(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
7 November 2013 (07.11.2013)

WIPO | PCT

(10) International Publication Number
WO 2013/164775 A1

(51) International Patent Classification:
G06Q 50/06 (2012.01) *G06Q 30/02* (2012.01)

(21) International Application Number:
PCT/IB2013/053450

(22) International Filing Date:
1 May 2013 (01.05.2013)

(25) Filing Language: Italian

(26) Publication Language: English

(30) Priority Data:
BO2012A000235 2 May 2012 (02.05.2012) IT

(72) Inventor; and
(71) Applicant : **VESPASIANI, Francesco, Maria** [IT/IT]; 121, Via Rubra, I-00188 Roma (IT).

(74) Agent: **RUZZU, Giammario**; 5, Via Gulli, I-40068 San Lazzaro di Savena (IT).

(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:
— *with international search report (Art. 21(3))*

(54) **Title**: SYSTEM AND METHOD FOR MANAGING THE CONSUMPTION OF POWER GENERATED FROM RENEWABLE AND ENVIRONMENTALLY FRIENDLY SOURCES

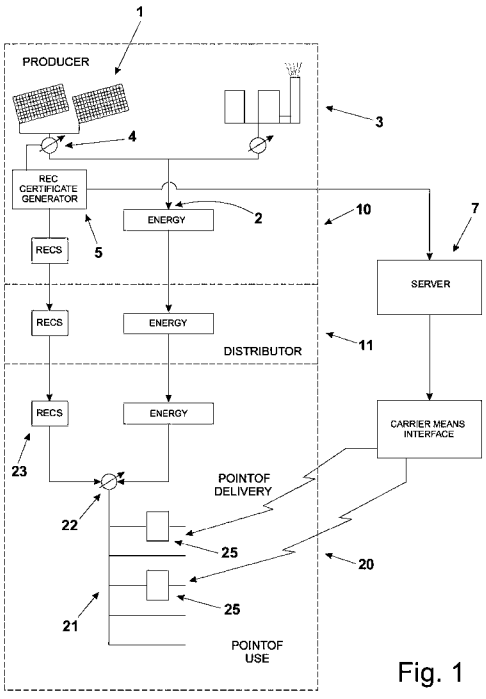


Fig. 1

(57) **Abstract**: The present system relates to managing the consumption of 'green' energy, that is energy deriving from renewable and environmentally friendly sources, aimed at being introduced into a power distribution network together with the energy obtained from other sources, so as to be distributed therewith, in an undifferentiated way, to predetermined delivery points. The green energy is associated to certificates of origin, for example RECS certificates, whose economic value is proportioned to the energy production. The power distribution network includes, in each delivery point, at least one consumption counter device, aimed at computing the total energy consumption in the plant served thereby. The system includes: at least one server, in association with the power distribution network, designed to manage electronic data connections in one or more communication networks, collecting means for collecting credits related to said certificates of origin RECS, being operative in the server, and partializer means for partializing the credits on the basis of purchase orders received from the consumers of the green energy. Storage means for carrying the partialized credits, held by each user, are aimed at storing the current amount of credits purchased by the user and at deducting from the amount the part of credits on the basis of the corresponding energy consumption that the user is going to derive from renewable and environmentally friendly sources.

WO 2013/164775 A1

Description

SYSTEM AND METHOD FOR MANAGING THE CONSUMPTION OF POWER GENERATED BY RENEWABLE AND ENVIRONMENTALLY-FRIENDLY SOURCES

Technical Field

[1] The present invention relates to the technical field concerning the production and distribution of electric energy obtained from renewable or environmentally friendly sources.

[2] In particular, the invention relates to a method and a system for attributing, distributing and computing certificates of guarantee of origin of a given amount of the so-called 'green' energy, that is produced from the above mentioned renewable or anyway, environmentally friendly sources and consumed by a user.

Background Art

[3] It is known that nowadays the production of energy from renewable sources, or anyway, from sources having no or very limited environmental impact is given considerable importance. Important examples of electric energy production from renewable sources include hydroelectric, wind, photovoltaic, geothermal plants, etc.

[4] The electric energy produced from the above mentioned sources is certainly more precious intrinsically with respect to that produced from traditional fossil sources, *in primis* petroleum and natural gas, and an ever increasing necessity is felt for exploiting not only its production, but also its use. Actually, users of energy services are more and more conscious that purchasing and using the energy produced without exploiting fossil resources, without causing further environmental pollution and jeopardizing the future availability of such sources, is the best way to restrain degradation of health conditions of our planet and to assure a still liveable and not too polluted environment also for our progeny.

[5] It has also been shown that quite a big percentage of users is even willing to pay a reasonably higher price for energy derived from not polluting sources.

