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**Datasheet for the decision
of 21 May 2024**

Case Number: T 0581/20 - 3.5.01

Application Number: 13726042.8

Publication Number: 2956782

IPC: G06Q50/06, G01D4/00

Language of the proceedings: EN

Title of invention:

METHODS AND SYSTEMS FOR MEASUREMENT AND VERIFICATION WEIGHTING
WITH TEMPERATURE DISTRIBUTION

Applicant:

Siemens Industry, Inc.

Headword:

Measurement and verification weighting with temperature
distribution/SIEMENS INDUSTRY

Relevant legal provisions:

EPC Art. 56, 84, 111(1)

Keyword:

Examination of own motion (claims not clear - Article 84 EPC)



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Case Number: T 0581/20 - 3.5.01

D E C I S I O N
of Technical Board of Appeal 3.5.01
of 21 May 2024

Appellant: Siemens Industry, Inc.
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Decision under appeal: **Decision of the Examining Division of the
European Patent Office posted on 15 October 2019
refusing European patent application No.
13726042.8 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman W. Chandler
Members: N. Glaser
E. Mille

Summary of Facts and Submissions

- I. This appeal is against the decision of the examining division to refuse European patent application No. 13726042.8 pursuant to Article 97(2) EPC on the grounds of lack of inventive step (Article 56 EPC) and added subject-matter (Article 123(2) EPC).
- II. The decision made reference *inter alia* to the following documents:

EP 2 157 408 A1 (D1)
CA 2 309 125 A1 (D2)
- III. In the statement setting out the grounds of appeal, the appellant requested to set aside the decision of the examining division and to grant a patent based on the refused main or first to third auxiliary request, or based on a fourth auxiliary request filed with the grounds of appeal.
- IV. In a first communication, the Board presented its preliminary opinion that all requests appeared to lack inventive step (Article 56 EPC) and that the second and third auxiliary requests contained added subject-matter (Article 123(2) EPC), essentially for the reasons given in the appealed decision.
- V. In a response, the appellant presented arguments why the claimed subject-matter was technical and involved an inventive step.
- VI. In its communication accompanying the summons to oral proceedings, the Board essentially maintained its

preliminary opinion.

- VII. In a reply, the appellant presented further arguments in favour of inventive step, in particular for the first and fourth auxiliary requests.
- VIII. At the oral proceedings, after having discussed claim 1 of the main request in view of the appellant's last submission, the Board raised a lack of clarity objection (Article 84 EPC) against the subject-matter of claim 1 of the main request. The fourth auxiliary request was admitted under Article 12 (4) and (6) RPBA, but the subject-matter of claim 1 of this request was also found to lack clarity (Article 84 EPC). The appellant had no further comments about the second and third auxiliary requests.
- IX. The final requests of the appellant were identical to its initial requests. After due consideration of the appellant's arguments the Chairman announced the decision.
- X. Independent claim 1 of the main request reads as follows:

*"1. A method in a data processing system (102, 302) for temperature weighting in energy-usage measurements, the method comprising:
identifying a number of days that each of a plurality of different temperatures occurred at a location during a period of time;
identifying (510) a baseline for initial energy usage at a building (106) located in the location;
receiving (512) measurements for energy usage at the building (106), from an energy usage sensor (304) connected to the data processing system (102, 302) and*

configured to measure an amount of energy received at the building;
generating (514) an expression for measured energy usage as a function of temperature by performing a regression analysis on the measurements for energy usage;
identifying (516) a difference between the baseline for initial energy usage and the expression for measured energy usage;
generating (518) a weighting for the difference between baseline energy usage and the measured energy usage at one or more temperatures based on the number of days the one or more temperatures occurred during the period of time;
storing the weighting for the difference; and
generating, using the weighted difference, an estimate of a reduction in energy usage at the building (106) as a result of energy-saving measures enacted at the building (106) between a time when the baseline for initial energy usage was calculated and a time when the measurements for energy usage at the building (106) were measured."

