maintained and discussed at the oral proceedings, and the decision under appeal was based on them, so they formed part of the appeal proceedings.

The expression extended beyond the content of the application as filed for the simple reason that it was not literally disclosed or explained in the original application.

Moreover, "continuously" should be interpreted as in the other occurrences in claim 1 where it meant "periodically" (with a fixed predetermined period). The term "continuously" applied not to the control but to "turning the heating element on and off". Even if power control in accordance with a duty cycle was covered by this term, this was not disclosed for an electric coil cooktop. Furthermore, the original disclosure of the control algorithm was more specific and also contained phases without change, so it at least did not disclose

continuously/periodically turning the heating element on and off alone.

Auxiliary requests A to D, F and G – Article 123(2) EPC

The same applied to the corresponding amendments in auxiliary requests A to D, F and G.

Auxiliary request E

Auxiliary request E filed with the grounds of appeal should not be admitted under Article 12(4) RPBA.

Deleting the expression "turning the heating element continuously on and off" and replacing it with the more specific steps in the algorithm for the electric coil cooktop extended the conferred protection by comparison with the claims as granted, contrary to Article 123(3) EPC.

Auxiliary request E' – Admittance

Auxiliary request E' filed at the oral proceedings was an amendment and should not be admitted under Article 13(2) RPBA because there were no exceptional circumstances.

Auxiliary request H

The objection that the alternative of the gas burner cooktop as granted without specifying that the temperature sensor is arranged to be "in direct contact with the bottom of the cookware" infringed Article 123(2) EPC had been presented at the oral proceedings in opposition as a reaction to the filing of auxiliary request 1 at the oral proceedings. The

opposition division admitted the objection and found it convincing. Hence, it was part of the appeal proceedings.

The omission of the more specific temperature sensor arrangement represented an unallowable intermediate generalisation. This arrangement was, however, originally disclosed in combination with the gas burner cooktop and was inextricably linked to the reliable measurement and control of the temperature in a gas burner cooktop.

Reasons for the Decision

1. Main request – Article 100(c) EPC

1.1 Claim 1 as granted is amended with respect to claim 1 as originally filed *inter alia* by Feature 1.5x, specifying that, for an electric coil cooktop and an electric glass ceramic cooktop, the control device is configured to control the power level of the cooktop (in accordance with the algorithm of Feature 1.4) "by turning the heating element continuously on and off" (hereinafter referred to as the "expression").

It is common ground that there is no literal basis for "continuously" in the context of "turning the heating element on and off" in the application as filed.

However, there are other occurrences of the term "continuously" in the description (both as filed and as granted) and in Feature 1.4 of claim 1 as granted in the context of *monitoring*/*sensing* the temperature and *calculating* a rate of change of the sensed temperature. The parties agreed that, according to the patent, in these occurrences "continuously" meant "periodically",

albeit with different time periods for monitoring (e.g. "every second, or other suitable time interval", paragraph [0017] of the patent, first two sentences) and calculating ("every ten seconds, or other suitable time interval", paragraph [0017], third sentence; see also paragraphs [0020], [0021] and [0025]).

1.2 In the decision under appeal (section II.12.2.3), the opposition division reasoned that the term "continuously" in the context of Features 1.4 and 1.5 of claim 1 as granted referred to the continuous *control of the power level* of the cooktop by the algorithm of Feature 1.4. The expression thus meant that "the control method is performed continuously by the algorithm during the whole operation of the cooktop, when power is supplied to the cooktop and is switched on and off by the control device when certain conditions are met". As claim 1 did not specify the "conditions, disclosed in the original description, under which the control device switches power to the cooktop on and off", in particular "a combination of rate of change of the sensed temperature and a temperature threshold monitoring", it involved an unallowable intermediate generalisation. Claim 1 was thus found to contain subject-matter extending beyond the content of the application as filed.

1.3 In the reply to the appeal, the respondent submitted that the ground for opposition under Article 100(c) EPC prejudiced the maintenance of the patent for the following reasons.

Firstly, the expression in Feature 1.5x had no basis or explanation in the application as filed and added subject-matter for this reason alone.

Secondly, for clarity and consistency, the same term should be given the same meaning throughout a claim. The term "continuously" in Feature 1.5x thus meant "periodically" as in the other occurrences in Feature 1.4 of claim 1. Hence, Feature 1.5x required the heating element to be periodically turned on and off. However, in the description of the algorithms in the application as filed, the heating element was only turned on and off when certain conditions were met, rather than continuously/periodically.

The application as filed disclosed periodic turning on and off in accordance with a duty cycle only for the electric glass ceramic cooktop, not for the electric coil cooktop. Furthermore, on page 7, lines 1 to 17 and in Figure 13, this was only disclosed in combination with further features, such as the selection of different duty ratios and phases of keeping the heating element "on" for a specific period of time during which the heating element was not continuously/periodically turned on and off.

