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**Datasheet for the decision
of 15 February 2022**

Case Number: T 2632/18 - 3.5.03

Application Number: 14733605.1

Publication Number: 2946568

IPC: H04Q9/00, H02J13/00

Language of the proceedings: EN

Title of invention:
Energy management system

Patent Proprietor:
Smappee NV

Opponent:
Dieckhoff, Beate

Headword:
ON/OFF triggering event/SMAPPEE

Relevant legal provisions:
EPC Art. 56
RPBA 2020 Art. 13(2)

Keyword:

Inventive step - main request and 1st auxiliary request (no):
obvious selection from equally likely alternatives
Admittance of claim request filed after summons - 2nd auxiliary
request (no): no exceptional circumstances

Decisions cited:

T 1786/16, T 0988/17, T 1482/17, T 1278/18, T 2271/18

Catchword:

That a "new" objection was raised by a board in appeal
proceedings cannot *per se* amount to "exceptional
circumstances" within the meaning of Article 13(2) RPBA 2020
(see point 4.3 of the Reasons).



Beschwerdekammern

Boards of Appeal

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Case Number: T 2632/18 - 3.5.03

D E C I S I O N
of Technical Board of Appeal 3.5.03
of 15 February 2022

Appellant: Snappee NV
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Decision under appeal: **Decision of the Opposition Division of the
European Patent Office posted on 10 October 2018
revoking European patent No. 2946568 pursuant to
Article 101(3) (b) EPC.**

Composition of the Board:

Chair K. Bengi-Akyürek
Members: K. Peirs
R. Winkelhofer

Summary of Facts and Submissions

I. The appeal lies from the decision of the opposition division to revoke the opposed patent on the grounds of lack of novelty of claim 1 as granted (Article 54 EPC), having regard to the following prior-art document:

D1: US 2013/0191103 A1.

The proprietor (appellant) appealed this decision.

II. Oral proceedings before the board were held on 15 February 2022 by videoconference in the absence of the opponent (as pre-announced).

III. The proprietor requests that the decision under appeal be set aside and, as a **main request**, that the opposition be rejected, or, in the alternative, that the patent be maintained in amended form according to one of **two auxiliary requests**, the first auxiliary request submitted with the statement of grounds of appeal and the second auxiliary request filed in response to the board's summons to oral proceedings.

IV. The opponent (respondent) requests to dismiss the appeal.

V. At the end of the oral proceedings, the board's decision was announced.

VI. Claim 1 of the proprietor's **main request**, i.e. claim 1 as granted, reads as follows:

"An energy management system comprising a[n] in situ processing unit (1) comprising:

(a) A measuring unit (2,3,5) capable of measuring a set of power related parameters over a main electricity cable;

(b) A first processing unit (6) capable of processing said power related parameters by applying a signature detection algorithm, for detecting an event relating to turning ON or OFF of an electronic and/or electric appliance and for characterizing said event;

(c) Means for transferring to a server a data packet comprising an output of said signature detection algorithm;

Characterized in that, the processing unit triggers the transfer of a data packet only in case such an event is detected."

VII. Claim 1 of the **first auxiliary request** reads as follows (board's feature labelling; amendments vis-à-vis claim 1 of the main request are highlighted by the board):

"An energy management system comprising a[n] in situ processing unit (1) comprising:

(a) A measuring unit (2,3,5) capable of measuring a set of power related parameters over a main electricity cable;

(b) A first processing unit (6)

(i) capable of processing said power related parameters by applying a signature detection algorithm, for detecting an event relating to turning ON or OFF of an electronic and/or electric appliance and for characterizing said event and

(ii) capable of triggering the transfer of a data packet only in case such an event is detected;

- (c) Means for transferring to a server a said data packet comprising an output of said signature detection algorithm;
~~Characterized in that, the processing unit triggers the transfer of a data packet only in case such an event is detected.~~
- (d) said output of said signature detection algorithm and said data packet comprise an event signature of said event relating to turning ON or OFF."

