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**Datasheet for the decision
of 22 April 2022**

Case Number: T 1562/18 - 3.5.02

Application Number: 07847607.4

Publication Number: 2220740

IPC: H02J3/32, H02J7/34

Language of the proceedings: EN

Title of invention:

Electricity Supply Apparatus of an Industrial Site

Applicant:

Telecom Italia S.p.A.

Relevant legal provisions:

EPC Art. 84, 83, 56

Keyword:

Claims - clarity after amendment (yes)

Sufficiency of disclosure - after amendment (yes)

Inventive step - (yes)



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Case Number: T 1562/18 - 3.5.02

D E C I S I O N
of Technical Board of Appeal 3.5.02
of 22 April 2022

Appellant:
(Applicant)

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Decision under appeal:

**Decision of the Examining Division of the
European Patent Office posted on 23 January 2018
refusing European patent application No.
07847607.4 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman R. Lord
Members: G. Flynn
W. Ungler

Summary of Facts and Submissions

- I. The appeal contests the examining division's decision to refuse European patent application no. 07 847 607.4.
- II. In the contested decision, the examining division considered the applicant's main request, based on a set of claims filed on 14 October 2015, and the applicants first to third auxiliary requests, based on sets of claims filed on 29 September 2017.

The examining division referred in substance only to the following document:

D1: US 2007/035290 A1.

Regarding the main request, the examining division held in section 1.1.2 that the feature in claim 3 of classifying each hour in the price table "according to said battery information (InfoB)" was not supported by the description (Article 84 EPC) and not sufficiently disclosed (Article 83 EPC). In the description, page 13, lines 5 to 12, it was defined that the hours were classified according to the price information (InfoP) but there was no teaching about how they would be classified according to the battery information.

In section 1.1.3 the examining division objected under Articles 83 and 84 EPC, to the terms "optimum charge level", "optimum discharge current" and "optimum recharge current".

In section 1.1.4 of the decision the examining division objected to the feature of claim 11 concerning the amplitude (A) being set to a first intermediate value

(A5) "such that said first current (I2) is equal to a current (I4*) requested by said load (TA), said second part (I3) of said first current (I2) being equal to zero". The division saw this as being defined as a result to be achieved (clarity, Article 84 EPC) and saw an insufficiency in the disclosure of how this feature should be achieved when the load was not a current sink (Article 83 EPC). The same objections were raised for claims 12 and 13.

In section 1.1.5 of the decision the examining division objected under Article 84 EPC that the feature in claim 1 of "said amplitude (A) having an intermediate value of a range delimited by a minimum value and a maximum value Amax)" was inconsistent with claim 11, claim 13, claim 14 and description page 11, lines 25 and 30), according to which the minimum and maximum values of the amplitude could be reached.

In section 1.2 the examining division held that the subject-matter of claims 1 and 15 of the main request did not involve an inventive step over document D1.

In section 2.2 the examining division held that the feature "substantially" constant current in claims 1 and 15 of the first auxiliary request was unclear and insufficiently disclosed.

In section 2.3 it was held that the features of "substantially" constant current and parallel connection of the battery and the load did not render claims 1 and 15 of the first auxiliary request inventive over document D1.

III. With the statement setting out the grounds for appeal filed on 22 May 2018 the appellant (applicant) filed

sets of claims according to first, second and third auxiliary requests for consideration in the appeal.

- IV. The Board summoned the appellant to oral proceedings. In a communication pursuant to Article 15(1) RPBA, the Board indicated that the independent claims of the third auxiliary request could form the basis of an allowable request.
- V. With a letter of 31 March 2022 the appellant withdrew the main request, first auxiliary request and second auxiliary request previously on file, maintaining the claims according to the third auxiliary request as a new main request. Furthermore, the appellant filed claims of a new auxiliary request.
- VI. In a communication dated 1 April 2022 the Board indicated that they saw deficiencies in the main request but considered the claims of the new auxiliary request to be allowable. The Board invited the appellant to reconsider their requests and file a description adapted to the new auxiliary request.
- VII. With a letter dated 14 April 2022 the appellant withdrew their main request and stated that the claims according to the auxiliary request filed with letter of 31 March 2022 were the appellant's main request. The appellant filed a complete amended description adapted to these claims and conditionally withdrew their request for oral proceedings.
- VIII. With communication of 21 April 2022, the Board cancelled the scheduled oral proceedings.