Thirdly, even if "continuously" was interpreted as relating to the continuous control of the power level "during the cooking", claim 1 as granted did not specify the conditions disclosed in the application as filed on the basis of which the heating element was turned on and off.

Therefore, the expression in Feature 1.5x was at least based on an unallowable intermediate generalisation of the original disclosure and thus extended beyond the content of the application as filed.

1.4 The appellant made the following submissions.

1.4.1 Admittance of objections

Some of the respondent's added-matter objections had been raised for the first time in the appeal proceedings and thus represented an amendment as per Article 12(4) RPBA and should not be admitted. According to the appellant, throughout the first-instance proceedings, Feature 1.5x had only been objected to for the electric glass ceramic cooktop – and only due to the alleged complete absence of the feature from the application as filed. Therefore, both the objection against Feature 1.5x in combination with an electric coil cooktop and the objections that Feature 1.5x lacked further limitations were new. Moreover, these objections were substantiated on the basis of new facts (elements of the contested patent that had not been presented in support of this ground in opposition).

1.4.2 Assessing whether the subject-matter of Feature 1.5x extended beyond the content of the application as filed required a two-step approach. First, the meaning of the claimed feature had to be established by interpreting it from the skilled person's perspective in the context of the whole document it forms part of, i.e. also the description and drawings (T 367/20, reasons 1.3.2). In a second step, it was to be assessed whether that subject-matter was disclosed in the application as filed (T 367/20, catchword). The mere fact that the application as filed did not contain a verbatim basis or explanation for Feature 1.5x was not sufficient to establish that it involved added subject-matter.

1.4.3 The different occurrences of the term "continuously" in claim 1 applied to different features in different contexts, and so all expressions involving that term

had to be interpreted individually and independently of one another.

According to the Oxford Advanced Learner's Dictionary, the term "continuous" had two different, if not contradictory, meanings: "happening or existing for a period of time without being interrupted" and "repeated many times".

In the context of Feature 1.5x the term "continuously" could apply to the *state* of the heating element being on or off or to the *action* of turning the heating element on and off. The first interpretation did not make sense as the *state* of the heating element could not be both "on and off", and "continuously on and off" even less so. In the second case, the *action* of turning the heating element on or off was "quasi-instantaneous" and not continuous in the sense of "for a period of time without being interrupted". Moreover, turning on and turning off were two different actions which were "continuous" in the sense of "repeated many times". However, no clear meaning emerged from the language of the claim alone. The expression thus had to be interpreted in the context of the description and drawings of the patent.

The description of the patent expanded on the corresponding configuration of the control device. For the electric coil cooktop it disclosed that "the control device, via the control algorithm, sends a signal to a relay" to turn the heating element on and off (paragraph [0017]), and for the electric coil cooktop it disclosed that the power level was controlled in accordance with a duty cycle (paragraphs [0025] and [0026]). Accordingly, the heating element was repeatedly turned on and off by the control device,

i.e. "periodically", but at changing time intervals (grounds of appeal, page 16, second paragraph, last sentence). Moreover, in line with the opposition division's interpretation (section II.12.2.3 of the decision), "continuously" in Feature 1.5x applied to the control device's continuous on/off control of the heating element throughout the cooking operation while keeping the cookware temperature in the desired range.

Feature 1.4 of claim 1 as granted already specified that the continuous on/off control algorithm was based on a combination of rate-of-change and temperature-threshold monitoring, i.e. the conditions for turning the heating element periodically on and off at irregular time intervals. In particular, keeping the temperature of the bottom of the cookware between the temperature thresholds "below the predetermined oil ignition temperature and above a cooking temperature" implied temperature-threshold monitoring.

1.4.4 The Board understands the appellant's submissions to cover two alternatives that were allegedly both originally disclosed: (i) "continuously" referred to the *control method* or *algorithm* for turning the heating element on and off, not to the *actions* of turning on and turning off, in the sense that the power level was adjusted "without being interrupted" throughout the cooking process, or (ii) "continuously" applied to the *action(s)* of turning on and turning off in the sense of "repeatedly" but at different points in time when certain conditions of the algorithm were met ("periodically" as understood by the appellant).

1.5 Admittance

The submissions by the opponent during the opposition proceedings are summarised in the decision under appeal in section II.12.2.3.1 as follows. The term "continuously" in Feature 1.5x meant "periodically" as in Feature 1.4 and applied to turning the heating elements on and off, not to "continuous control over time". The application as filed did not disclose "continuously" turning the heating elements on and off, neither for the "electric coil cooktop" (II.12.2.3.1, last paragraph, lines 1 to 3) nor for the "glass ceramic cooktop" (rest of the paragraph). The algorithm for the latter disclosed (with reference to page 6, line 17 to page 7, line 17 and Figure 13) using "specific, different duty cycles" (not defined in claim 1), and so Feature 1.5x represented an (unallowable) intermediate generalisation of this algorithm.

