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**Datasheet for the decision
of 10 December 2025**

Case Number: T 2291/22 - 3.4.01

Application Number: 10708388.3

Publication Number: 2404485

IPC: H05B37/02

Language of the proceedings: EN

Title of invention:
AUTOMATICALLY CONFIGURING OF A LIGHTING

Patent Proprietor:
Signify Holding B.V.

Opponent:
Helvar Oy Ab

Headword:
Automatically configuring a lighting / Signify Holding B.V

Relevant legal provisions:
EPC Art. 83

Keyword:
Sufficiency of disclosure - (no)



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Case Number: T 2291/22 - 3.4.01

D E C I S I O N
of Technical Board of Appeal 3.4.01
of 10 December 2025

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Decision under appeal: **Interlocutory decision of the Opposition
Division of the European Patent Office posted on
17 August 2022 concerning maintenance of the
European Patent No. 2404485 in amended form.**

Composition of the Board:

Chairman P. Scriven
Members: A. Medeiros Gaspar
L. Bühler

Summary of Facts and Submissions

- I. The Opposition was based on grounds under Article 100(a) and (b) EPC.

- II. In their decision, the Opposition Division held that the patent disclosed the invention in a manner sufficiently clear and complete for it to be carried out by the skilled person, but that it defined subject-matter that was not new. They also held that the proprietor's auxiliary requests 1 to 3 infringed Article 123(2) EPC, but that auxiliary request 4, filed and admitted during oral proceedings, complied with the requirements of the EPC.

- III. Both the opponent and the proprietor appealed this decision.

- IV. The proprietor requested that the decision under appeal be set aside and the opposition rejected (main request). Alternatively, the proprietor requested that the patent be maintained in amended form on the basis of one of auxiliary requests I, II, IIB, IIB', IIC, IID, III, IIIa, IV, IVa, V, Va, VI, VI', VIa, VII, and VIII, in that order. Auxiliary requests I, II, IIB, and IIB' are the auxiliary requests underlying the contested decision (designated there auxiliary requests 1 to 4). Auxiliary requests IIC and IID were filed in reply to the opponent's statement of grounds of appeal. The other auxiliary requests were filed in proceedings

before the Opposition Division, and resubmitted with the proprietor's statement of grounds of appeal.

- V. The opponent requested that the decision under appeal be set aside and the patent be revoked.

- VI. Both parties also conditionally requested oral proceedings.

- VII. In a communication pursuant to Rule 100(2) EPC, the Board expressed, *inter alia*, the preliminary opinion that the invention was not sufficiently disclosed, and that the deficiency that applied to all requests on file.

- VIII. The opponent also contested the Opposition Division's decision to admit auxiliary request IIB' (auxiliary request 4 of the decision); and, in its communication, also the Board questioned whether some of the auxiliary requests on which the decision was not based should be considered.

- IX. The proprietor submitted a written reply to the Board's communication.

- X. Oral proceedings took place before the Board. Both parties maintained their requests, as set out above. At the end of the oral proceedings, the Board announced its decision.

XI. Claim 1 of the patent reads:

A lamp (12) to be used in a lighting system, the lamp comprising

- a light source (16),*
 - a communication unit (18) adapted to create network connections and communicating with other lamps of the lighting system,*
 - a presence detector (14) to detect an activity level in an area highlighted under the lamp,*
 - a memory (20) storing a configuration of the lamp and a program for controlling the activity of the lamp depending on inputs received from other lamps and on measurements of said presence detector,*
 - a central control unit, which comprises a processing unit (22) adapted to execute the program stored in the memory,*
- characterized in that:*

each input of said inputs contains a history of activity levels detected by the respective presence detectors of the respective lamp of said other lamps, wherein the program contains the instructions to

- (i) process the inputs by applying a learning function to said inputs which is adapted to learn, from histories of activity levels detected by respective presence detectors of other lamps received as inputs, in order to determine the movement of a person, and*
- (ii) adjust the light emission of said light source depending on said determined movement of the person.*

