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D E C I S I O N
of 14 November 2001

Case Number: T 1040/99 - 3.4.2
Application Number: 91311497.1
Publication Number: 0490647
IPC: H05B 41/38, H05B 41/24,
H01J 65/04

Language of the proceedings: EN

Title of invention:

Method of hot restarting electrodeless hid lamps

Patentee:

GTE PRODUCTS CORPORATION

Opponent:

Fusion UV Systems Inc.

Headword:

-

Relevant legal provisions:

EPC Art. 123(2)

Keyword:

"Inadmissible subject-matter - claim 1, main and first auxiliary request (confirmation)"

Decisions cited:

-

Catchword:

-



Case Number: T 1040/99 - 3.4.2

D E C I S I O N
of the Technical Board of Appeal 3.4.2
of 14 November 2001

Appellant: GTE PRODUCTS CORPORATION
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Respondent: Fusion UV Systems Inc.
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Decision under appeal: Decision of the Opposition Division of the
European Patent Office posted 17 September 1999
revoking European patent No. 0 490 647 pursuant
to Article 102(1) EPC.

Composition of the Board:

Chairman: E. Turrini
Members: M. A. Rayner
B. J. Schachenmann

Summary of Facts and Submissions

- I. The appellant (=patent proprietor) has appealed against the decision of the opposition division revoking European patent number 490 647 (application number 91 311 497.1). The patent concerns restarting electrodeless high intensity discharge (HID) lamps.

- II. The original opposition was filed against claims 1 to 6 and based on Articles 100(a) (Articles 54 and 56 EPC). Following an amendment made to claim 1 involving temperature, the opposition division remarked that amended features reciting a "start temperature" and "until the lamp reaches said start temperature" could not be found in the documents as filed. Throughout the original application, only two parameters or criteria are used for regulating the cooling of the lamp, namely time and light emission. Moreover, although according to the auxiliary request claim 1 did not contain the wording "start temperature", a regulation of the cooling process of the lamp as a function of temperature was implied, which was never mentioned in the documents as filed. The reason for the revocation of the patent given in the decision under appeal was thus that claim 1 according to both the main and auxiliary request before the opposition division had been amended in contravention of Article 123(2) EPC. Consideration of novelty and inventive step was specifically excluded from the decision.

- III. The appellant requested setting aside of the decision and remittal of the case to the opposition division for consideration of novelty and inventive step. The respondent (=opponent) requested the board to dismiss the appeal. Oral proceedings were requested by both

parties.

- IV. Oral proceedings were appointed, consequent to the auxiliary requests filed, and in a communication accompanying the summons, the board indicated that any decision made in respect of novelty and inventive step would have the consequence of the parties being deprived of an instance, because a decision on these issues had been explicitly excluded by the opposition division. Moreover, if the board were to decide favourably for the appellant on the issue of added subject matter, a request for remittal to the first instance for consideration of these issues had been made. Therefore, the procedural situation seemed to preclude consideration of novelty and inventive step.

During the oral proceedings the appellant requested remittal of the case to the first instance on the basis of the main or one of four auxiliary requests. The respondent maintained his request for dismissal of the appeal.

- V. The arguments of the appellant can be summarised as follows:

The problem of cold restart of a HID lamp is solved by an empirical temperature determination. Neither of the claims 1 before the first instance contains any disclosure, implicit or otherwise, involving monitoring the temperature of the lamp. Nor does either claim exclude cooling beyond the start temperature, the only limitation as opposed to the claim as granted is the lamp is not extinguished before the start temperature is reached. The intention behind the amendment to both the main and first auxiliary request was thus to

disclaim not reaching the start temperature by limiting to a case where energy is reduced to or beyond the restart point. Claim 1 as granted was not necessarily so limited. Timing or monitoring energy reduction is specifically disclosed in the patent. Reference can be had in this respect to column 2, line 13 et seq. Cooling is specifically disclosed in this context in column 4, line 42 et seq. The time of two minutes mentioned is mentioned as the cooling time required (column 5, line 8). If cooling over a period of time takes place, there is plainly an operating temperature and a cooler start temperature. There is some point at which the glow state is reached and the patent realises this is reached through cooling by power reduction, all the time enabling a restart. No more than this originally disclosed information is what is claimed in the main or first auxiliary request. The second auxiliary request does not contain the amendment upon which the decision of the opposition division was based.