The minutes of the oral proceedings further show (point 3.5) that the opponent referred to page 4, line 8 to page 5, line 6 of the application as filed regarding the disclosure of the electric coil cooktop and mentioned that "certain conditions" were not met. As to the glass ceramic cooktop, the opponent submitted that the on/off transitions described in the algorithm could not be considered "continuous".

It can be further seen from the opponent's letter of 29 September 2022, point 2, that it submitted that, for the electric coil cooktop, turning the heating element on and off was disclosed only "when specific conditions are met", not "continuously", and that the same applied to the glass ceramic cooktop as the algorithm involved two different duty cycles as well as phases of "maintaining the heating element on for a specific

period of time", which interrupted the "continuity of the on-off transitions".

Accordingly, all the elements of the respondent's objections reproduced under point 1.3 above had already been submitted in the opposition proceedings, and the appellant's assertions in this respect are not correct. Therefore, even if the opposition division did not fully agree with the opponent's line of argument, the decision under appeal is based on all the facts, objections and arguments summarised above under point 1.3. The appeal proceedings are thus based on them within the meaning of Article 12(2) RPBA, and so the objections and arguments do not constitute an amendment under Article 12(4), first sentence, RPBA. The Board thus has no discretion not to admit them.

As to the alleged lateness, it is true that the facts, objections and arguments at issue were not presented within the opposition period. The opposition division would thus have had the discretion to disregard these objections against the patent as granted (or the alleged facts underpinning them) for being late-filed under Article 114(2) EPC. However, the admittance of these objections (or the underlying alleged facts) was not challenged by the patent proprietor, who dealt with them in substance at the oral proceedings (minutes, points 3.6 and 3.8; decision under appeal, section II. 12.2.3.2). Consequently, the opposition division was under no obligation to justify and reason whether and how it had made use of its discretion. There is thus no reason for the Board to review the opposition division's discretionary decision either.

Accordingly, all the objections set out by the respondent summarised under point 1.3 above are to be considered in the appeal proceedings.

1.6 Interpretation of "continuously" in Feature 1.5x

1.6.1 The Board agrees in principle with the "two-step approach" for the assessment of added matter submitted by the appellant and set out in the catchword of T 367/20. The patent claims first have to be interpreted in order to determine the subject-matter they contain after the amendment. They are interpreted in line with G 1/24, which states, in the context of assessing the "patentability of an invention under Articles 52 to 57" (see G 1/24, headnote and reasons 4 and 12), that the claims are the starting point and the basis for the assessment, and the description and drawings are always to be consulted to interpret the claims. The Board considers this to be true not only for the question of "patentability of an invention under Articles 52 to 57" but also for the issue of Article 123(2) EPC.

In a second step, it has to be assessed whether the subject-matter of the amended claim – determined by way of interpretation – contains subject-matter which extends beyond the content of the application as filed. In this regard, in accordance with G 2/10 the decisive factor is whether or not the skilled person is presented with new **technical information** after the amendment. The mere fact that the expression "turning the heating element continuously on and off" is not literally found in the original disclosure is not decisive because this alone does not establish that the expression adds new technical information.

1.6.2 The parties agree that "[n]o clear meaning emerges from the language of the claim itself" for the expression in Feature 1.5x, as submitted by the appellant (statement of grounds of appeal, page 16, first paragraph). According to the respondent, there is no explanation or clear correspondence for the expression in the description and drawings either. In this regard, the Board will now address the interpretations submitted by the parties.

1.6.3 Interpretation of Feature 1.5x

Taking the claims as the starting point and basis (see point 1.6.1 above), the respondent's approach that the same term in a claim should be given the same meaning is a valid hypothesis to start with.

According to Feature 1.4, the algorithm which involves monitoring the temperature and calculating the rate of change also involves controlling the power level, which is specified in more detail in Feature 1.5x. The term "continuously" in claim 1 thus applies to different features but is used in the same context, namely that of an algorithm repeatedly executed by the control device. Hence, contrary to the appellant's opinion, there are good reasons for considering that "continuously" in Feature 1.5x also refers to "periodically" turning the heating element on and off (albeit again not necessarily with the same time period as the monitoring/sensing or calculating). Moreover, periodic turning on and off is a well-established concept for controlling the power level of a heating element in accordance with a duty cycle, as also referred to by the appellant and in line with the disclosure of the algorithm for the electric glass

ceramic cooktop in paragraphs [0025] and [0026] and Figure 13 of the patent.