XII. Auxiliary request I modifies the end of claim 1 of the patent, as follows:

...

the program contains the instructions to

- (i) process the inputs by applying a learning function to said inputs which is adapted to learn, from histories of activity levels detected by respective presence detectors of other lamps received as inputs, in order to determine the direction of movement of a person, and*
- (ii) adjust the light emission of said light source depending on said determined direction of movement of the person.*

XIII. Auxiliary request II modifies the end of claim 1 of auxiliary request I, as follows:

...

the program contains the instructions to

- (i) process the inputs by applying a learning function to said inputs which is adapted to learn, from histories of activity levels detected by respective presence detectors of other lamps received as inputs, in order to determine the direction of movement of a person based on knowledge on which lamps are close to each other determined by analysing the patterns in presence detection by the different presence detectors, and*
- (ii) adjust the light emission of said light source depending on said determined direction of movement of the person.*

XIV. Auxiliary requests IIB and IIB' modify the end of claim 1 of auxiliary request I and claim 1 of the patent, respectively, as follows:

...

the program contains instructions to

- (i) process the inputs (...), and*
- (ii) filter the inputs by strength of the radio signal and/or the time of flight of the signal transmitting an activity level from a lamp in that only signals with a radio signal strength larger than a predetermined value or a time of flight lower than a predetermined value, respectively, is to be considered for processing inputs,*
- (iii) adjust the light emission*

XV. Auxiliary requests IIC and IID are identical. They modify the beginning of claim 1 of auxiliary request IIB' as follows:

A lamp (12) to be used in a lighting system, the lamp comprising

- a light source (16), a communication unit (18) adapted to create wireless network connections and communicating with other lamps of the lighting system,*

....

XVI. Claim 1 of auxiliary request III is directed to a lighting system, rather than a lamp. In effect, it

modifies the beginning of claim 1 of auxiliary request I as follows:

~~A lamp (12) to be used in a lighting system,
the lamp comprising~~
A lighting system comprising:
a network from by a plurality of lamps
(12) wherein
a lamp to be used in the lighting system
comprises
- a light source (16),

XVII. Auxiliary request IIIa modifies the beginning of claim 1 of auxiliary request III as follows:

A lighting system for automatically
configuring a lighting comprising:
.....

XVIII. Auxiliary request IV modifies the beginning of claim 1 of auxiliary request III as follows:

A lighting system comprising:
a network from by a plurality of lamps (12)
wherein a each lamp of the plurality of
lamps to be used in the lighting system
comprises
.....

XIX. Auxiliary requests IVa and V add, at the end of claim 1 of auxiliary requests IIIa and IV, respectively:

[... movement of the person], and wherein the lighting system is configured to analyse patterns in presence detection by means of the history of activity levels detected by different presence detectors in the network of the plurality of lamps and to determine which lamps are close to each other.

XX. Auxiliary requests Va and VI add, at the end of claim 1 of auxiliary requests IIIa and IV, respectively:

[... movement of the person;] and wherein the processing of the received inputs comprises processing the inputs with a weight function, wherein every input is weighted and the used weights are adjusted continuously depending on the activity detected by one or more presence detectors.

XXI. Auxiliary request VI' modifies claim 1 of auxiliary request VI, as follows:

*...
the program contains the instructions to
(i) process the inputs by applying a learning function to said inputs which is adapted to learn, from histories of activity levels detected by respective presence detectors of other lamps received as inputs, in order to determine the ~~direction of~~ movement of a person, and*

(ii) adjust the light emission of said light source depending on said determined ~~direction of~~ movement of the person, and wherein the processing ...

XXII. Auxiliary requests VIa and VII add, at the end of claim 1 of auxiliary requests Va and VI, respectively:

[... one or more presence detectors], wherein adjusting the weights comprises comparing the activity levels of two lamps and increasing the weights when the derivatives of the activation of lamps are positive or otherwise when the derivatives of activation of lamps are negative decreasing the weights.

