

Internal distribution code:

- (A) [-] Publication in OJ
- (B) [-] To Chairmen and Members
- (C) [-] To Chairmen
- (D) [X] No distribution

**Datasheet for the decision
of 19 December 2022**

Case Number: T 2502/19 - 3.5.03

Application Number: 13773914.0

Publication Number: 2895929

IPC: G05D23/19, F24F11/00

Language of the proceedings: EN

Title of invention:

Social learning softthermostat for commercial buildings

Applicant:

Siemens Corporation

Headword:

Climate control devices/SIEMENS

Relevant legal provisions:

EPC Art. 84, 123(2)

Keyword:

Clarity - main request (no)
Added subject-matter - first and second auxiliary requests
(yes): unallowable intermediate generalisation

Decisions cited:

T 2787/19



Beschwerdekammern
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
Fax +49 (0)89 2399-4465

Case Number: T 2502/19 - 3.5.03

D E C I S I O N
of Technical Board of Appeal 3.5.03
of 19 December 2022

Appellant: Siemens Corporation
(Applicant) 170 Wood Avenue South
Iselin, NJ 08830 (US)

Representative: Maier, Daniel Oliver
Siemens AG
Postfach 22 16 34
80506 München (DE)

Decision under appeal: **Decision of the Examining Division of the
European Patent Office posted on 15 March 2019
refusing European patent application
No. 13773914.0 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chair K. Bengi-Akyürek
Members: K. Peirs
C. Heath

Summary of Facts and Submissions

- I. The appeal is against the decision of the examining division to refuse the present application on the basis of a sole set of claims. The examining division did not deem this set of claims allowable under Articles 84 and 56 EPC.
- II. The appellant was summoned to oral proceedings before the board. The board issued a communication under Article 15(1) RPBA 2020 including its negative preliminary opinion concerning clarity (Article 84 EPC) and inventive step (Article 56 EPC).
- III. Oral proceedings before the board were held on 19 December 2022 by videoconference. At their end, the board announced its decision.
- IV. The appellant's final requests were that the decision under appeal be set aside and that a patent be granted on the basis of the claims underlying the appealed decision as a **main request**, or the claims of one of **two auxiliary requests** (the "first auxiliary request" and the "second auxiliary request") filed with a written reply to the board's communication under Article 15(1) RPBA 2020.
- V. Claim 1 of the **main request** reads as follows (board's feature labelling and underlining):
 - (a) "A method for determining with a processor in a first building with cubicles with a first location with a first climate control device and a second location adjacent to the first location with a second climate control device a first arbitrated

temperature setting of the first climate control device and the first arbitrated temperature setting of the second climate control device enabled to each affect the first and the second location, comprising:

- (b) processing a preferred temperature for the first location obtained from a temperature profile of an occupant of the first location and a preferred temperature for the second location that is different from the preferred temperature for the first location obtained from a temperature profile of an occupant of the second location, to control the first and second climate control devices to create an actual temperature of the first location and an actual temperature of the second location, the actual temperatures having different values, wherein each of the temperature profiles is available from a social network and includes a presence schedule of the respective occupants; and
- (c) arbitrating the preferred temperatures obtained from the temperature profiles based on a constraint to set the first climate control device at the first arbitrated temperature setting and the second climate control device at the first arbitrated temperature setting, wherein the arbitrating is based on an optimization criterion that is applied to a convex optimization calculation that minimizes a difference between the preferred temperature for the first location and the first arbitrated temperature setting of the first climate control device and the preferred temperature for the second location and the first arbitrated temperature setting of the second climate control device, and
- (d) wherein a reference temperature setting by a facility manager is provided as an input to the optimization calculation."