Hence, taking "continuously" to mean "periodically" is a valid, technically meaningful interpretation of "continuously" in the context of Feature 1.5x, with the expression "turning the heating element continuously on and off" thus referring to a periodic sequence of the actions of turning the heating element on and turning the heating element off, as in pulse-width modulation of the power in accordance with a duty cycle.

It is noted in this regard that "periodic" and "periodicity" are well-known technical terms which imply a fixed, predetermined period (repetition at fixed, predetermined time intervals) contrary to the appellant's understanding (that repetitions "at varying time intervals" are "periodic"). Hereinafter, therefore, changes at varying intervals are not understood to be covered by the term "continuously" in the sense of "periodically". This understanding is also in line with the description of the patent, which refers to "every second, or other suitable time interval" or "every ten seconds, or other suitable time interval" (e.g. paragraph [0017]). This wording expresses that the time interval between repetitions can be selected but that each repetition occurs exactly when the specified time interval after the last repetition has passed, i.e. at fixed intervals.

1.6.4 By contrast, the appellant's interpretation, adopted by the opposition division, that "continuously" applied to the continuous execution of the control method and algorithm for power control during the cooking process is not convincing.

Most importantly, this interpretation is not in line with the plain wording of claim 1. Feature 1.5x does not specify controlling the power level "continuously" but controlling the power level "by turning the heating element continuously on and off". In that respect, the Board agrees with the appellant's own analysis that, according to the wording of Feature 1.5x, "continuously" can only apply to the *action(s)* of turning the heating element on and off (see point 1.4.3 above, third paragraph).

Moreover, it is self-evident for the skilled person that the power control algorithm only operates when the cooktop is turned on and continues to run throughout the cooking process so as to maintain the temperature of the cookware within the range specified in Feature 1.4. The continuous aspect of the power control is also apparent merely from the cyclic nature of the algorithm (see, for example, the flow chart of Figure 13). Hence, expressly specifying that the power is "continuously" controlled is unnecessary and redundant and does not provide any additional limitation. Any such interpretation that basically disregards the deliberately added feature is not convincing.

1.6.5 The appellant's alternative interpretation of the expression "turning the heating element continuously on and off" (see point 1.4.4, second sentence) is not convincing either, at least not in the sense of "repeated" turning on and off at *irregular* time intervals (when certain conditions of the algorithm are met).

It is true that the aspect of the term "continuous" of "happening or existing for a period of time without being interrupted" does not correlate with the

instantaneous, alternating, even opposite nature of the actions of turning on and turning off. The Board thus agrees with the appellant that "continuously" in this context must be primarily understood in the other sense of "repeated many times".

However, the two meanings of "continuously" submitted by the appellant are not entirely independent of each other, nor complementary or contradictory as suggested by the appellant. Even when interpreted to mean "repeated many times", "continuously" expresses that there is no significant interruption or cessation between repetitions. Hence, the expression "turning the heating element continuously on and off" does not include the case where the heating element is turned on and off irregularly, at variable time intervals, namely only when the conditions of the algorithm are met, as disclosed in certain embodiments of the algorithm in the description.

Moreover, if the actions of turning on and turning off were to be considered "continuous" simply because the heating element switches between the on and off states at certain times (at variable intervals), this would render the term "continuously" meaningless. The resulting subject-matter would be no different from "turning the heating element on and off" without the term "continuously", regardless of whether "continuously" applied to the control algorithm or to "turning the heating element on and off" (see point 1.6.4).

1.6.6 Accordingly, the Board disagrees with the two interpretations of Feature 1.5x submitted by the appellant. The only convincing interpretation of the expression is thus that of periodically turning the

heating element on and off (at fixed intervals) as submitted by the respondent, which includes pulse-width modulation of the heating element in accordance with a predetermined duty cycle. This interpretation will be used in the following (see point 1.7 below) when examining whether the amendment according to Feature 1.5x has added new technical information.

1.6.7 The appellant argued that this interpretation was "obviously not in line with the disclosure in the patent" and thus did not correctly take into consideration the context of the description and the drawings (see T 367/20, reasons 1.3.2).

The Board disagrees for the following reasons.

According to T 367/20, reasons 1.3.2, a claim feature must be interpreted not in isolation but in the context of the whole document it forms part of. This is done, however, by taking due account of the **primacy of the claims** (reasons 1.3.6; see also T 1473/19, reasons 3.16 to 3.16.2, cited in G 1/24, reasons 11). This is also in line with G 1/24 as discussed above, which states that the "claims are **the starting point and the basis**" (G 1/24, reasons 12 and headnote, emphasis added; see also UPC_CoA_335/2023, second headnote, according to which the claims are the "decisive basis"). The claim interpretation in point 1.6.6 has been arrived at using this approach.