IX. The appellant's **main request** is that the decision of the examining division be set aside and a patent be granted on the basis of the following documents:

Description:

Pages 1 to 21 filed with the letter dated
14 April 2022

Claims:

Numbers 1 to 11 filed with the letter of
31 March 2022 as "NEW AUXILIARY REQUEST"

Drawings:

Sheets 1/7 to 7/7 as published

X. **Independent claim 1 of the main request** reads as follows:

"1. An electricity supply apparatus (ESA) of a telecommunication site (TS) comprising telecommunication apparatuses (TA) absorbing a current (I4) having a substantially constant value (I4*), said electricity supply apparatus (ESA) comprising:

- a control device (CD) configured to calculate an amplitude (A) of a control signal (Vc) according to a price information (InfoP) indicative of a price per time unit of a first current (I2) drawn from a mains (Ms) and to generate said control signal (Vc);
- an energy station (ES) configured to draw said first current (I2) from said mains (Ms), to provide at least a first part (I4) of said first current (I2) to said telecommunication apparatuses (TA), to receive said control signal (Vc) from said control device (CD), and to reduce said first current (I2) by an amount proportional to said amplitude (A) of said control signal (Vc); and

- a battery (B) electrically connected to said energy station (ES) and to said telecommunication apparatuses (TS), said battery (B) and said telecommunication apparatuses (TA) being connected to an output line of said energy station (ES) according to a parallel configuration, said battery (B) being configured to recharge by drawing a second part (I3) of said first current (I2) from said energy station (ES) and to discharge by providing a second current (-I3) to said telecommunication apparatuses (TA),

wherein said control device (CD) is further configured to calculate said amplitude (A) of said control signal (Vc) also according to battery information (InfoB) relating to at least one of a recharge condition and a discharge condition of said battery (B), said amplitude (A) having an intermediate value of a range delimited by a minimum value and a maximum value (Amax)".

Claims 2 to 10 are dependent on claim 1.

Independent claim 11 of the main request reads as follows:

"11. A method for supplying, by means of an energy station (ES), a telecommunication site (TS) comprising telecommunication apparatuses (TA) absorbing a current (I4) having a substantially constant value (I4*), said method comprising:

- a) at said energy station (ES), drawing a first current (I2) from a mains (Ms) by means of said energy station (ES) and providing at least part (I4) of said first current (I2) to said telecommunication apparatuses (TA);
- b) at a control device (CD), calculating an amplitude (A) of a control signal (Vc) according

to a price information (InfoP) indicative of a price per time unit of said first current (I2) and providing said control signal (Vc) to said energy station (ES);

- c) at said energy station (ES), receiving said control signal (Vc) and reducing said first current (I2) by an amount proportional to said amplitude (A) of said control signal (Vc); and
- d) performing one of an operation of recharging a battery, said battery (B) and said telecommunication apparatuses (TA) being connected to an output line of said energy station (ES) according to a parallel configuration, with a second part (I3) of said first current (I2) and an operation of discharging said battery (B) by providing a second current (-I3) to said telecommunication apparatuses (TA),

wherein said step b) comprises calculating said amplitude (A) of said control signal (Vc) also according to battery information (InfoB) relating to at least one of a recharge condition and a discharge condition of said battery (B), said amplitude (A) having an intermediate value of a range delimited by a minimum value and a maximum value (Amax)".

XI. The appellant's submissions may be summarised as follows:

- (a) Regarding the objection in section 1.1.2 of the decision, the appellant submitted that claim 3 was both supported by the description and sufficiently disclosed. Page 13, lines 18 to 20 of the original description (see WO 2009/068112 A1) explicitly disclosed that the calculation of the number N of peak hours (which was part of the hour

classification as depicted in the flow chart of Figure 3) was according to the battery information. As described in detail on page 13, lines 30 to 33, the number N of peak hours was calculated as the number of hours required to discharge the battery B from its optimum charge level BCL_{opt} to its minimum charge level BCL_{min} with a discharge current equal to the optimum discharge current I_{3opt-} . Similar considerations applied to the calculation of the number M of off-peak hours (which was also part of the hour classification as depicted in the flow chart of Figure 3), see page 14, lines 14 to 16 and 18 to 21. Such calculations were also the subject matter of claims 5 and 7, which indirectly depended on claim 3.