VI. Claim 1 of the **first auxiliary request** reads as follows (board's feature labelling and underlining):

- (e) "A method for determining, with a processor, an arbitrated temperature setting for a first location in a building with a first climate control device and an arbitrated temperature setting for a second location in the building, the second location adjacent to the first location with a second climate control device, the first climate control device and the second climate control device enabled to each affect the first and the second location, the method comprising:
- (f) processing a first vector of data values $\mathbf{T}_0 = [T_0[1], T_0[2]]$, a first data value, $T_0[1]$, of the first vector, \mathbf{T}_0 , comprising a preferred temperature for the first location obtained from a temperature profile of an occupant of the first location and a second data value, $T_0[2]$, of the first vector, \mathbf{T}_0 , comprising a preferred temperature for the second location that is different from the preferred temperature for the first location obtained from a temperature profile of an occupant of the second location, wherein each of the temperature profiles is available from a social network and includes a presence schedule of the respective occupants; and
- (g) arbitrating the preferred temperatures obtained from the temperature profiles to determine a second vector of data values, $\mathbf{T}_a = [T_a[1], T_a[2]]$, the second vector, \mathbf{T}_a , comprising a first data value, $T_a[1]$, for the first climate control device and a second data value, $T_a[2]$, for the second climate control device, the first data value, $T_a[1]$, comprising an arbitrated temperature setting for the first location, the second data value, $T_a[2]$,

comprising an arbitrated temperature setting at the second location, based on a constraint that the first and second data values of the second vector, \mathbf{T}_a , are within pre-determined ranges of values and to set the first climate control device to the arbitrated temperature setting, $T_a[1]$ and the second climate control device to the arbitrated temperature setting, $T_a[2]$, wherein the arbitrating is based on an optimization criterion that is applied to a convex optimization calculation that minimizes a norm, $\|\mathbf{v}\|$, of a third vector of data values, $\mathbf{v} = \mathbf{T}_a - \mathbf{T}_0$, comprising a difference between the second vector, \mathbf{T}_a , and the first vector, \mathbf{T}_0 , and

- (h) wherein a reference temperature setting, T_r , by a facility manager is provided as an input to the optimization calculation."

VII. Claim 1 of the **second auxiliary request** reads as follows (board's feature labelling and underlining):

- (i) "A method for determining, with a processor, an arbitrated zone temperature set point for a first location in a first zone of a building with a first climate control device and an arbitrated zone temperature set point for a second location in a second zone of the building, the second location adjacent to the first location with a second climate control device, the first climate control device and the second climate control device enabled to each affect the first and the second location, the method comprising:
 - (j) processing a first vector of data values $\mathbf{T}_0 = [T_0[1], T_0[2]]$, a first data value, $T_0[1]$, of the first vector, \mathbf{T}_0 , comprising a preferred temperature for the first location obtained from a

temperature profile of an occupant of the first location and a second data value, $T_0[2]$, of the first vector, \mathbf{T}_0 , comprising a preferred temperature for the second location that is different from the preferred temperature for the first location obtained from a temperature profile of an occupant of the second location, wherein each of the temperature profiles is available from a social network and includes a presence schedule of the respective occupants; and

- (k) arbitrating the preferred temperatures obtained from the temperature profiles to determine a second vector of data values, $\mathbf{T}_a = [T_a[1], T_a[2]]$, the second vector, \mathbf{T}_a , comprising a first data value, $T_a[1]$, for the first climate control device and a second data value, $T_a[2]$, for the second climate control device, the first data value, $T_a[1]$, comprising an arbitrated zone temperature set point for the first location, the second data value, $T_a[2]$, comprising an arbitrated zone temperature set point at the second location, based on a constraint that the first and second data values of the second vector, \mathbf{T}_a , are within pre-determined ranges of values and to set the first climate control device to the arbitrated zone temperature set point, $T_a[1]$ and the second climate control device to the arbitrated zone temperature set point, $T_a[2]$, wherein the arbitrating is based on an optimization criterion that is applied to a convex optimization calculation that minimizes a norm, $\|\mathbf{v}\|$, of a third vector of data values, $\mathbf{v} = \mathbf{T}_a - \mathbf{T}_0$, comprising a difference between the second vector, \mathbf{T}_a , and the first vector, \mathbf{T}_0 ,
- (l) wherein a reference temperature setting, T_r , by a facility manager is provided as an input to the

optimization calculation."

Reasons for the Decision

1. *Technical background*

1.1 The present application concerns a temperature control scheme used for a facility such as a commercial building. A temperature control scheme like this one often requires to reconcile opposing needs, such as conflicting temperature-setting preferences of the facility's occupants. Moreover, a "facility manager" may strive to minimise energy costs associated with the facility's temperature control while being unaware of the occupants' temperature wishes.