Moreover, interpreting "continuously" to mean "periodically" (see point 1.6.6) encompasses the heating element being operated in accordance with a duty cycle, which is disclosed in some embodiments of the patent. It thus does not represent an

interpretation that is "obviously not in line with the disclosure in the patent".

1.7 Comparison with the application as filed

While it is undisputed that the application as filed does not disclose the expression "turning the heating element continuously on and off", it does disclose embodiments where the heating element is controlled on the basis of a duty cycle and is thus "continuously" turned on and off; see the power control algorithm for the electric glass ceramic cooktop on page 7, lines 1 to 17 and in Figure 13.

However, according to this disclosure, the power level is in fact controlled by changing between two different duty cycles when certain threshold conditions in terms of the monitored temperature and rate of change are met. Moreover, the algorithm also contains phases where the heating element is kept "on" for a specific period of time without turning the heating element periodically on and off (e.g. block "Turn Element On" at the top of Figure 13 and "to decide when to remove power to the element", page 7, lines 1 to 2; block "Turn On Element For 10 seconds" at the bottom right of Figure 13 and "pulsed 'on' for 10 seconds", page 7, lines 14 to 17).

Accordingly, as submitted by the respondent, even in the algorithm using duty cycles, the heating element is not always "periodically" turned on and off, and the "continuity" of the duty cycle is interrupted under certain conditions. As claim 1 as granted does not include these more specific aspects of the power control for the electric glass ceramic cooktop of the application as filed, and as the application as filed

does not disclose a periodicity throughout the algorithm, the amendment in Feature 1.5x is at least an unallowable intermediate generalisation of the original disclosure.

Moreover, the application as originally filed does not contain a corresponding disclosure (power control algorithm based on a duty cycle) for the electric coil cooktop (Feature 1.5a). Accordingly, the combination of Feature 1.5x with Feature 1.5a extends beyond the content of the application as filed.

1.8 The maintenance of the patent as granted according to the main request is thus prejudiced by the ground of opposition under Article 100(c) EPC.

2. Auxiliary requests A to D, F and G – Article 123(2) EPC

Claim 1 of auxiliary requests A to D contains different additional specifications of the temperature sensor arrangement but otherwise maintains the combination of Feature 1.5x ("the control device is configured to control the power level of the cooktop by turning the heating element continuously on and off") with either an electric coil cooktop or an electric glass ceramic cooktop. The parties agreed that the further amendments do not affect the subject-matter of these combinations with respect to Feature 1.5 in the patent as granted and submitted that no further discussion of these auxiliary requests was necessary.

Claim 1 of auxiliary requests F and G is identical to claim 1 as granted.

The Board thus concluded that auxiliary requests A to D, F and G are not allowable under Article 123(2) EPC

for the same reasons as set out for the main request under Article 100(c) EPC.

3. Auxiliary request E

3.1 Admittance

Auxiliary request E was submitted for the first time with the statement of grounds of appeal. The decision under appeal is thus not based on this request within the meaning of Article 12(2) RPBA, and so the request constitutes an amendment under Article 12(4), first sentence, RPBA. The appellant submitted that the objections under Article 100(c) EPC against the patent as granted were raised shortly before the oral proceedings. The opposition division's reasoning could only be fully understood with the written decision, and the appeal proceedings were the first time the patent proprietor could appropriately react.

Since auxiliary request E is in any case not allowable (see below), the Board does not see any need to further discuss the appellant's reasoning and the respondent's counterarguments as to its admittance. The Board exercised its discretion under Article 12(4) RPBA to admit auxiliary request E into the appeal proceedings.

3.2 Article 123(3) EPC

Claim 1 has been amended, *inter alia*, by defining the conditions of the power control algorithm for the electric coil cooktop based on page 4, line 29 to page 5, line 9 of the original description. The previous feature whereby the control device is configured to control the power level of the cooktop by "turning the

heating element continuously on and off" has been replaced for the electric coil cooktop with:

"*turning the heating element off when the sensed temperature is above a predetermined threshold temperature and the rate of change is above a predetermined rate of change and on when the sensed temperature is below a predetermined threshold temperature and the rate of change is below a predetermined rate of change*"

The appellant submitted that the above-cited new formulation was more specific by comparison with the previous feature because it recited particular conditions for the transition between on and off. However, it still required the heating element to be "continuously" turned on and off because turning on and turning off were repeatedly performed, were never interrupted and were carried out periodically at varying time intervals. Moreover, as also disclosed on page 2, line 33 to page 3, line 3, the power level of an electric coil cooktop was generally controlled by "an electronically controlled relay that establishes a duty cycle". This was also expressly disclosed for the control device of the electric coil cooktop on page 5, lines 1 to 3 and was implicit in claim 1. Accordingly, the heating element of the electric coil cooktop was implicitly "periodically" turned on and off in accordance with a duty cycle.