[6] In practical terms, what has been described above, can build over time a virtuous feedback mechanism in the diffusion and development of the renewable energy technologies. In fact, it is wholly probable that, if an energy producer establishes that the users are more willing to purchase energy derived from renewable and sustainable sources, he is more stimulated to increase the 'green' part of his production. Then, he will take this fact into consideration while defining his future investments.

[7] An implicit aspect of the current organization of the energy production and distribution is the fact that both the energy produced in a conventional way and energy derived from renewable and eco sustainable sources are introduced into the same power distribution network, which conveys them to the final users, both industrial and domestic. Therefore, identification of the real origin of the energy made available for

the users is in fact impossible. On the other hand, it is inconceivable to assume that parallel capillary power distribution networks will be constructed for distributing the energy derived from renewable sources in a physically separated way.

[8] In order to satisfy the requests of a part of users to use clean energy, on one side, and the producers' interest to show their care to produce it, even at a higher cost of a produced unit, on the other side, a certification system for the part of energy deriving from renewable sources and for the interchange of such certificates among the interested parties, has been created and developed over time. For example, the AIB (Association of Issuing Bodies) promotes the European standardized system for quality certification of green energy, i.e. derived from renewable sources, by means of RECS (Renewable Energy Certificate System) and GO (Guarantee of Origin).

[9] Basically, the issued certificates confirm that a certain amount of electric energy has been produced in compliance with precise regulations for production from renewable and non polluting sources. Such certificates are granted to producers who prove to have observed the specific requests for the foregoing amount of production.

[10] The 'quality' credit represented by the certificates can be divided and sold, for example to wholesale dealers, who in turn, can sell them to the final users on the basis of the supplies delivered to the respective delivery points. The purchase of certificates for a certain amount of energy shows that, for this precise amount, the user has in fact used energy derived from renewable and clean sources.

[11] The certificates sold to the final user are counted up and recorded always at the end of a solar year.

[12] Therefore, the delivery of certificates is always associated to a well defined power supply annual contract and indicates a single delivery point, that is the one defined by the electric energy metering device installed in that point by the power provider.

[13] The purchase of the above mentioned certificates by a user causes an increase of costs for power supply to the same user. However, the increased cost is rewarded, especially in case of firms, by an image return that can be advantageously used for promotion and for creation of a reputation as a company that cares about environmental issues.

Disclosure of Invention

Technical Problem

[14] The approach to managing of RECS, GO and other similar certificates has considerable limits, which make them of no interest to private users, and in particular to users who get most satisfaction from the high cost purchase of energy derived from renewable sources only by seeing with their own eyes their consumption, which is non polluting and sustainable.

[15] Actually, the conventional ways of handling certificates include a normal power supply at the delivery point, measuring the delivered energy and calculating the final balance of the renewable energy that the user has purchased or is going to purchase as

a part of his/her total energy consumption for the period taken into consideration. In this way, in practice, at the end either of the year or of every quarter, the user will simply have another item, which increases the price to pay, among many others present in the bill. Therefore, in practice, there is no appreciable way to make the user aware of having really consumed, at a certain moment or in a certain period, the energy produced according to ecologically acceptable criterion and technologies.

Technical Solution

[16] It is an object of the present invention to propose a system for managing the consumption of energy derived from renewable and environmentally friendly sources, and a corresponding method that carries it out, which allows a user to decide when, how and for which specific application to use an amount of such renewable energy that has been purchased.

[17] Another object of the invention is to propose a system and method which allow separating and making totally independent from each other the tasks relating to energy supply and managing the amounts of renewable and clean energy that a user is going to consume.

[18] The above mentioned objects are wholly obtained in accordance with the contents of the claims by a method and system for managing the consumption of 'green' energy, that is energy deriving from renewable and environmentally friendly sources, aimed at being introduced into an power distribution network together with the energy produced by other sources, so as to be distributed therewith, in an undifferentiated way, to predetermined delivery points. The green energy is associated to certificates of origin, for example RECS certificates, whose economic value is proportioned to the energy production. The power distribution network includes, in each delivery point, at least one consumption counter device, aimed at computing the total energy consumption in the plant served thereby.

[19] The system includes: at least one server, in association with the power distribution network, designed to manage electronic data connections over one or more communication networks, collecting means for collecting credits related to said certificates of origin RECS, being operative in the server, and partializer means for partializing the credits on the basis of purchase orders received from the consumers of the green energy.

[20] Storage means for carrying the partialized credits, held by each user, are aimed at storing the current amount of credits purchased by the user and at deducting from the amount the part of credits on the basis of the corresponding energy consumption that the user is going to derive from renewable and environmentally friendly sources.