XXIII. Auxiliary request VIII modifies claim 1 of auxiliary request VII as follows:

*...
the program contains the instructions to (i) filter the inputs by strength of the radio signal and/or the time of flight of the signal transmitting an activity level from a lamp in that only signals with a radio signal strength larger than a predetermined value or a time of flight lower than a predetermined value, respectively, is to be considering for processing inputs,*

(ii) process the inputs by applying a learning function to said inputs which is adapted to learn, from histories of activity levels detected by respective presence detectors of other lamps received as inputs, in order to determine the direction of movement of a person, and (iii) adjust the light emission of said light source depending on said determined direction of movement of the person, and wherein the processing ...

Reasons for the Decision

The patent in suit

1. The patent relates to lighting systems and their automatic configuration (patent, [0001]).
2. It describes the invention as based on the idea that a lamp, in a network of lamps, can be configured to adjust its light emission depending not only on presence detection in its own direct environment, but also on presence detection in the environment of other lamps in the network; and on the insight that, by analysing historical patterns in presence detection by various lamps, it is possible to find out, or learn, which lamps are close to one another in terms of how likely it is that a person will pass under a given lamp, given that they are currently passing under some other lamp. This could allow lamps to be configured so

as to illuminate an area before the person gets there (patent, [0005]).

3. This teaching is further detailed in paragraphs [0020] to [0027].

Main request - Sufficiency of disclosure

4. Claim 1 of the patent defines a lamp comprising a light source, a communication unit, a presence detector, a memory comprising a configuration of the lamp and a program for controlling the lamp, and a central control unit comprising a processing unit adapted to execute the program.
5. The communication unit is adapted to create network connections to other lamps.
6. The program is additionally defined as being *for controlling the activity of the lamp depending on inputs received from other lamps and on measurements of said presence detector*. Each input is defined as containing *a history of activity levels detected by the respective presence detectors of the respective lamp of said other lamps*.
7. Furthermore, the program is defined as containing *instructions to:*
 - (i) *process the inputs applying a learning function to said inputs which is adapted to learn, from histories of activity levels detected by respective presence detectors of other lamps received as inputs, in order to determine the movement of a person;*

(ii) adjust light emission of said light emission of said light source depending on the determined movement of the person

8. The opponent argues that the patent did not teach how the movement of a person could be determined by processing the inputs received from other lamps of the network, as defined under (i) above, or how the learning function to be applied was obtained.
9. They further argue that it was not possible meaningfully to adjust the light emission, as defined under (ii), without knowing the lamp's own history of activity levels. Such information was essential to the identification of correlations between the activity of the lamp and that of others.
10. The Board agrees. Indeed, what the patent teaches is, as indicated above, that by analysing patterns, or histories of activity levels, detected by the presence detectors of various lamps of a network, it is possible to "learn" how likely it is that a person will pass under a given lamp, given that the person is currently passing under another lamp.
11. It is already questionable, whether the information provided in the patent is sufficient to enable the skilled person to implement such a statistical analysis, and obtain such a *learning function*. The mere indication that this is carried out based on the histories of activity levels of the other lamps is an unsatisfactory level of disclosure, that would imposed on the skilled person an undue implementation burden.
12. The patent's further references to a "normalized weighted summation", a "sigmoid function", a "radial

basis function" or a "softmax activation function" do not eliminate this deficiency.