However, firstly, operation in accordance with a duty cycle is not claimed for the electric coil cooktop and not inevitable. Hence, claim 1 is not implicitly restricted to power level control "by turning the heating element continuously on and off" in accordance with a duty cycle. Secondly, it is questionable whether

the heating element can be understood as being "continuously" or "periodically" turned on and off during a phase where it is "turned off" according to claim 1. Thirdly, the transitions between on and off take place irregularly when the claimed conditions are fulfilled, which interrupts the continuity of the alleged duty cycle. Accordingly, claim 1 is not restricted, either implicitly or explicitly, to an algorithm where the power level for the electric coil cooktop is controlled in accordance with a duty cycle (as an example of "continuously" (periodically) turning the heating elements on and off).

Furthermore, as already set out above under point 1.6.3, repetition at varying time intervals is not covered by the term "periodically". Hence, the above-cited amendment in claim 1 of auxiliary request E removes the previous restriction that the power level is controlled "by turning the heating element continuously on and off". Periodically turning the heating element on and off (at fixed intervals) is no longer required for the electric coil cooktop.

The amendments in auxiliary request E thus shift the subject-matter for the electric coil cooktop in such a way as to extend the protection conferred by the patent, contrary to the requirements of Article 123(3) EPC. For this reason alone, auxiliary request E is not allowable.

4. Auxiliary request E' – Admittance

4.1 At the oral proceedings before the Board, the appellant filed auxiliary request E' to be ranked after auxiliary request E.

In claim 1 of auxiliary request E', the alternative that the cooktop is an electric coil cooktop has been deleted. Regarding the alternative of the electric glass ceramic cooktop, claim 1 of auxiliary request E' contains the same amendments in relation to the algorithm as auxiliary request E. That is, the previous feature that the control device is configured to control the power level of the cooktop by "turning the heating element continuously on and off" (Feature 1.5x) has been replaced with "*establishing a duty cycle based on specific combinations of the sensed temperature and change in temperature*" on the basis of page 7, lines 4 to 6.

4.2 The appellant submitted that auxiliary request E' should be admitted. It set out that there were exceptional circumstances in that, firstly, auxiliary request E' had only been amended by deleting the alternative of the electric coil cooktop and was thus not a substantive amendment to its appeal case. Secondly, exceptional circumstances were borne out of the Board's surprising finding at the oral proceedings that "continuously" required a "fixed, predetermined" periodicity.

4.3 The respondent submitted that its understanding of "continuously" as "periodically" had been on the table since the letter of 29 September 2022 in opposition and had been discussed during the oral proceedings in opposition, maintained in the reply to the appeal and confirmed in the Board's preliminary opinion in the communication under Article 15(1) RPBA. The appellant had thus had ample opportunity to file a new auxiliary request before the oral proceedings on appeal, even after the Board's communication. The appellant had even replied to the Board's preliminary opinion with a new

submission two weeks before the oral proceedings but did not file a new request at that time. Filing a new request only at the oral proceedings was too late. Even if the amendment did only concern the deletion of an alternative, it was still an amendment to the appellant's case that should not be admitted.

4.4 In the Board's view it was already clear in the opposition proceedings that the opponent's interpretation of "continuously" as "periodically" implied repetition at fixed predetermined time intervals. Firstly, this interpretation was based on the other occurrences of the term "continuously" in the patent and the application as filed. These disclose "continuously" in the sense of "every second, or other suitable time interval" (e.g. paragraph [0017] of the patent; page 4, lines 29 to 32), that is, at a selectable but fixed time interval. Secondly, the technical term "periodic" per se implies repetition at regular (fixed) time intervals known as the "period". Thirdly, the opponent clearly argued that repetition at irregular time intervals when specific conditions of the algorithm were met was not to be understood as "periodic". These arguments had also been stated and confirmed in the Board's communication under Article 15(1) RPBA (see e.g. points 5.2.1 and 5.2.8). Accordingly, the Board does not share the appellant's view that the interpretation of "continuously" as "periodically" with a "fixed, predetermined" periodicity was surprising and only came to light during the oral proceedings on appeal. The appellant thus could have already reacted to these arguments during the opposition proceedings – and should have reacted to them at least in response to the respondent's reply in the appeal proceedings. Hence, the Board's interpretation of "continuously" at the

oral proceedings does not constitute exceptional circumstances within the meaning of Article 13(2) RPBA.