Description of Drawings

[21] The characteristic features of the invention, as they will appear evident from the claims, are pointed out in the following detailed description, with reference to the enclosed tables of drawings, in which:

[22]

1. - Figure 1 is a general block diagram of the system for managing the consumption of energy derived from renewable sources obtained according to a first embodiment of the present invention;

[23]

1. - Figure 2 is a block diagram of a metering and computing device that belongs to the system of Figure 1;

[24] Figure 3 is a general block diagram of the system for managing the consumption of energy derived from renewable sources obtained according to a second embodiment of the present invention.

Best Mode

[25] With reference to Figure 1, there is described hereinafter a first embodiment of a system for managing the consumption of 'green' energy, i.e. derived from renewable sources or anyway sources having very limited or even no environmental impact. The diagram of Figure 1 shows a generator 1 formed by photovoltaic panels. However, it is understood that, for the purposes of the present invention, it is possible to use any environmentally friendly source of energy, whose production can be associated to the RECS or other kind of certificates.

[26] According to the normal structure of a system for generating and distributing energy, the energy produced by the photovoltaic generator 1 and by all the other existent renewable sources, is introduced into a power distribution network 2 together with the energy produced by one or more generators 3 of conventional type, for example, belonging to the same producer.

[27] According to known technologies, downstream of the photovoltaic generator 1, there is a counter device 4 for counting the produced green energy and a device 5 for generating certificates for attribution of such energy, for example RECS certificates. Later on, specific reference will be made to this kind of certificates, however, only for the sake of explanation simplicity.

[28] The energy produced and introduced into the power distribution network is thus generally sold, together with some or all the RECS certificates produced by the given producer, to a distributor 11, who takes care to subsequently resell the energy to a final user at a delivery point 20, and to issue an invoice for it eventually, on the basis of the consumption of the plant 21 associated to this delivery point. For this purpose, a consumption counter device 22 is provided, aimed at computing the energy used by the plant 21. Moreover, the whole supply can be associated, in a conventional way, to a corresponding amount of credits represented by the RECS certificates 23 purchased by the distributor 11, so that the energy used by the plant 21 is recognized as deriving from the photovoltaic generator 1 or from other generators of green energy, for which the RECS certificates, possessed by the distributor 11, have been generated.

[29] According to the invention, the system for managing the consumption of energy

produced by the photovoltaic generator 1, includes an independent server 7, including a processor provided with suitable and known connections to one or more global communication networks, for example Internet, the cellular telephone network, etc. The foregoing server 7 belongs to an administrator of the distribution of certificates of origin for a predetermined amount of energy, for example, the above mentioned RECS certificates. According to the invention, this person can be an energy producer 10 or distributor 11, or, in an equally advantageous way, an independent person, whose interests are not involved with the produced energy market, but concern only the credits granted by the RECS certificates.

[30] Besides the operating system and normal procedures for managing the above mentioned communication networks, in the server 7 run also procedures for purchasing and partializing a part or the whole amount of the RECS certificates issued nearby the generator device 5. These procedures are also generally known as collecting means for the credits related to the aforesaid certificates purchased by the administrator of the certificates.

[31] The partialized credits can be purchased from the administrator by users who are going to attribute a selected quantity of their energy consumption directly to 'green' production, that is deriving from the photovoltaic generator 1 or from other generators of renewable energy. The purchase and the respective payment can be performed using known conventional channels.

[32] According to a first illustrated embodiment of the invention, the system for managing the consumption of green energy includes, for each delivery point 20, at least an energy metering and computing device 25.

[33] The device 25 (see also the diagram of Figure 2) includes an input 26 of energy taken from the plant 21 served by the delivery point 20 corresponding to a given user. The input 26 is usually, but not always, formed by a normal plug, adapted to be connected to a corresponding socket provided at a point of use of the plant 21.

[34] The device 25 includes also a power outlet 27, that can be formed, for example, by a standard power socket, aimed at transferring the energy taken by means of the input plug 26 to a load.

[35] Between the input 26 and outlet 27, there is provided a measuring device 28 for measuring the supplied energy, whose circuital configuration can be anyone among those known and available on the market. The metering device which is aimed at counting the quantity of energy withdrawn by means of the metering and computing device 25.

[36] The latter includes also a computerized control unit 29, connected electrically to the aforesaid measuring device 28 and aimed at measuring the energy consumption by means of the metering and computing device 25.

[37] Carrier means 30 are also connected to the control unit 29 for carrying the above mentioned partialized credits, represented by the RECS certificates, registered in the

server 7. The amount of such partialized credits substantially corresponds to the purchase orders sent by the user to the server 7.

[38] The metering and computing device 25 includes also an interface 31 for communicating with the communication networks used and accessible by the server 7. The interface is connected with the control unit 29 and is aimed at being controlled by a communication procedure running therein, so as to communicate with the server 7 and receive new partialized credits related to RECS certificates as a result of a purchase by the user.