- (b) Regarding the objection in section 1.1.3 of the decision, the appellant submitted that from the description (page 4, lines 5 to 20 and page 24, lines 7 to 24) it was apparent that the "optimum" charge level BCL_{opt} and "optimum" discharge/recharge currents I_{3opt+}/I_{3opt-} of the battery B were those which minimized the risk of damaging the battery B and maximized the energy storage efficiency of the battery B . This had been clarified in amended claims 4 and 6 of the main request.
- (c) Regarding the objections in section 1.1.4 of the decision the appellant submitted that the definition in terms of the result to be achieved was appropriate in the context, all other definitions being unduly limiting.

Regarding the objection under Article 83 EPC, the appellant had limited independent claims 1 and 11

to a telecommunication site comprising telecommunication apparatuses following the Board's assessment that in this context, the feature that the current absorbed by the load has a substantially constant value was clear.

- (d) Regarding the objection in section 1.1.5 of the decision, the appellant submitted that this had been overcome by deleting the dependent method claims 13 and 14.

- (e) Regarding the inventive step objection in section 1.2 of the decision, the appellant submitted that document D1 also did not disclose the energy station being configured to reduce the current drawn from the mains by an amount proportional to the amplitude of the control signal calculated by the control device also according to battery information relating to at least one of a recharge condition and a discharge condition of the battery. These distinguishing features solved the problem of providing an electricity supply apparatus for an industrial site which provided simultaneous control of both the current drawn from the mains and the recharging and/or discharging of the battery.

A skilled person starting from D1 and facing the above problem would not arrive to the subject-matter of claim 1. The system ASV of D1 was configured to adjust (and possibly reduce) the current fed to the battery BAT from the mains via the battery charger BLG only according to the energy consumption as measured by the integrated electricity meters Z1, Z2 (see paragraphs [0011] and [0045]), with no regard to the recharge and discharge conditions of the battery BAT.

Reasons for the Decision

1. *Articles 83 and 84 EPC*

1.1 The Board finds that with the amendments made to the claims the requirements of Articles 83 and 84 EPC are met. The reasons for this finding are set out below with reference to the reasons given in the various sections of the contested decision.

Section 1.1.2 of the decision

1.2 The Board concurs with the appellant that claim 3 of the main request is supported by the description, as required by Article 84 EPC, and that there is sufficient disclosure of how to carry out its subject-matter, as required by Article 83 EPC.

1.3 Firstly, there is literal support for the subject-matter of claim 3 on page 5, lines 12 to 14 of the application as filed (see WO 2009/068112 A1).

1.4 Secondly, as submitted by the appellant, the description sets out from page 13, line 13 to page 14, line 13 how the control device calculates the number N of peak hours of the day based on battery information and classifies that number of hours of the day as peak hours. The battery information to be used is that set out on page 13, lines 20 to 24. Similarly, on page 14, lines 14 to 23 it is set out how the control device calculates the number M of hours of the day to be

classified as off-peak hours. The remaining hours of the day are classified as neutral hours (see page 14, lines 24 and 25). Thus there is sufficient disclosure of how each hour in the price table (PT) can be classified as peak, neutral or off-peak according to battery information.

Section 1.1.3 of the decision

- 1.5 Claim 4 itself contains a definition of the term "optimum charge level (BC_{Lopt})" as being "the maximum charge level allowing said battery (B) to store energy with a storage efficiency higher than a predetermined threshold". It is known in the field that for any given battery type the storage efficiency will depend on the charge level. For this reason the Board considers the definition of the term "optimum charge level" in claim 4 to be clear.
- 1.6 Furthermore, with the amendments made to claims 4 and 6 of the main request, the terms "optimum discharge current (I_{3opt-})" and "optimum recharge current (I_{3opt+})" are now clearly defined.

Section 1.1.4 of the decision

- 1.7 The Board concurs with the appellant that the feature of the control device being configured to set the amplitude (A) to a first intermediate value (A₅) "such that said first current (I₂) is equal to a current (I_{4*}) requested by said load (TA), said second part (I₃) of said first current (I₂) being equal to zero" does not render claim 11 of the main request unclear in the sense of Article 84 EPC. It merely requires that

the control device be capable of determining which amplitude A achieves the stated conditions ($I_2 = I_4^*$ and $I_3 = 0$).