The Board also agrees with the respondent that deleting subject-matter and correspondingly reducing the subject-matter for which protection is sought in auxiliary request E' represents an amendment to the appellant's case. Such reduction may sometimes be beneficial to procedural economy if it means that the deleted subject-matter does not have to be examined and if the deletion does not redirect the case to, for example, subject-matter not previously discussed. In the current case, however, the deletion concerns subject-matter that had already been discussed at the oral proceedings before the Board and led to the rejection of auxiliary request E. This amendment in auxiliary request E' thus redirects the attention to the remaining alternatives of auxiliary request E and would require further discussions. The Board thus does not consider that the amendment is justified by exceptional circumstances merely because it concerns a deletion.

Accordingly, auxiliary request E' is not admitted into the appeal proceedings in line with the Board's discretion under Article 13(2) RPBA.

5. Auxiliary request H – Article 123(2) EPC

Auxiliary request H differs from the patent as granted in that (i) the alternative of the electric cooktop has been deleted in independent claims 1 and 12, (ii) claims 5, 6 and 11 directed to the deleted alternatives have been deleted, and (iii) the independent method claim has been renumbered as claim 9. Accordingly, claim 1 of auxiliary request H is exclusively directed

to a gas burner cooktop, as already defined as one alternative in claim 1 as granted.

5.1 The respondent submitted that specifying the cooktop to be a "gas burner cooktop" without also specifying that the temperature sensor is arranged to be "in direct contact with the bottom of the cookware", as disclosed in original claim 8 and on page 3, lines 15 to 17 and 22 to 24 and on page 5, lines 20 to 24 of the application as filed, represented an unallowable intermediate generalisation of the original disclosure and thus extended beyond the content of the application as filed.

5.2 Admittance of the objection

The appellant submitted that claim 1 as granted covered three alternative types of cooktops, i.e. three different subjects that could also have been formulated as three independent claims. One of these alternative subjects, that of the gas burner cooktop, was pursued in auxiliary request H. No objection had been raised against this subject-matter in the notice of opposition. The respondent's objection against the alternative of the gas burner cooktop (summarised above) had been presented for the first time at the oral proceedings in opposition during the discussion of newly filed auxiliary request 1, with the proprietor requesting that the objection not be admitted. The opposition division admitted the late-filed attack but did not provide any reasoning for doing so in the decision under appeal. It was thus not clear whether the opposition division had recognised and exercised the discretion it had. Nor was it clear on which criteria, if any, the opposition division's decision had been based. The appellant requested that this

objection not be admitted under Article 12(4) RPBA. Moreover, it requested that the opposition division's exercise of discretion be reviewed and overturned.

As submitted by the appellant itself, the objection against specifying the cooktop to be a "gas burner cooktop" without also specifying that the temperature sensor was "in direct contact with the bottom of the cookware" had been raised against auxiliary request 1 at the oral proceedings in opposition. Auxiliary request H is identical to auxiliary request 1 then on file. The finding in the decision under appeal that this auxiliary request is not allowable is based on the objection at issue. Accordingly, this objection against auxiliary request H is not an amendment within the meaning of Article 12(4), first sentence, RPBA.

It is true that this objection, which related to subject-matter already contained in the claims as granted, had been presented for the first time at the oral proceedings in the course of the discussion of the newly filed auxiliary request 1 and that the proprietor had requested that this objection not be admitted (decision under appeal, section II.13.3.2; minutes, point 4.2). In section II.13.3.3 the opposition division sets out its reasoning why auxiliary request 1 was, *inter alia*, prejudiced by the objection at issue. It is thus evident that the opposition division admitted the objection in spite of the proprietor's request and found it convincing (minutes, point 4.6; decision, II.13.3.2 and II.13.3.3). Although the decision under appeal does not explicitly set out the grounds for admitting auxiliary request 1 and the late-filed objection against it, in the Board's view it is implicit that the opposition division admitted the objection as it was *prima facie* highly relevant and was

a reaction to the newly filed auxiliary request 1, in the same way as it is implicit that the division admitted auxiliary request 1 as a reaction to the course of the oral proceedings. Neither appears problematic to the Board.

Moreover, both the minutes and the decision under appeal record the proprietor's submission that the opponent's arguments and "objection" (minutes, point 4.4; decision, II.13.3.2, second paragraph, line 4) were "late". In the Board's view, this shows that the opposition division was indeed aware of its discretion regarding the admittance of this objection, in the same way as it was aware of its discretion regarding the admittance of auxiliary request 1, which was not filed until the oral proceedings (this is recorded in the minutes, point 4.6, but likewise not explicitly set out or reasoned in the decision under appeal).