1.2 The present application aims to address these opposing needs by relying on an automatic arbitrator to determine arbitrated temperature settings (see Figure 6 of the application reproduced below).

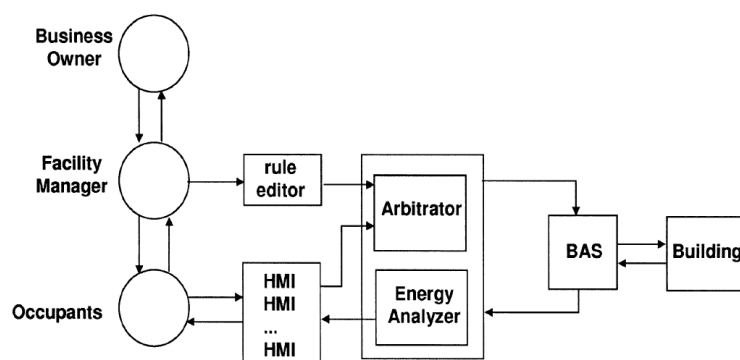


FIG. 6

These arbitrated temperature settings are determined such that they not only meet the occupants' comfort concerns but also the facility manager's desire to

minimise energy costs. The present application proposes learning or applying these arbitrated temperature settings through a social network.

2. *Main request: claim 1 - clarity*

2.1 The board holds, for the following reasons, that claim 1 of the main request lacks clarity.

2.1.1 **Feature (a)** comprises the expressions

- "a first arbitrated temperature setting of the first climate control device"

and

- "the first arbitrated temperature setting of the second climate control device".

The first and second "climate control devices" according to feature (a) will typically be *different* climate control devices that are located on *different* locations (the "first location" and "second location") within a building. Thus, the skilled reader would readily understand that the settings of these climate control devices will, in general, not be equal, because they will typically relate to *different* environmental conditions and *different* occupants of the building.

Nonetheless, the use of the definite article for the expression "first arbitrated temperature setting" in relation to the "second climate control device" suggests to the skilled reader that feature (a) requires these climate control devices to be set identically, namely using the "first arbitrated temperature setting". The board therefore agrees with

point II.1.1 of the appealed decision that it would indeed be ambiguous for the skilled reader "whether the same temperature setting or two different ones are used for the first and second climate control devices".

2.1.2 Moreover, as correctly observed in point IV.1.4 of the appealed decision, the expression "the first arbitrated temperature setting" according to **feature (c)** could refer to

- the "first arbitrated temperature setting of the first climate control device"

or to

- the "first arbitrated temperature setting of the second climate control device".

Feature (c) is therefore also not clear. The board notes in this respect that the additional comments in section IV of the appealed decision do not constitute the reasons for which the examining division decided to refuse the present application. These additional comments were clearly meant as an *obiter dictum*, which is by definition used to make a party aware of any relevant defects in addition to those on which the decision was based. The board is at liberty to draw upon these comments when exercising its power to raise objections *ex officio*.

2.1.3 Furthermore, it would not be clear for the skilled reader how the method of claim 1 takes the "reference temperature setting" according to **feature (d)** into account, other than by merely accepting it as an input to the optimisation calculation.

2.2 The appellant referred to several paragraphs of the description and highlighted that "the disclosure of the present application is consistent in itself". It emphasised that, by virtue of Rules 42(1) and 43 EPC, any claim construction must necessarily rely on the description. It concluded that claim 1 might be broad but did not lack clarity.

The board does not share the appellant's view. Rather, the claims should be taken by themselves, i.e. without relying on the description and drawings, and tested against the broadest possible or objectively reasonable construction which would occur to the skilled reader. This is because Article 84 EPC stipulates that the matter for which protection is sought is defined by the claims. It does not require to rely on any other part of the application documents. For the reasons set out in points 2.1.1 to 2.1.3 above, the board considers that claim 1 of the main request, taken by itself, would indeed not be clear for the skilled reader.

2.3 Hence, the main request is not allowable under Article 84 EPC.

3. *First and second auxiliary requests: claim 1 - added subject-matter*

3.1 The appellant refers to paragraphs [0078] to [0080] of the original description regarding Article 123(2) EPC for **features (g), (h), (k) and (l)**.