Claim 1 of the first auxiliary request changes the preamble to "method for generating an estimate of a reduction in energy usage based on energy-usage measurements" and adds after the second feature:

"measuring energy usage measurements at the building (106) by means of an energy usage sensor (112, 304) configured to measure an amount of energy received at the building (106);
measuring corresponding temperatures by means of a temperature sensor (116, 308);"

and adapts the step "receiving measurements" accordingly.

Claim 1 of the second auxiliary request is based on claim 1 of the main request and changes the preamble to a "method for controlling ambient temperature" and adds the final step "*controlling ambient temperature in the building (106) based on the estimate*".

Claim 1 of the third auxiliary request changes the preamble to a "method for temperature weighting in energy-usage measurements" and combines the amendments made to the first and second auxiliary requests.

Claim 1 of the fourth auxiliary request adds after the second feature of claim 1 of the first auxiliary request the following features:

"comprising:

receiving an initial set of measurements for energy usage at the building (106) and corresponding temperature values,
generating a weighting for each measurement in the initial set based on the number of days that a temperature associated with the each measurement occurred during the period of time,
generating a plurality of pairs of weighted energy usage and temperature data points by applying the weighting to the each measurement, and
generating the baseline for initial energy usage at the building (106) by performing a regression analysis on the plurality of pairs of data point".

Reasons for the Decision

1. Background of the invention
 - 1.1 The invention concerns improving the estimation of the reduction in energy usage in a building as a result of applying energy-saving measures, see paragraphs [0003] and [0081] of the published application.
 - 1.2 Traditional methods either involve measuring historical and current energy consumption over a long period of time to accommodate seasonal variations [0003], or extrapolating from a limited set of data, for example, a week or month. The former takes a long time and the latter is prone to inaccuracy, because it does not account for variations over the course of a whole year, see [0005] and [0020].
 - 1.3 The key idea behind the invention is to decompose the energy consumption (or saving) into a sum of the products of energy usage (or saving) as a function of *temperature* (Figure 8) and a distribution of the number of days at that temperature (Figure 7). The latter is derived from historical data. The former is derived by linear regression; of either historical energy usage ("baseline for initial energy usage", items 602/804), see [0073] or current energy usage ("measured energy usage", items 606/806) over a monitoring period, see [0084].
 - 1.4 It appears that since energy usage as a function of temperature is roughly linear (unlike the energy usage as a function of time), it can be established from a relatively short monitoring period. Thus, energy predictions can be determined from relatively few

measurements and more quickly.

- 1.5 More particularly, according to claim 1, a "baseline" energy usage for the building is determined (see Figure 6a, 602). Although not stated in the claim, this energy usage is a function of temperature, not time, and it is derived from historical data [0083]. Then, a number of measurements of the actual energy usage, presumably after applying the energy-saving measures, are made (the triangular energy/temperature points in Figure 6a). Although again not claimed, the temperature range of the points only "spans a portion" of the temperature range of the baseline [0084], presumably because it is made over a shorter time period. A "measured" energy usage function 604 is determined by a regression analysis of these points. Next, the difference between the "baseline" energy usage and the measured energy usage is determined. Finally, an estimate of the reduction in energy usage is determined by weighting the difference by the number of days that each temperature occurred (Figure 7).

It is not clear from the claim, or the description for that matter, exactly how the historical energy usage and temperature values are related.

2. Article 84 EPC
 - 2.1 In the preliminary written opinion, the Board tended to consider that the distinguishing features over D2 (calculating energy usage using "regression analysis" instead of as an average over one month and calculating energy-saving by weighting the (differences in) rates with the number of days at each temperature) did not have technical character and appeared to be obvious

routine techniques.

2.2 In a written response and during the oral proceedings, the appellant placed great emphasis on the technicality of the effect of determining the reduction of energy usage more accurately and accommodating seasonal variations based on limited energy usage data. At the oral proceedings the Board was not convinced that claim 1 of the main request, as well as of the first and fourth auxiliary requests, solved this problem because it was not clear exactly how the regression analysis on the measured usage was carried out and what its result was. The appellant argued that the above mentioned historical energy usage baseline 602 was scaled by a correction factor, based on the difference between it and the current energy usage baseline 604, to generate an adjusted energy usage baseline 606 as shown in Figure 6b.