VIII. Claim 1 of the **second auxiliary request** reads as follows (amendments vis-à-vis claim 1 of the main request are indicated by the board):

"An energy management system comprising an in situ processing unit (1) comprising:

(a) a measuring unit (2,3,5) capable of measuring a set of power related parameters over a main electricity cable;

(b) a first processing unit (6) capable of processing said power related parameters by applying a signature detection algorithm, for detecting an event relating to turning ON or OFF of an electronic and/or electric appliance and for characterizing said event;

(c) means for transferring to a server a data packet comprising an output of said signature detection algorithm;

characterized in that, the processing unit triggers the transfer of a data packet only in case such an event is detected, and wherein the in situ processing unit (1) comprises:

(A) the measuring unit (2, 3, 5) capable of measuring and monitoring the power related set of parameters, X, as a function of time, t, over the main electricity cable;

(B) the first processing unit (6) capable of

processing said power related parameters by applying a signature detection algorithm comprising:

(a) calculating a power value, P_i , from the values of the power related set of parameters, X_i , measured within a time interval, Δt_i comprised between $[t_i, t_{i+1}]$;

(b) calculating a power variation, $\Delta P_i = P_j - P_i$, between the power value, P_j , at time interval $\Delta t_j = [t_j, t_{j+1}]$, and the power value P_i at time interval $\Delta t_i = [t_i, t_{i+1}]$, wherein $t_j > t_i$;

(c) comparing the value of the power variation, ΔP_i , with a reference value, ΔP_{ref} , and defining that an event occurred between times t_i and t_{j+1} in case $\Delta P_i > \Delta P_{ref}$, else the power set of parameters, X_i , is considered as steady between times t_i and t_{j+1} ;

in that, if and only if an event occurred between t_i and t_{j+1} , then said processing unit further processes the data as follows:

(d) defining an event interval $[t_{h,0}, t_{h,N+1}]$ with $t_{h,0} < t_i < t_{j+1} < t_{h,N+1}$, comprising a pre-event interval $\Delta t_{h,0} = [t_{h,0}, t_{h,1}]$ and post-event interval $\Delta t_{h,N} = [t_{h,N}, t_{h,N+1}]$, such that the power set of parameters, $X_{h,0}$ and $X_{h,N}$ are steady in both pre-event interval and post-event interval, respectively;

(e) calculating the power values, $P_{h,0}$ and $P_{h,N}$ within the respective time intervals, $\Delta t_{h,0}$ and $\Delta t_{h,N}$, and calculating the variation $\Delta P_{h,0N} = P_{h,N} - P_{h,0}$; and

(C) in that, the data packet comprises the variation $\Delta P_{h,0N}$ ".

Reasons for the Decision

1. *Technical background*

The patent concerns an energy management system to monitor electric appliances in a building, which can be used, for instance, to study how to reduce a household's electricity consumption.

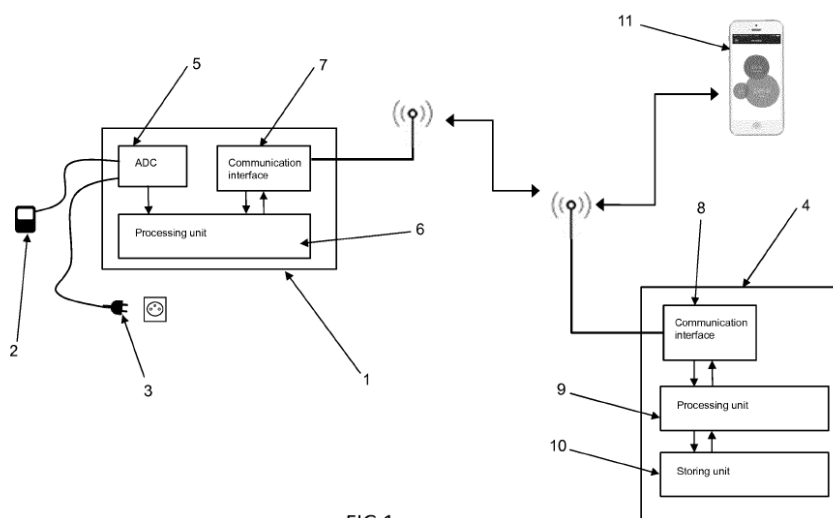


FIG 1

As shown in Figure 1 of the patent, this energy management system involves (see above):

- a local-end ("in situ") device 1 with a first processor 6 and with sensors 2 to perform power-characteristic measurements on a power line of the building

and

- a remote server 4 with a second processor 9 which analyses the results of the power-characteristic measurements.