- VI. According to the respondent, the temperature must be monitored as otherwise no stop point for the cooling procedure is determined. Maintaining the lamp in a partially ionised state without stopping is simply dimming. The respondent drew attention to the fact that the word "temperature" did not occur at all in the documents as filed. Two criteria involved with the point at which the lamp can be extinguished other than temperature monitoring are in fact disclosed in the patent, namely light output and time. Cooling is mentioned in the context of a restart but no temperature monitored endpoint for this cooling is defined. In fact partial pressure would be a better criterion than temperature, but be that as it may, the

fact remains that the passages cited in the description shows that it is time and not temperature that is monitored.

VII. Claim 1 according to the requests of the appellant is worded as follows:

Main request

A method of operating a microwave powered arc discharge electrodeless HID lamp switched to an off condition wherein said lamp has a start temperature and an operating temperature higher than the start temperature and said lamp is cooled from said operating temperature to said start temperature prior to restarting thereof, characterised in that said cooling of the lamp is effected by decreasing microwave power supplied to the lamp to cause a decrease in optical emission of the lamp fill whilst maintaining said lamp fill partially ionised until the lamp reaches said start temperature.

First auxiliary request

A method of operating a microwave powered arc discharge electrodeless HID lamp switched to an off condition wherein said lamp is cooled prior to restarting thereof, characterised in that said cooling of the lamp is effected by decreasing microwave power supplied to the lamp to cause a decrease in optical emission of the lamp fill and to cause cooling of the lamp from an operating temperature to a temperature at which, upon extinguishing of the lamp, restarting of the lamp is possible by the reapplication of microwave power, whilst maintaining said lamp fill partially ionised.

Second auxiliary request (claim 1 as granted)

A method of operating a microwave powered arc discharge electrodeless lamp switched to an off condition wherein said lamp is cooled prior to restarting thereof, characterised in that said cooling of the lamp is effected by decreasing microwave power supplied to the lamp to cause a decrease in optical emission of the lamp fill whilst maintaining said lamp fill partially ionised.

Third and fourth auxiliary requests

Since the auxiliary requests are not addressed by the present decision (see point 5 of the Reasons below), the wording of the claims concerned is not given.

VIII. The board gave its decision at the end of the oral proceedings.

Reasons for the Decision

1. The appeal complies with the provisions mentioned in Rule 65(1) EPC and is therefore admissible.

Article 123(2) EPC

2.1 *Main request*

The amendments made to claim 1 according to the main request in the course of the opposition proceedings are the following:

- (a) the recitation of the lamp as a "HID" lamp,
- (b) the recitation that the lamp has "a start temperature and an operating temperature higher than the start temperature",
- (c) the recitation that the lamp is cooled "from said operating temperature to said start temperature", and
- (d) the final feature of the claim "until the lamp reaches said start temperature".

While HID lamps are disclosed for example in the introductory sentence of the description as filed, the board did not find any specific reference to the "temperature" as mentioned in the context of amendments (b), (c) and (d) in the documents as filed, nor could the appellant point to any such reference during the oral proceedings.

2.2 The passages referred to by the appellant as support for this amendment are worded as follows:

"In the normal operating mode of an electrodeless HID lamp, continuous microwave power is supplied to the lamp. In the present invention the hot restart condition is achieved through controlled reduction of the microwave power at the time at which the lamp is switched off (column 2, line 13 et seq.=column 2, lines 19 et seq of the "A" publication)."

"Continuous cooldown of the lamp to the glow condition is achieved by feeding a gradually increasing negative current into the inverting input of OP2, designated as

point A in Figure 5. This current is in the same direction as photocurrent originating from the photocell and amplified by OP1 before being fed to the same point. Therefore, OP2 interprets this current as being due to increased light intensity, and decreases power to the lamp in order to maintain control at what it believes to be a constant light level. The net result is a steady decrease in light level until the lamp enters the glow state. At this point a simple timer circuit can be used to remove power to the lamp and to disable the control circuit in preparation for the next application of power to the lamp. Alternatively, the lamp can be maintained so that the arc is on permanently in a low power mode in which little light is emitted. The negative current supplied to point A is generated by the circuit shown in Figure 6. This consists of a simple capacitor charging circuit with a time constant given by R5 and C1, which supplies a potential to the gate of the P-channel FET T1. This is operated as a source-follower with the output supplied through resistor R6 to point A in Figure 5. Too rapid cooldown can result in lamp instability. A cooling time of about 2 minutes is adequate to ensure successful operation (column 4, line 42 to column 5, line 9=column 4, line 54 to column 5, line 21 of the "A" publication)."