13. The patent simply does not provide a sufficient level of disclosure as regards the learning process. At best, the patent suggests some form of machine learning, but without specifying the algorithm or the way it is trained.
14. But even if the information provided in the patent were sufficient to obtain a learning function from the histories of the activities levels the other lamps, as argued by the proprietor, it would still not allow the determination of the movement of a person, as defined in the claim.
15. Indeed, even if it were possible to determine the likelihood of a certain sequence of lamp activations, with no knowledge as to the relative position of the different lamps in the network, it would still not be possible to establish a correspondence between such a sequence of lamp activations and *a movement of a person* under those lamps. It would, for instance, not be possible to determine whether a certain predicted sequence of lamp activations corresponded to the movement of a person in a straight line in a certain direction, or along a circle.
16. The Board does not subscribe to the proprietor's submission that the skilled person would understand the expression *movement of the person* to mean a sequence of lamp activations or even just the output that is generated by applying the *learning function* to the inputs received from the other lamps, as those interpretations would deprive the expression *movement of a person* of any meaning.

17. In any case, irrespective of the above and of the meaning ascribed to *movement of a person*, the opponent is also correct in noting that the claim does not define any processing of the history of activity levels of the lamp in question, but only refers to the histories of activation levels received from the other lamps.
18. Without an analysis, or a learning, of how the history of activity levels of the lamp in question relates to the histories of the other lamps, it is not possible to determine how likely it is that a person will pass under the lamp in question, given that the person is currently passing under another lamp of the network.
19. Consequently, the skilled person would also not know how to to *adjust the light emission* of the lamp in question *depending on the determined movement of the person*, as defined in the claim.
20. It is true that, as argued by the proprietor, the claim defines the lamp as comprising a program for controlling the activity of the lamp not only depending on inputs received from other lamps but also on measurements from the presence detector of the lamp itself.
21. However, the determination of the movement of the person and the consequent adjustment to the light emission are defined exclusively by reference to the inputs received from the other lamps, and take no account of the lamp's own activation history.
22. Finally, the Board also notes that the description of the patent is also silent on how to determine the movement of a person, or on how to adjust the light

emission of a lamp exclusively based on the knowledge of histories of activity levels of the other lamps.

23. Therefore, the patent fails under Article 100(b) EPC.

Auxiliary requests

24. The issues of lack of sufficient disclosure, identified above with regards to claim 1 of the main request, apply equally to claim 1 of each of the auxiliary requests.

25. Indeed, the amendments introduced into claim 1 of each of the auxiliary requests either do not address or are unable to overcome the lack of sufficiency concerning the determination of the movement of a person and the impossibility of meaningful adjustment light emission depending on said movement.

26. In this context, the Board notes that claim 1 of some of the auxiliary requests further specifies that what is determined is the *direction of the movement of the person*, rather than simply the movement. This, however, rather aggravates than alleviates the problem.

27. Claim 1 of some auxiliary requests further defines that determination, whether of the movement per se or of the direction of movement, as being *based on knowledge on which lamps are close to each other determined by analysing the patterns in presence detection by different present detectors*, while claim 1 of some other auxiliary requests further defines the inputs received from the other lamps as *filtered by strength of the radio signal and/or time of flight*.

28. While these limitations imply the use of information concerning the proximity of the other lamps to the lamp in question, they still fail to address the issues identified under points 15. to 22., above.
29. Claim 1 of some auxiliary requests also defines the processing of the inputs as comprising *processing of a weight function, wherein every input is weighted and the used weights are adjusted continuously depending on the activity detected by one or more presence detectors.*
30. Also these limitations do not solve the issues addressed under points (points 11. to 13.), not to mention that they fail to address the key sufficiency issues identified under points 14. to 22., concerning the determination of the (direction of) movement of a person based on the inputs from the other lamps, and the adjustment of the light emission accordingly.
31. The remaining amendments to claim 1, do not relate to the determination of the (direction of) movement of a person or to the adjustment of the light emission of the light source depending on it. Consequently, they do not impact the reasoning, above, as to the lack of sufficient disclosure.
32. Therefore, irrespective of the questions on the admission of some, none of the auxiliary requests is allowable.

Order

For these reasons it is decided that:

1. **The decision under appeal is set aside.**
2. **The patent is revoked.**

The Registrar:

The Chairman:



D. Meyfarth

P. Scriven

Decision electronically authenticated