[39] A particularly important characteristic of the invention lies in the fact that the communication interface 31 is connected in real time with the server 7, for example, through Internet by means of a known 'wireless' connection, i.e. a RF connection or through a cellular telephone network interface, via SMS or other known way. In this way, it is possible that the RECS certificates purchased by the user are held in the server 7, and therefore the aforesaid carrier means 30 for carrying credits are formed by a dedicated memory area present in the server 7. Also the detraction of the credits on the basis of consumption can be managed directly by the server 7.

[40] According to another possible embodiment, the carrier means 30 provided in the device 25 are formed by a dedicated permanent memory area, capable of receiving the codes corresponding to the partialized credits owned by the user.

[41] The control unit 29 suitably includes a managing procedure, made according to known programming techniques, capable of withdrawing the current value of the partialized credits receivable by the user from the memory area 30, of recording the value in terms of RECS certificates corresponding to the consumption measured by the metering device 28, of detracting the equivalent from the amount of the partialized credits and storing the remaining value in the memory area 30.

[42] The device 25 can also have a display 32, aimed at displaying the remaining credits present in the memory area 30 or in the server 7, so that the user is always aware when to top up his/her credit.

[43] Actually, another characteristic of the invention lies in the fact that it includes means for converting units of measure, situated in the control unit 29 of the measuring and computing device 25 and formed by a suitable conversion procedure and aimed at converting immediately the readings related to the consumed energy into the corresponding value in terms of certificates and transmitting this value to the display 32.

[44] Optionally, the device 25 can also have a controlled switch 33, connected to the control unit 29 and aimed at interrupting the current supply to the outlet 27, if the credit is used up. In this case, the user can be sure that the whole consumption made through the device 25 will be RECS certificated and consequently, derived from a renewable source.

[45] In practical application, the device 25 is formed by the above described elements enclosed in a suitable container, which can be mounted in the plant 21 in place of one

of the points of use provided therein. Alternatively, the device 25 can be provided with a standard input plug and thus it can be wholly portable and independent from the plant 21. In this case, it can be advantageously used by the user in any other plant, completely independently from the supply of energy derived from the distributor 11, and even from the energy derived by a given producer.

[46] According to an alternative version of the above described means for carrying partialized credits RECS 30, they are constituted by an independent memory unit and can be physically removed from the metering and computing device 25, for example a pen drive with re-writable permanent memory, provided with a USB interface. In this way, it can be removed from the device 25, and topped up through other channels, for example, a computer connected to the above mentioned communication networks used by the server 7.

[47] According to a second embodiment of the system in accordance with the invention, illustrated in the diagram of Figure 3, the delivery point served by the distributor 11, or directly by the producer, is a public energy point of sale 50, or anyway, a point of sale accessible to a plurality of users, for example, a charge station for electric cars. In this case, the delivery point includes an energy delivering-counter device 51, made according to wholly known techniques and capable of delivering electric current and debiting the user, who takes it with the amount calculated according to a basic charge.

[48] The energy delivering-counter device 51 is connected to an interface unit 52 connected to the aforementioned carrier device for partialized credits 53, owned by the user who is taking at this moment the energy from the point of sale 50. Advantageously, in this case, the carrier device for partialized credits 53 is portable as described above, and is preferably formed by a USB memory pen drive, which stores, suitably codified, the current amount of the partialized RECS credits that the user is in credit of. The energy delivering-counter device 51 is provided with a suitable computing procedure for calculating the amount of the partialized RECS credits corresponding to the energy taken by the user and for updating the amount of the aforesaid credits on the carrier device 53.

[49] In practice, when the user introduces the latter device into the interface 52, the sum of the corresponding RECS credits is calculated for the whole amount of the energy taken by the same user, and then, such sum is deduced from the number of the credits present in the carrier device 53.

[50] However, it is obvious that the user can obtain the same result with a portable metering and computing device as described in the first embodiment of the invention, if provided with the input plug compatible with the delivery socket of the point of sale 50.

[51] An advantage of the above described invention lies in the fact that a user who cares about environment problems is offered a system for managing the consumption of energy derived from renewable and environmentally friendly sources, and a corre-

sponding method that carries it out, which allows a user to decide when, how and for which specific application an amount of such renewable energy that he/she has purchased should be used.

[52] Another advantage of the invention derives from the fact that it offers a system and method which allow separating and making wholly independent the tasks of supplying energy and managing the amounts of renewable and clean energy that a user is going to consume.

[53] It is understood that what above has been described as a pure not limiting example. Therefore, possible changes and different versions of the invention are considered within the protective scope granted to the present technical solution, as described above and claimed below.