- 2.3 Firstly, the board observes that it is a matter of fact that cooling of an HID lamp is necessary before a restart can be effected. In the view of the board, there is moreover a disclosure in the patent application as filed, particularly explicit for example in the last of the above cited passages, that cooling takes place over time. It emerges from the disclosure, however, that the time is not arbitrary but is set so

as to be "adequate to ensure successful operation", i.e. to set an endpoint for the cooling period after which a restart is possible. Contrary to this disclosure, the terminology "from said operating temperature to said start temperature" and "until the lamp reaches said start temperature" in claim 1 defines no endpoint on a temporal basis but specifies reaching of the "start temperature". If a specific temperature to be reached (or passed) is the decisive criterion, then to make technical sense, temperature must be monitored. However, there is no reference at all to temperature of the lamp in the documents as filed, let alone to its monitoring in relation to the cooling process. In view of these deficiencies in the documents as filed, the board had to reach the conclusion that subject matter has been added to the claim by the amendment thereto contrary to Article 123(2) EPC.

- 2.4 The approach of the appellant in support of the amendment is that the amendment amounts to a disclaimer of not reaching the start temperature and, as a restriction to what is claimed, cannot add subject matter to the disclosure. In the view of the board, this approach confuses extension of protection by claim amendment (Article 123(3) EPC) with subject matter extending beyond the content of the application as filed (Article 123(2) EPC). In the present case the amendment does not amount to a disclaimer of an accidental disclosure in the prior art and thus for Article 123(2) EPC to be considered satisfied support for the amendment should be present in the documents as filed in the form of directly and unambiguously derivable subject matter. This is not the case for the temperature related features introduced by the amendment. In particular, even if an undescribed

technical effect of the method disclosed is reaching or passing the start temperature upon elapsing of the time period selected, this effect does not amount to a disclosure replacing what is actually disclosed because no measurement for the endpoint for the cooling on the basis of temperature is disclosed. Accordingly, designating the amendment as a disclaimer according to the approach of the appellant does not convince the board of its admissibility in the light of Article 123(2) EPC.

2.5 Another line of argument of the appellant was based on considering the temperature determination as an empirical determination in order to avoid including temperature monitoring. This line of argument also fails to persuade the board, firstly because it finds no counterpart in the claim and secondly because even if it did, it would include other possibilities such as partial pressure determination as referred to by the respondents, which were not disclosed in the documents as filed.

2.6 Therefore, the board agrees with the opposition division and the respondent that claim 1 according to the main request includes subject matter extending beyond the contents of the application as filed and thus fails to satisfy Article 123(2) EPC.

3. *First auxiliary request*

3.1 The amendments made to claim 1 according to the auxiliary request in the course of the opposition proceedings are the following:

(a) the recitation of the lamp as a "HID" lamp,

(b) inclusion in the characterising part of the claim of the feature "and to cause cooling of the lamp from an operating temperature to a temperature at which, upon extinguishing of the lamp, restarting of the lamp is possible by the reapplication of microwave power".

3.2 Amendment (a) is the same as for the main request and therefore the considerations set out in point 2.1 apply. Since, however, amendment (b) to the claim according to this request also requires cooling to a "temperature" and thus to make technical sense requires temperature monitoring, the considerations set out in points 2.2 to 2.5 relating to an absence of corresponding disclosures apply to the claim of the auxiliary request correspondingly.

3.3 Therefore, the board agrees with the opposition division and the respondent that claim 1 according to the first auxiliary request includes subject matter extending beyond the contents of the application as filed and thus fails to satisfy Article 123(2) EPC.

4. *Second auxiliary request*

This claim corresponds to claim as granted and thus no amendments giving rise to objection under Article 123(2) were filed during the opposition proceedings.

Third and fourth requests

5. In view of the positive conclusion reached by the board with respect to the second auxiliary request of the appellant, consideration of the third and fourth

auxiliary requests is not necessary in the present decision.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the department of first instance for further prosecution of the case on the basis of the claims as originally granted (second auxiliary request).

The Registrar:

The Chairman:

P. Martorana

E. Turrini