A user can access these results by means of a smartphone 11, by which they can see the energy consumption of a particular appliance of their household in real time. The invention aims to improve the energy management system's efficiency by not keeping the communication link between in situ device 1 and remote server 4 continuously open, contrary to what is often done in conventional systems. According to the invention, in situ device 1 only transmits data packets to server 4 when they are necessary for the electricity consumption analysis.

In particular, a data packet is only transferred to server 4 if an "ON/OFF event" has been detected for (at least) one of the electric appliances that are being monitored. In situ device 1 of the present application recognises such an event by means of a "signature detection algorithm", which can be based on a statistical analysis of peaks appearing in the measured power characteristic.

2. *Main request: claim 1 - inventive step*

2.1 The board will adhere to the feature labelling introduced in point VII above throughout the present inventive-step analysis. From points VI and VII above, it is immediately apparent that the subject-matter of claim 1 of the **main request** essentially amounts to features (a), (b), (b)_(i), (b)_(ii) and (c).

2.2 In Reasons 8 of the appealed decision, the opposition division deemed **features (a), (b), (b)_(i), (b)_(ii) and (c)** to be disclosed in Figures 2 and 3 together with paragraphs [0024], [0028], [0031], [0039], [0042] and [0043] of document **D1**.

2.3 The appellant only contested the disclosure in D1 of **feature (b)_ (ii)**. While several passages in D1 in fact indicate that there is not necessarily a *continuous* stream of data between "in-situ" or "first" processor 304 and server 203 of D1, for instance

- the clause "[o]nce the representative wavelet model has been determined, protocol processor 304 can pass the representative wavelet model to communication module 306" (emphasis by the board) in paragraph [0031] of D1;
- the phrase "[a]s device load on a building electrical circuit 107 changes" (emphasis added) in paragraph [0039] of D1;
- the sentence "[t]he representative wavelet model can be transmitted hourly or daily during scheduled synchronization of communication module 306 with server 203" (board's emphasis) of paragraph [0045] of D1,

the board agrees that there is no direct and unambiguous disclosure in D1 of feature (b)_ (ii).

Therefore, on the basis of this feature, novelty of claim 1 is to be acknowledged (Article 54 EPC).

2.4 The only technical effect that can be credibly ascribed to **feature (b)_ (ii)** is that its conditional transmission might lower the workload of one component of the claimed energy management system, namely the "first processing unit" of feature (b). This is because it dispenses, at least partly, with the management of any peripheral devices that are typically involved in a transmission between an in-situ device and a server, relating to, for instance, transmitting and receiving messages, packet assembly and disassembly, error

detection and correction. It does so at a smaller computational cost of checking whether a particular condition is fulfilled. As a result, the conditional transmission of a data packet according to feature (b)_(ii) achieves the technical effect of reducing the workload for the first processing unit of feature (b).

For the following reasons, the technical effects mentioned by the appellant cannot be credibly attributed to feature (b)_(ii):

- 2.4.1 The appellant stated that feature (b)_(ii) allowed
- following up energy consumption in real time while keeping a low computational power on the sensor;
 - avoiding extensive data streaming to the server, and
 - keeping, at the same time, the overall manufacturing costs to a minimum.

While these effects correspond to the objects stated on page 2, lines 8 to 13 of the description as filed, they cannot be credibly attributed to feature (b)_(ii) because the conditional data transmission of this feature does not necessarily contribute to an energy consumption follow-up, a low computational power on the sensor, a data stream reduction to the server and overall manufacturing costs. In particular, a *lower* workload for one component of a given system might have to be compensated for by a *higher* workload for another component of that system, such that feature (b)_(ii) does not allow to draw conclusions regarding the necessary computational power for the "sensor", which

apparently corresponds to the "measuring unit" of feature (a). Similarly, a reduction of the data stream to the server coming from *one* source in the system may have to be compensated for by an additional data stream to that server from *another* source. Also the manufacturing costs are not affected by the above conditional data transmission.

2.4.2 The board likewise cannot share the appellant's point of view that

- the detection and characterisation of an on/off event as a peak in the data stream

and

- the subsequent trigger of a data transfer in accordance with feature (b)_(ii)

avoid the need for "massive data streams" which are typical for a common household, thereby improving the efficiency of the energy management system. Whether such "massive data streams" are truly suppressed depends on various implementation details about which the claimed energy management system is utterly silent. As a result, the appellant's argument is not persuasive that claim 1 concerned a highly *specialised* system, whereas D1 related only to a *general* reservoir of information.