Claims

[1] A system for managing the consumption of 'green' energy, that is energy deriving from renewable and environmentally friendly sources 1, aimed at being introduced into a distribution system 2 together with the energy produced by other sources 3, so as to be distributed therewith, in an undifferentiated way, to predetermined delivery points 20, 50, said green energy being associated to certificates of origin 23, whose economic value is proportioned to the energy production, said power distribution network including, in each said delivery point 20, 50 at least one consumption counter device 22 capable of computing the total energy consumption in the plant served thereby, said system being characterized in that it includes: at least one server 7, in association with said distribution system 3, designed to manage computer connections over one or more communication networks, collecting means 5 of credits represented by said certificates of origin 23, operating in said server 7, and partializer means for partializing said credits on the basis of purchase orders received from the consumers of said green energy; storage means 30, 53 for carrying said partialized credits, held by each said user, aimed at storing the current number of credits purchased by said user and at deducting from said number of credits a quantity of credits on the basis of the corresponding energy consumption that in the intention of the same user is deriving from renewable and environmentally friendly sources.

[2] A system as claimed in claim 1, characterized by at least one metering and computing device 25 for each said delivery point 20, the device including an input 26 aimed at being connected to a corresponding outlet of the electrical system served by said counter device for withdrawing energy, an outlet 27 supplying a point of use or a group of points of use of said energy, a measuring unit 28 for measuring the energy in transit through said metering and computing device 25, and a computerized control unit 29, aimed at measuring said amount of energy in transit, and in that said carrier means 30 for carrying partialized credits include a memory area that is a part of said metering and computing device, said control unit 29 being also provided with a computing procedure for deducting from the current amount of said partialized credits a sum corresponding to the energy consumption passed through said metering and computing device 25.

[3] A system as claimed in claim 2, characterised in that said metering and computing device 25 includes also a communication interface 31 for communicating with said server 7, through said communication networks, said partialized credits being downloaded on said device 25 through said communication networks.

[4] A system as claimed in claim 2, characterised in that said dedicated memory area 30 can be physically removed from said metering and computing device 25, and is constituted by a re-writable permanent memory card with USB interface.

[5] A system as claimed in claim 1, characterised in that said metering and computing 25 includes also current switching means 33, controlled by said control unit 29 and aimed at interrupting the energy supply to the user connected thereto when the partialized credits are used up.

[6] A system as claimed in claim 1, characterised in that said metering and computing device 25 includes also units of measure converting means, including a conversion procedure that operates in said control and processing unit and aimed at converting immediately the readings of the consumed energy into a corresponding value in terms of certificates and at transmitting said value to the displaying means 32 that belong to said measuring device.

[7] System as claimed in claim 1, characterized in that said delivery point 20 is a public energy point of sale 50, or anyway accessible to a plurality of users, that in said delivery point there is a device 51 for delivering-counting the delivered energy, provided with an interface 52, compatible with a corresponding interface of said carrier means for carrying partialized credits 53, the latter comprising also a re-writable permanent memory, aimed at being connected to said delivering-counter device, so as to obtain a detraction of said credits deriving from the certificates in proportion to the energy withdrawn from said point of sale 50.

[8] A method for managing the consumption of 'green' energy, that is energy deriving from renewable and environmentally friendly sources 1, aimed at being introduced into an power distribution network 2 together with the energy produced by other sources 3, so as to be distributed therewith, in an undifferentiated way, to predetermined delivery points 20, 50, said green energy being associated to certificates of origin 23, whose economic value is proportioned to the energy production, said power distribution network 2 including, in each said delivery point 20, 50 at least one consumption counter device 4 aimed at computing the total energy consumption in the plant served thereby, said method being characterized in that it includes: collecting said credits related to said certificates of origin 23, by a server 7, associated to the administrator of said power distribution network 2 or independent therefrom and aimed at managing the computer connections, in one or more communication networks; partializing said credits on the basis of purchase orders coming from the consumers of said green energy; attributing said partialized credits, in a predetermined amount, to the users

who have paid a corresponding amount; deducting from said amount the number of credits on the basis of the corresponding energy consumption that the same user intends to consider as derived from renewable and environmentally friendly sources, said corresponding energy being consumed through an energy delivering device 25, 51, comprising energy metering and computing means 25 and aimed also at interacting with said carrier means 30,53 for carrying partialized credits, which are aimed at carrying information about the amount of credits purchased by a given user.

[9] A method as claimed in claim 8, characterized in that said energy metering and computing means 25 include also a communication interface for communicating with said server 7, through said communication networks, and in that said detraction of parts of partialized credits based on the corresponding consumption is effected by means of real time interaction of said metering and computing means 25 with said server 7.

[10] A method as claimed in claim 8, characterized in that said detraction of parts of partialized credits on the basis of the corresponding consumption is effected by cancelling parts of the partialized credits on said carrier means for carrying partialized credits 30, the latter being associated to said metering and computing means 25.