The Board is not convinced by these arguments.

Firstly, there is no scaling and no correction factor defined in claim 1. Secondly, the Board considers that these arguments involving the correction factor render the operation of the claimed method unclear. While the application mentions a *correction factor* in paragraph [0085] which is used for baseline scaling, the description does not clearly explain how it is obtained. The examples given in paragraph [0070] for a *correction factor*, such as a multiplier, an offset, and/or a function based on the difference between two baselines do not help much. They rather obscure the feature further, because no teaching is provided of how the formula for baseline 606 is derived from baseline 602 by applying a *correction factor*. The Board concludes that the appli-

cation does not sufficiently disclose how the adjusted energy usage baseline 606 is obtained.

- 2.3 The applicant then referred to Figure 5, instead of Figures 6a and 6b, to explain claim 1. Figure 5 has a step 510 referring to the identification of a baseline. Figure 5 shows steps 502 to 508 which explain how a baseline for initial energy usage is obtained.

These steps are not defined in claim 1 and this leads to a lack of clarity. Using its power according to Article 111(1) EPC, the Board introduced a lack of clarity objection (Article 84 EPC) against claim 1 of the main and first auxiliary request. The Board objected that the step of identifying a baseline (510) for initial energy usage at a building, present in both requests, is unclear, because the feature "baseline" is not clear on either a mathematical or a technical level and it is not defined how it is obtained.

- 2.4 The appellant also referred to Figure 7 and paragraphs [0086] to [0088] to explain the relationship between historical data 702 and measured data before 704 and after 706 having implemented energy saving measures. Figure 8 and paragraphs [0089] to [0090] illustrate the energy savings 802 between previous baseline 804 and adjusted baseline 806.

These arguments do not help the appellant. Figure 7 reflects that the range of temperatures and number of days in the baseline temperature distributions 704 and 706 is much less than the the historical baseline, because the sampling period is often much less than a year. As mentioned above, this difference in time periods is not reflected in claim 1 of the main or the first auxiliary request. Figure 8 simply reflects that

the energy saving at a particular temperature is the difference between the historical and current/adjusted baselines, which does not help explain the time periods or how the baselines are calculated.

- 2.5 Accordingly, claim 1 of the main and first auxiliary request do not comply with Article 84 EPC.

- 2.6 Claim 1 of the fourth auxiliary request introduces into claim 1 of the first auxiliary request the features of original claim 5, which aim to define how the historical energy usage baseline is identified. These features correspond to steps 506 and 508 of Figure 5.

- 2.7 These features introduce another clarity problem (Article 84 EPC), because it is not clear how the baseline for initial energy usage can be obtained by performing a regression analysis on weighted points.

- 2.8 The application discloses the "weighting" of values in paragraphs [0075][0078][0080] of the application, corresponding to steps 508, 514 and 518 of the method shown in Figure 5, on which claim 1 is based. The weighting is described to be always "*based on the number of days that a temperature occurred*", which the person skilled in the art would interpret as multiplying a measurement or a difference value with the number of days the corresponding temperatures had occurred. Such a weighting makes technical sense when an estimate for an energy usage or a reduction in energy usage is determined, in other words, it makes sense to weight the baseline values or the difference between the (initial) baseline and the baseline after having enacted energy saving measures, but not for weighting individual measurement values and performing thereafter regression analysis of the weighted values.

2.9 Claim 1 of the fourth auxiliary request does therefore not comply with Article 84 EPC.

2.10 The Board concluded that there was no need to further discuss other matter, as the application does not meet Article 84 EPC.

3. Further auxiliary requests

3.1 Regarding the second and third auxiliary requests, the Board agrees with the examining division that the features "*a method for controlling ambient temperature*" and "*controlling ambient temperature in the building based on the estimate*" do not find a basis in the application as filed contrary to Article 123(2) EPC.

3.2 The appellant did not present any counter arguments neither orally nor in its written submissions.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:



T. Buschek

W. Chandler

Decision electronically authenticated