However, as set out in the following, there is no direct and unambiguous disclosure for these added features in those paragraphs.

3.1.1 Features (g) and (k) express that the "first and second data values" of second vector T_a are "within pre-determined ranges of values" (see also the underlining in those features in points VI and VII above). By contrast, paragraph [0078] of the original description only specifies in this respect that second vector T_a should be within "the acceptable temperature area, A_a ". Original paragraph [0080] uses the term "acceptable region" in a similar context.

The board considers that terms such as "acceptable temperature area" or "acceptable region" may render a claim unclear. However, this does not mean that these terms can simply be replaced by the expression "pre-determined ranges of values" without adding subject-matter that was not disclosed in the application as filed. In the context of the original application, the adjective "acceptable" refers to temperatures that minimise the occupants' discomfort (cf. original paragraphs [0077] and [0090]). Such temperatures typically lie within a range of a few degrees above or below 22°C.

Conversely, the phrase "pre-determined ranges of values" of features (g) and (k) can relate to any range of temperatures. As a result, even when being confined to "within pre-determined ranges of values", the first and second data values of second vector T_a according to features (g) and (k) may very well be unpleasant or even uncomfortable for at least some occupants. The term "preferred temperature[s]" used in features (f), (g), (j) and (k), to which the appellant referred in this context, does not change this conclusion because these "preferred temperatures" may be obtained from their associated temperature profiles based on, for instance, environmental or cost considerations rather

than taking into account the occupants' comfort.

- 3.1.2 Moreover, the skilled reader would immediately understand from the second sentence of paragraph [0079] of the original description that "reference temperature setting T_r " of **features (h) and (l)** is a parameter of the function defining the "second vector \mathbf{T}_a ". Reference temperature setting T_r therefore has a deterministic functional relationship with second vector \mathbf{T}_a . However, claim 1 of the first and second auxiliary requests does not specify that clearly defined functional relationship, implying that there could be a very general or different relationship or no relationship at all. This in turn means that features (h) and (l) amount to an unallowable intermediate generalisation (cf. **T 2787/19**, Reasons 2.2).

The board emphasises in this respect that, contrary to the appellant's view, features (h) and (l) do not imply that "reference temperature setting T_r " must necessarily be a parameter of the optimisation method underlying the "convex optimisation calculation" according to features (g) and (k). Rather, "reference temperature setting T_r " is simply provided in features (h) and (l) as an input to the optimisation calculation, for whatever purpose. It should be noted here that the "convex optimisation calculation" of features (g) and (k) is not necessarily restricted to *only* minimising a norm as specified in those features and yielding second vector \mathbf{T}_a . It could also encompass, for instance, informing the facility manager about how much the components of second vector \mathbf{T}_a deviate from the facility manager's desired temperature setting. Accordingly, within the context of features (h) and (l), reference temperature setting T_r could in fact be provided with the purpose of informing the facility

manager rather than of being part of the actual algorithm for optimising temperature settings. Stated differently, in claim 1 of the first and second auxiliary request, second vector T_a is not necessarily a function of "reference temperature setting T_r ", contrary to what is expressed in the application as filed.

- 3.2 As an aside, the board notes that the clarity deficiencies of **features (a), (c) and (d)** mentioned in points 2.1.1 to 2.1.3 above have not been resolved in claim 1 of the first and second auxiliary requests, as is apparent from some of the terms in **features (e), (g), (h), (i), (k) and (l)** that were underlined in points VI and VII above.
- 3.2.1 In particular, in **feature (e)**, it is still ambiguous whether or not the term "an arbitrated temperature setting" refers to the same setting for the first and second climate control devices. This also applies to the expression "an arbitrated zone temperature set point" of **feature (i)**.
- 3.2.2 Similarly, the expression "an arbitrated temperature setting" of **feature (g)** could concern one of the two occurrences of "arbitrated temperature setting" of feature (e) or could represent even a new setting. The same is true for the term "an arbitrated zone temperature set point" according to **feature (k)**.
- 3.3 In conclusion, the board holds that, apart from not resolving the clarity deficiencies of claim 1 of the main request, claim 1 of the first and second auxiliary requests does not comply with Article 123(2) EPC.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chair:



B. Brückner

K. Bengi-Akyürek

Decision electronically authenticated