[11] A method as claimed in claim 8, characterized in that said metering and computing means 25 include a device aimed at being connected to an electric socket and provided with at least one own socket 27 and a metering unit for measuring the energy 28 in transit, said detraction of the amount of energy consumed through said electric socket 27 being performed by connecting said carrier means for carrying partialized credits 30 to said metering and computing means 25, and then detracting an amount proportional to the consumed energy from said credits.

[12] A method as claimed in claim 11, characterized in that said carrier means for carrying partialized credits 30 are installed in said metering and computing device 25 in a permanent way.

[13] A method as claimed in claim 11, characterized in that said carrier means for carrying partialized credits 30 are physically independent, consists of a re-writable permanent memory card and are installed in said metering and computing device 25 when said green energy is consumed, or consist of a dedicated memory area placed under control of said server 7.

[14] A method as claimed in claim 8, characterized in that said delivery point is a public energy point of sale 50, or anyhow accessible to a plurality of users, that in said delivery point 50 there is a delivering-counter device of the delivered energy 51, provided with an interface compatible with a corresponding interface of said carrier device for carrying partialized credits

53, and that said detraction of an amount of credits proportional to the amount of delivered energy is carried out as a result of the connection of said carrier device 53 to a suitable interface present in said delivering-counter device 51.

[Fig. 1]

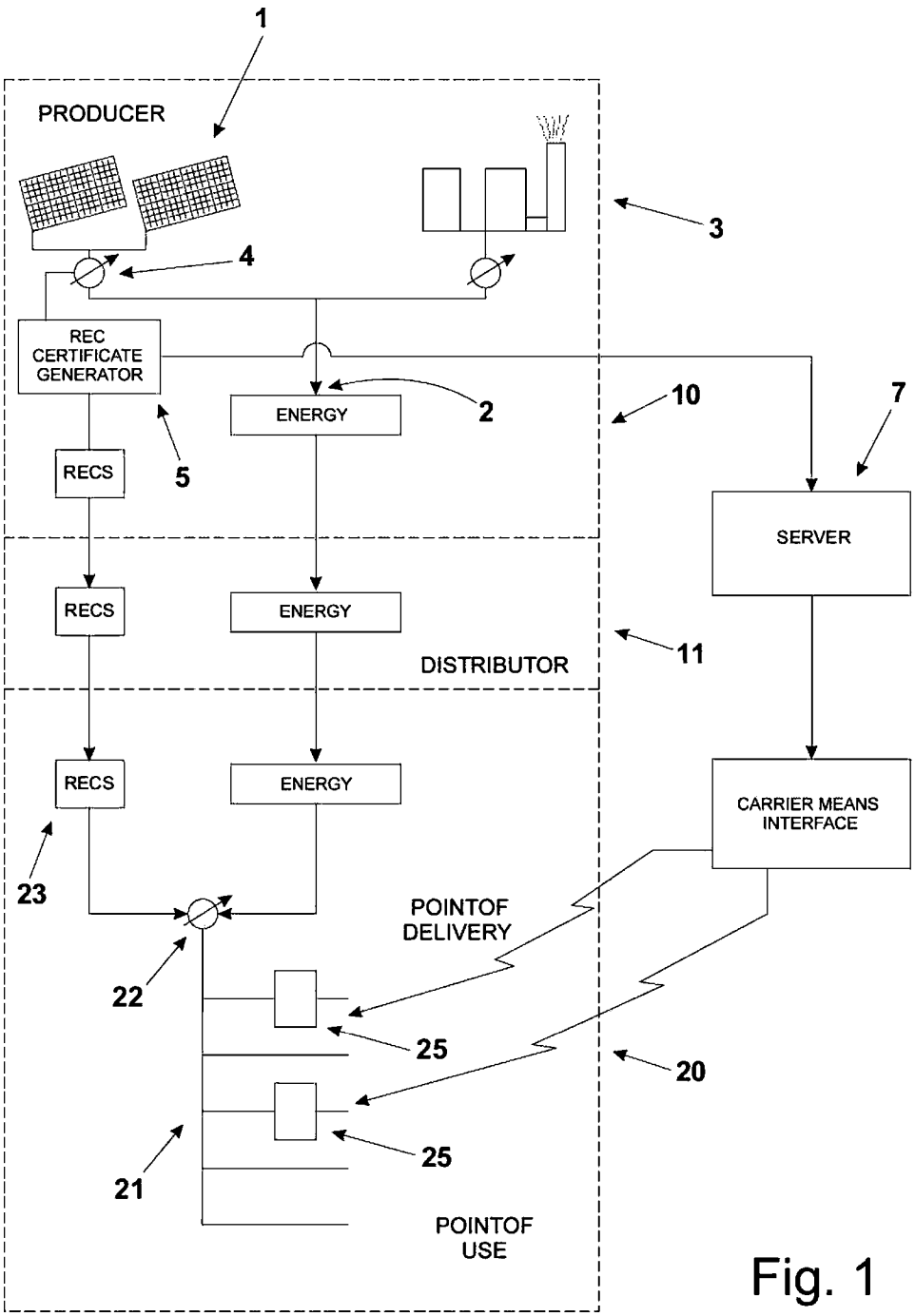

1
PRODUCER
3
4
REC CERTIFICATE GENERATOR
ENERGY
2
10
7
RECS
5
SERVER
RECS
ENERGY
DISTRIBUTOR
11
RECS
ENERGY
CARRIER MEANS INTERFACE
23
POINTOF DELIVERY
22
25
20
25
21
POINTOF USE