In addition, the Board considers the following. Even if there were still doubts as to whether the opposition division was aware of its discretionary power, given the lack of explicit reasoning for its decision, the parties agreed that remitting the case to the opposition division would not change the case in substance and thus would not make sense. Moreover, even if it were a discretionary error, with the consequence that the implicit admittance of the objection in the opposition proceedings would have to be reversed, the Board would exercise its own discretion under Article 12(4) RPBA and admit the objection set out by the respondent in the reply due to its *prima facie* relevance (see below).

Accordingly, the opponent's objection summarised under point 5.1 above is to be taken into account in the appeal proceedings.

5.3 Article 123(2) EPC

5.3.1 Claim 1 as originally filed is not limited to a particular type of cooktop and discloses a temperature sensor "adjacent a bottom of the cookware on the cooktop".

5.3.2 Claim 1 of auxiliary request H is restricted to a gas burner cooktop. This specification can be found in original claim 8 and in the original description (see e.g. page 3, lines 15 to 17).

However, as submitted by the respondent, the application as filed discloses a gas burner cooktop only in combination with the temperature sensor being "in direct contact with the bottom of the cookware" (claim 8; similarly on page 3, lines 15 to 17 and lines 22 to 24; page 5, lines 22 to 24).

The respondent furthermore argued that direct contact between the temperature sensor and the bottom of the cookware was closely related to the function "to maintain a temperature of the bottom of the cookware below the predetermined oil ignition temperature and above a cooking temperature" specified in claim 1. In a gas burner cooktop, the temperature of the bottom of the cookware would not be able to be properly determined and controlled unless the sensor was in direct contact with the cookware. Hence, omitting the specific temperature sensor arrangement in a gas burner cooktop represented an unallowable intermediate generalisation.

5.3.3 The appellant submitted that original claim 1 already represented a basis for generalising the more specific temperature sensor position as it merely required, for any type of cooktop, a temperature sensor "adjacent a bottom of the cookware on the cooktop".

Omitting the specific temperature sensor arrangement "in direct contact with the bottom of the cookware" was at best an allowable intermediate generalisation. Estimating the temperature at the bottom of the cookware was a function of the control device, not of the temperature sensor. According to the application as filed, the control device could take into account offsets in the "sensor temperature" thresholds and even account for thermal inertia of the cookware. The skilled person knew that to control the bottom temperature so that it is in a certain temperature range, the exact position of the temperature sensor was not so important.

5.3.4 Original claim 1 does indeed provide a basis for the generalised arrangement of the temperature sensor "adjacent" to the cookware, as long as the type of cooktop is not further specified. The application as filed discloses that the term "adjacent" in original claim 1 and on page 3, lines 6 to 8 encompasses temperature measurements of the cooktop bottom "either directly or indirectly" (page 3, lines 14 to 15) and arrangements of the sensor either in direct contact with the bottom of the cookware or from below the glass ceramic plate, as explained on page 3, lines 15 to 19 and page 6, lines 23 to 28.

However, claim 1 as filed does not provide a basis for generalising the more specific definitions of the

sensor arrangement disclosed for each of the specific cooktops.

5.3.5 Accordingly, the application as filed discloses a gas burner cooktop only in combination with the temperature sensor "in direct contact" with the bottom of the pan or other cookware. Claim 1 of auxiliary request H does not include this limitation. Hence, claim 1 includes an "intermediate generalisation" of the original disclosure for the gas burner cooktop.

According to the established case law of the boards of appeal, an intermediate generalisation is allowable if it is directly and unambiguously derivable that the *features extracted* from the original disclosure are not closely related to the *omitted features* or, put another way, not inextricably linked to them (Case Law of the Boards of Appeal of the EPO, 10th edition, 2022, II.E. 1.9.1).

In particular in a gas burner cooktop, where there is little thermal inertia and a rapid, direct transfer of heat from the flame to the cookware, thereby allowing for temperature control with rapid responsiveness (see page 5, lines 20 to 26), the bottom temperature of the cookware cannot be accurately estimated with a temperature sensor unless it is in direct contact with the cookware at its bottom (unless special provisions are taken, which are beyond the content of the application as filed). According to page 9, lines 18 to 20 and Figure 7, the sensor is even spring-loaded to ensure it is in direct contact with the cookware, further supporting the functional importance of the direct contact. The Board is thus convinced that the specification of the temperature sensor arrangement is

closely functionally related to the specific type of a gas burner cooktop.

5.3.6 Hence, the subject-matter of claim 1 is based on an unallowable intermediate generalisation of the original disclosure and thus contains subject-matter extending beyond the content of the application as filed, contrary to the requirements of Article 123(2) EPC.

6. Summary

For the reasons set out above, none of the appellant's claim requests is allowable. The appeal is thus to be dismissed.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

C. Spira C. Herberhold

Decision electronically authenticated