2.4.3 Furthermore, the appellant invoked a technical effect according to which the user was able to see in real time which appliance of their household is not working optimally. Yet, the board cannot see how this effect could be credibly attributed to any of features (a), (b), (b)_(i), (b)_(ii) and (c). The same applies to the

appellant's argument that the invention allowed observing a specific appliance, such as a washing machine, by characterising peaks in the energy consumption that typically occurred during this appliance's operation.

2.5 In accordance with the technical effect acknowledged for feature (b)_(ii) in point 2.4 above, the objective technical problem associated with feature (b)_(ii) is to be defined as "how to reduce the workload of first processor 304 of D1".

2.6 The skilled person qualified to solve this objective technical problem comes from the field of computer engineering. This skilled person would have known, based on their common general knowledge, that there were *several* solutions to the objective problem posed, one of which being to reduce, by means of an appropriate programming, the workload involved with handling input/output ("I/O") to peripheral devices.

Within the context of D1, in particular in view of the passages referred to in the three dashes of point 2.3 above, the skilled person would have immediately realised, based on their common general knowledge, that a conditional transmission of a data packet from first processor 304 to server 203 of D1 is one feasible way to implement such an appropriate programming allowing to reduce I/O handling. To achieve this conditional transmission in the concrete case of D1, the skilled person would have readily chosen either of the two indications of a changed device load as mentioned in paragraph [0039] of D1, i.e. either

- the addition or removal of electrical appliances from building electrical circuit 107

or

- the turning ON or OFF of electrical devices,

depending on which one of the two indications the skilled person would have found more relevant or critical for a *particular* situation.

By selecting one of the above equally likely alternatives, on the basis of their known benefits and downsides and depending on practical constraints, the skilled person would have arrived at feature (b)_(ii) without exerting any inventive activity. In this regard, the board moreover notes in passing that the patent itself is entirely silent as to the determination of the *relevance* or *severity* of particular events such as ON/OFF events, let alone the respective criteria to be used for that determination.

2.7 Claim 1 of the main request therefore lacks an inventive step (Article 56 EPC).

3. *First auxiliary request: claim 1 - inventive step*

3.1 As regards claim 1 of the **first auxiliary request**, the appellant alleged that **feature (d)** (cf. point VII above) was not disclosed in D1.

3.2 The appellant's argumentation in this respect hinged on the assertion that the output of the "signature detection algorithm" according to **features (b)_(i), (c) and (d)** was to be identified with the (steady-state) "representative wavelet model" constructed by in-situ

energy monitor 201 based on current-waveform measurements from electrical devices connected to electrical circuit 107 as mentioned in paragraphs [0025] and [0036] to [0043] of D1.

However, the only "signature detection algorithm" that can be recognised in paragraph [0039] of D1, to which the opposition division referred in Reasons 8 of the appealed decision with respect to the "signature detection algorithm" of the so-labelled feature "(b)", is the one underlying the analysis of "edge events" that typically occur when an electrical appliance connected to electrical circuit 107 is turned ON or OFF. Such an analysis requires at least an identification and, hence, an "event signature" of these edge events. The latter is provided by the underlying algorithm as output data at some point during its execution by first processor 304 of energy monitor 201.

From paragraph [0028] of D1, to which the opposition division referred with respect to the so-labelled feature "(c)" in Reasons 8 of the appealed decision, together with paragraphs [0027] and [0044] to [0047] of D1, it is immediately apparent that this output is provided to server 203 (evidently via a digital transmission) because these paragraphs teach in an unequivocal way that edge-event information can be used by server 203 "to facilitate identification of which known waveform signatures to combine" and to build the combined predictive model of electrical circuit 107.

This edge-event information, however, must be the "event signature" (or technically equivalent information) underlying the analysis of paragraph [0039] of D1. Otherwise, the obtained

combined predictive model could not be used by server 203 to identify, based on a comparison with the representative wavelet model which was set up by first processor 304, a particular device coupled to electrical circuit 107, its operating mode and its performance, as apparent from paragraph [0028] of D1. Likewise, the representative wavelet model built by first processor 304 must necessarily incorporate transition events occurring during the time period when the aggregated current waveform is obtained in step 601, as explained in paragraphs [0034] to [0038] of D1. This is moreover confirmed by the use of the term "steady state edge event of the representative wavelet model" in paragraph [0041] of D1. Such incorporated transition events could be, for instance, those relating to turning a device ON or OFF, as argued by the respondent.