Fig. 1

[Fig. 2]

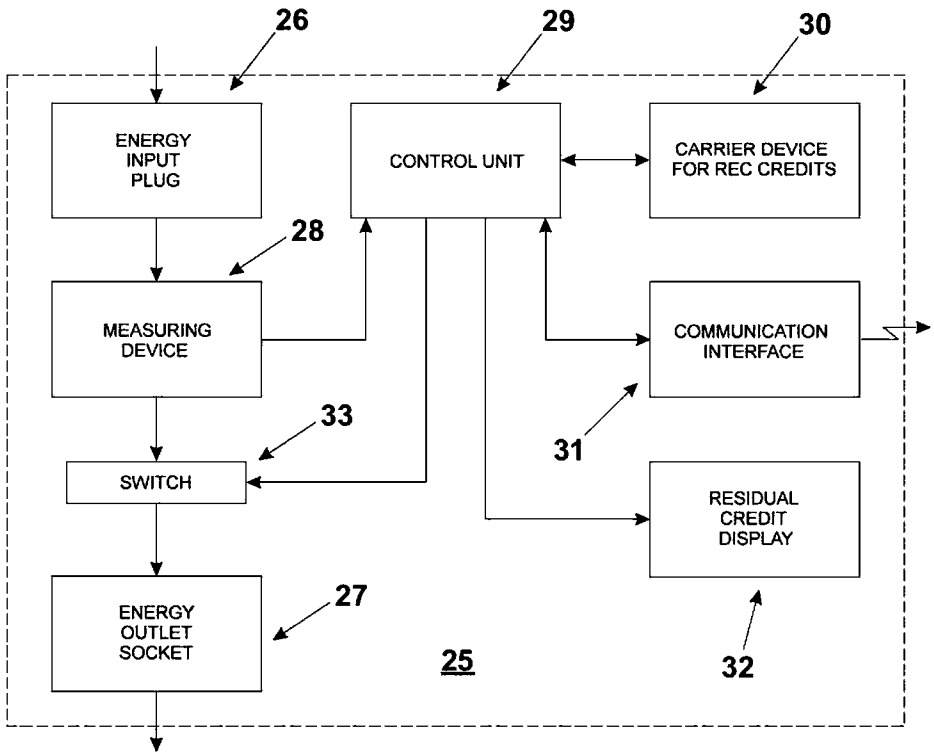

26
29
30
ENERGY INPUT PLUG
CONTROL UNIT
CARRIER DEVICE FOR REC CREDITS
28
MEASURING DEVICE
COMMUNICATION INTERFACE
33
31
SWITCH
RESIDUAL CREDIT DISPLAY
ENERGY OUTLET SOCKET
27
25
32

Fig. 2

[Fig. 3]