- 1.8 Regarding the examining division's objection under Article 83 EPC the Board notes that the description sets out from page 19, line 17 to page 20, line 6 how this feature of claim 11 can be achieved. There it is explained that

"[the control device CD] preferably starts increasing the amplitude A of the control signal Vc as shown in graph (c) [of figure 5b], thus decreasing the current I2".

It is explained that

"Since the telecommunication apparatuses TA always absorb the same current I_4^ , the current I_3 absorbed by the battery B starts decreasing".*

Furthermore, it is stated that

"Preferably, the control device CD increases the amplitude A of the control signal Vc until, at a time t_5 , it reaches a value A_5 comprised between 0 and A_{max} . Preferably, the value A_5 is such that the current I_2 drawn by the energy station ES is again equal to I_4^ , and therefore the current I_3 absorbed by the battery B is equal to 0, so that the battery B stops recharging (no-recharge mode)".*

- 1.9 This procedure apparently only works when the load comprises telecommunication apparatuses TA which always absorb the same current I_4^* , and when the "battery B and the telecommunication apparatuses TA are connected to the output line of the energy station ES according to a parallel configuration" (cf. page 10, lines 6 to 8 and figure 1). With these features the battery current

I3 decreases in line with the decrease in the current I2 drawn by the energy station ES according to the relationship $I2 = I3 + I4$ (cf. page 10, line 15). As these features have been added to the independent claims 1 and 11 of the main request, the Board considers that there is sufficient description of how to carry out this aspect of the invention as claimed. Hence, the requirements of Article 83 EPC are now met in this respect.

- 1.10 Whilst the feature that the current absorbed by the load has a substantially constant value might be too imprecise in the context of loads in general, the Board considers that in the context of a telecommunications site and telecommunications apparatuses, which do typically have rather constant loads at least in the short term, this expression is clear in the sense of Article 84 EPC.

Section 1.1.5 of the decision

- 1.11 The Board concurs with the examining division that the statement in the independent claims, that the amplitude (A) has an intermediate value of a range delimited by a minimum value and a maximum value, would be understood as meaning a value somewhere between the minimum and maximum values, but not the minimum or the maximum values. In the main request the appellant has deleted the dependent claims which contradicted this interpretation, thus resolving the lack of clarity identified by the division.

2. ***Inventive step, Article 56 EPC***

2.1 The Board concurs with the examining division's finding that the subject-matter of claim 1 as on file at the time differed from the disclosure of D1 (at least) in that:

- (a) the site is an industrial site;
- (b) an amplitude of a control signal is calculated, said first current is reduced according to said amplitude of said control signal and said amplitude has an intermediate value of the range; and
- (c) the battery (B) is electrically connected to said energy station (ES).

2.2 With the amendments carried out according to the main request, the invention is further limited to the site being a telecommunication site comprising telecommunication apparatuses absorbing a current having a substantially constant value. Document D1 does not relate to such a substantially constant load situation. On the contrary, it discloses a device for covering the peak load of an electrical consumer that is connected to an alternating current terminal of a public electricity network (see abstract). As set out in paragraph [0019], the term "consumer" refers to an electrical device rather than to an individual or a business. The examples given are the devices of a fast food outlet, such as a hot dog stand (see paragraph [0020]). These are evidently AC loads.

2.3 In the Board's assessment, it would not be obvious for the skilled person to apply the arrangement of D1, which is designed for peak-logging of AC loads, to a telecommunications site with a substantially constant current load which, by virtue of being connected in parallel with a battery, must be a DC load.

2.4 For these reasons the Board concludes that the Requirements for inventive step according to Article 56 EPC are met.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the examining division with the order to grant a patent in the following version:

Description:

Pages 1 to 21 filed with the letter dated
14 April 2022

Claims:

Numbers 1 to 11 filed with the letter of
31 March 2022 as "NEW AUXILIARY REQUEST"

Drawings:

Sheets 1/7 to 7/7 as published

The Registrar:

The Chairman:



U. Bultmann

R. Lord

Decision electronically authenticated