In other words, D1 discloses the transmission, by means of a data packet, of an *event signature* relating to turning an electrical appliance of electrical circuit 107 ON or OFF as an output of a "signature detection algorithm". Hence, it discloses feature (d).

3.3 As a result, feature (d) cannot alter the conclusion drawn in point 2.7 above.

3.4 Consequently, claim 1 of the first auxiliary request also lacks an inventive step (Article 56 EPC).

4. *Second auxiliary request: admittance into the appeal proceedings (Article 13(2) RPBA 2020)*

4.1 The **second auxiliary request** was submitted *after* notification of the summons to oral proceedings (cf.

point III above).

4.2 In support of its admittance, the appellant argued that it was submitted in reaction to objections first raised by the board against the main request (i.e. the then "first auxiliary request") and that the present situation was similar to the ones in T 1482/17 and T 1278/18, where an "exceptional circumstance" within the meaning of Article 13(2) RPBA 2020 was recognised.

4.3 Firstly, it is recalled that the mere fact that a "new" objection was raised by a board cannot *per se* amount to "exceptional circumstances" within the meaning of Article 13(2) RPBA 2020 (see e.g. T 2271/18, Reasons 3.3). Nothing else can be derived from the decisions cited by the appellant. In both cases, the aspect relating to "new objections" was considered as only one of several *other* criteria, including the complexity or the clear allowability of the amendments made (see T 1482/17, Reasons 2.3 and T 1278/18, Reasons 5).

Also, the "explanatory remarks" to Article 13(2) RPBA 2020 mentioned in CA/3/19, as e.g. invoked in cases T 988/17 (Reasons 6.3.3) and T 1786/16 (Reasons 3.2), do not indicate that a "new" objection raised for the first time in a board's preliminary opinion or in the oral proceedings before the board, *taken alone*, would be an example of such "exceptional circumstances". Rather, the third paragraph of those remarks reads (board's emphasis):

"The basic principle of the third level of the convergent approach is that [...] amendments to a party's appeal case are not to be taken into consideration. However, a limited exception is

*provided for: it requires a party to present **compelling reasons** which justify clearly why the circumstances leading to the amendment are indeed exceptional in the particular appeal ("**cogent reasons**"). **For example**, if a party submits that the Board raised an objection for the first time in a communication, it must explain **precisely** why this objection is new and does not fall under objections previously raised by the Board or a party [...]"*.

In the board's view, this paragraph, at most, provides an example of *how* to present "cogent reasons" rather than implying that a new objection raised by a board in a communication alone exemplifies "exceptional circumstances" in that context. A "precise explanation" as regards cogent reasons is however completely absent here.

- 4.4 Secondly, even if a board's "new objection" amounted automatically to "exceptional circumstances", in the present case no new objections were raised in the board's communication under Article 15(1) RPBA 2020. Only a reasoning was provided as to why the appellant's arguments as regards novelty in view of feature (d) was not persuasive (cf. point 5.2.1 of that communication).
- 4.5 In conclusion, the appellant did not provide any "cogent reasons" justifying "exceptional circumstances" under which this claim request could be admitted into the proceedings. Nor can the board see any such circumstances.
- 4.6 During the oral proceedings before the board, the appellant reiterated that the opposition proceedings had been very brief and emphasised that they had not had a chance to react to the appealed decision in the

form of amended claims.

The board notes, in this respect, that the appellant had not requested oral proceedings during the opposition proceedings and, hence, deliberately took the "risk" and accepted that the opposition division would decide on the basis of the facts and arguments on file. While the appellant is, of course, free to do so, appeal proceedings, being of a *reviewing* nature, cannot be used to counter, by filing claim requests in the appeal proceedings that could have been submitted before the opposition division, a negative outcome incurred as a result of taking this "risk".

- 4.7 Consequently, in the absence of any exceptional circumstances, the second auxiliary request could not be admitted into the appeal proceedings (Article 13(2) RPBA 2020).

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chair:



B. Brückner

K. Bengi-Akyürek

Decision electronically authenticated