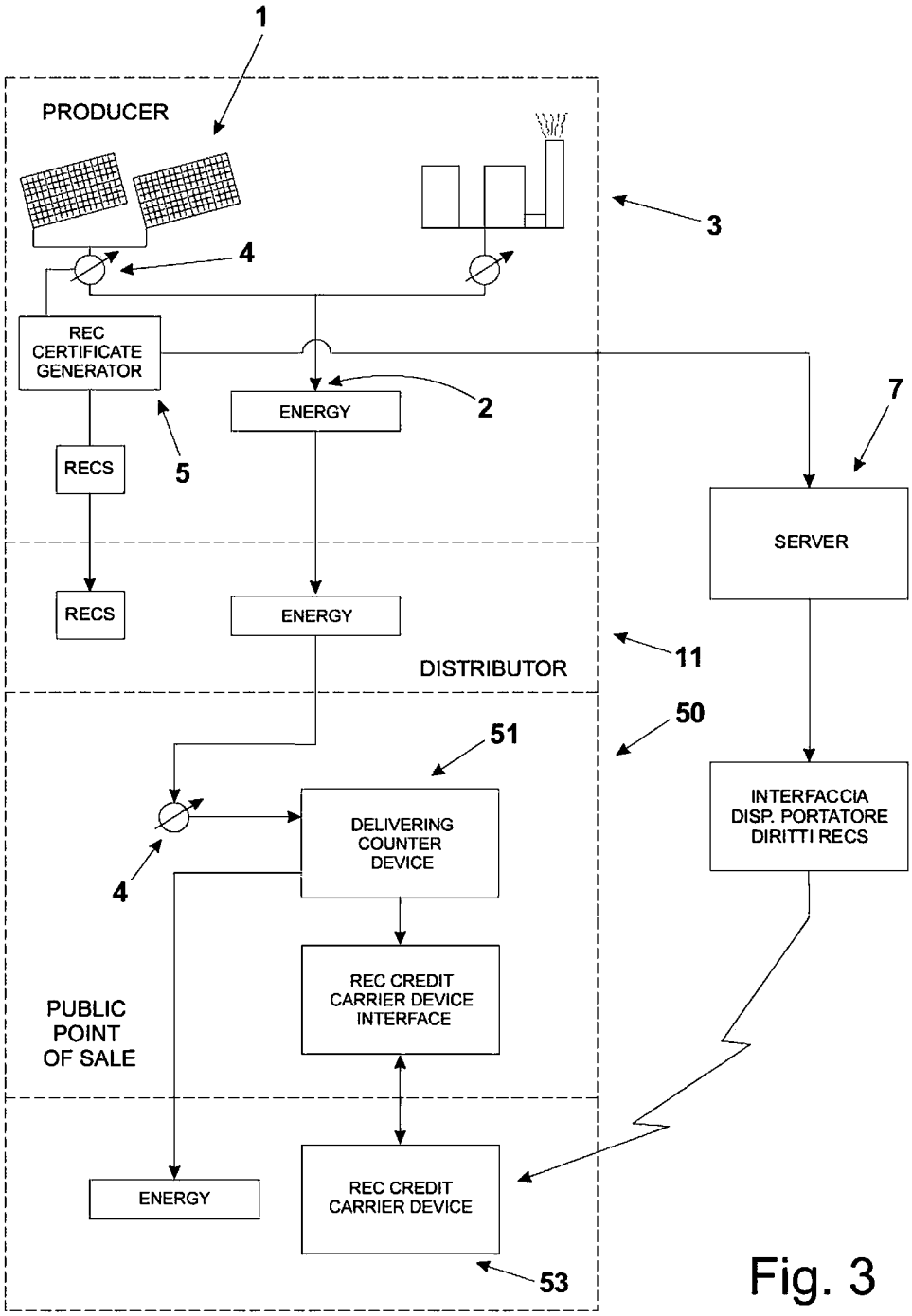

1
PRODUCER
3
4
REC CERTIFICATE GENERATOR
ENERGY
2
7
RECS
5
SERVER
RECS
ENERGY
DISTRIBUTOR
11
50
51
INTERFACCIA DISP. PORTATORE DIRITTI RECS
DELIVERING COUNTER DEVICE
4
REC CREDIT CARRIER DEVICE INTERFACE
PUBLIC POINT OF SALE
ENERGY
REC CREDIT CARRIER DEVICE
53

Fig. 3

INTERNATIONAL SEARCH REPORT

International application No
PCT/IB2013/053450

A. CLASSIFICATION OF SUBJECT MATTER
INV. G06Q50/06 G06Q30/02
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
G06Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6 950 730 B1 (BOUWHUIS EGBERT A J [NL]) 27 September 2005 (2005-09-27) abstract; figures 1-2 column 1, line 49 - column 2, line 53 column 3, line 51 - column 4, line 33 -----	1-14
A	WO 2011/103121 A1 (SOLAR COMPONENTS LLC [US]; BULLEN M JAMES [US]; SATTLER C WARREN [US]) 25 August 2011 (2011-08-25) abstract; figure 2 paragraph [0002] paragraph [0008] - paragraph [0011] paragraph [0050] - paragraph [0051] -----	1-14

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
6 August 2013	16/08/2013

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Fiorenzo Catalano, M

1

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/IB2013/053450

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 6950730 B1	27-09-2005	AT 279761 T	15-10-2004
		AU 1741901 A	06-06-2001
		CA 2389395 A1	17-05-2001
		CN 1390336 A	08-01-2003
		DE 60014952 D1	18-11-2004
		DE 60014952 T2	13-10-2005
		EP 1228491 A1	07-08-2002
		ES 2225270 T3	16-03-2005
		JP 4732655 B2	27-07-2011
		JP 2003521205 A	08-07-2003
		NL 1013568 C2	15-05-2001
		PT 1228491 E	28-02-2005
		US 6950730 B1	27-09-2005
		WO 0135351 A1	17-05-2001
WO 2011103121 A1	25-08-2011	CN 102893489 A	23-01-2013
		EP 2537131 A1	26-12-2012
		US 2010211812 A1	19-08-2010
		WO 2011103121 A1	25-08-2011