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

Datasheet for the decision
of 19 October 2015

Case Number: T 2241/11 - 3.5.03

Application Number: 07107189.8

Publication Number: 1850563

IPC: H04L29/12

Language of the proceedings: EN

Title of invention:
Method for configuring IP addresses in a windfarm network

Applicant:
GENERAL ELECTRIC COMPANY

Headword:
Windfarm network/GENERAL ELECTRIC

Relevant legal provisions:
EPC Art. 56

Keyword:
Inventive step - (no)

EPA Form 3030

This datasheet is not part of the Decision.
It can be changed at any time and without notice.

Case Number: T 2241/11 - 3.5.03

D E C I S I O N
of Technical Board of Appeal 3.5.03
of 19 October 2015

Appellant: (Applicant)	GENERAL ELECTRIC COMPANY 1 River Road Schenectady, NY 12345 (US)
Representative:	Bedford, Grant Richard GPO Europe GE International Inc. The Ark 201 Talgarth Road Hammersmith London W6 8BJ (GB)
Decision under appeal:	**Decision of the Examining Division of the European Patent Office posted on 10 May 2011 refusing European patent application No. 07107189.8 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman	F. van der Voort
Members:	B. Noll
	O. Loizou

Summary of Facts and Submissions

I.   This appeal is against the decision of the examining
      division refusing European patent application
      No. 07107189.8. The impugned decision was issued
      "according to the state of the file" as requested by
      the applicant and refers to two earlier communications.
      In these communications the examining division
      expressed the view that the claimed subject-matter
      lacked an inventive step (Articles 52(1) and 56 EPC)
      having regard to the following documents:

      D1: EP 1 558 002 A1; and
      D2: WO 01/82032 A2.

II.   With the statement of grounds of appeal, the appellant
      filed sets of claims of a main request ("Primary
      Request") and an auxiliary request. A conditional
      request for oral proceedings was made in the notice of
      appeal.

III. In a communication accompanying the summons to oral
      proceedings, the board gave a preliminary opinion as
      regards inventive step of the subject-matter of claim 1
      of the main request and the auxiliary request.

IV.   With a letter dated 18 September 2015, the appellant
      submitted arguments in support of the requests on file.

V.   Oral proceedings were held on 19 October 2015.

      The appellant requested that the decision under appeal
      be set aside and that a patent be granted on the basis
      of the claims of the main request (primary request) or,
      in the alternative, on the basis of the claims of the

auxiliary request, both requests as filed with the statement of grounds of appeal.

At the end of the oral proceedings the chairman announced the board's decision.

VI.   Claim 1 of the main request reads as follows:

"A windfarm network, comprising

a plurality of wind turbines (200) connected with each other via a windfarm LAN (300);

a remote control centre (100) connect *[sic]* to the windfarm LAN (300), wherein each wind turbine (200) is accessible from the remote control centre (100) via the windfarm LAN (300), said remote control centre (100) further comprising a host (110);

each said wind turbine (200) comprising a respective identifier tag sending device (210, 220, 230) which is adapted to send an identifier tag to said remote control centre (100) so that the IP address of a device connected to said windfarm network (300) is uniquely related to a specific wind turbine (200) in said windfarm via said identifier tag;

said control centre (100) being operable to automatically configure the windfarm LAN (300) by:

(a) dynamically assigning (S701) IP addresses to devices connected to the local windfarm network using a dynamic host configuration protocol (DHCP),

(b) automatically determining (S702) network topology of the windfarm network (300) using a link layer

discovery protocol (LLDP),

(c) identifying (S703) wind turbine subnetworks by identifying wind turbine switches from LLDP information by receiving (S704) wind turbine numbers from the wind turbine switches; and

(d) relating (S705) the IP addresses of the devices contained in a subnetwork of a specific wind turbine to a respective identified wind turbine."

Claim 1 of the auxiliary request differs from claim 1 of the main request in that features (a) to (d) are replaced by the following features (a) to (f):

"(a) dynamically allocating (S801) IP addresses to devices connected to the local windfarm network using a dynamic host configuration protocol (DHCP),

(b) automatically determining (S802) network topology of the windfarm network (300) using a link layer discovery protocol (LLDP),

(c) identifying (S803) wind turbine subnetworks by identifying wind turbine switches from LLDP information by receiving (S804) device numbers of the wind turbine switches;

(d) reading (S805) an identifier tag corresponding to a respective switch device number from a database;

(e) identifying (S806) a wind turbine including the switch on the basis of the identifier tag; and

(f) relating (S807) the IP addresses of the devices

contained in a subnetwork of a specific wind turbine to
a respective identified wind turbine".

Reasons for the Decision

1.   *Claim 1 of the main request - inventive step*
        (Articles 52(1) and 56 EPC)

1.1   D1 discloses a general purpose automation system in
        which network addresses are assigned to automation
        devices. The automation system 100 (Fig. 1) includes a
        plurality of switches 104 connected to, and accessible
        from, an address server 122 via a local area network
        (LAN) 102, e.g. Ethernet (cf. Fig. 1 and paragraphs
        [0020] and [0048]). Each switch comprises a plurality
        of ports (110, 112, 114) to which a plurality of
        automation devices is connected (as an example,
        automation device 116 is connected to port 110 in
        Fig. 1). Having regard to the embodiment shown in
        Fig. 3, it is implicit that a subnetwork is constituted
        by a switch ("Switch1") and the automation devices
        ("Gerät1" etc.) associated with that switch
        ("Switch1"). The IP address of a device is uniquely
        related to that subnetwork. This is apparent from the
        structure of IP addresses listed in the right-hand
        column in the table in Fig. 3, since the respective IP
        addresses of the switch and each of the automation
        devices have an identical most significant address
        portion ("10.0.0") and is distinguished only by the
        fourth, i.e. least significant address portion.
        Further, each automation device 116 has stored an
        identifier tag ("Chassis-ID" or "Stationsname", see
        paragraphs [0031] and [0036]) and is configured to send
        the identifier tag to the address server during an
        initial set-up phase. Hence, the collectivity of

automation devices associated with a switch, each
having the ability to send an identifier tag,
constitutes an identifier sending device in the
respective subnetwork. The address server 122 serves to
assign IP addresses to the automation devices of the
automation system (cf. paragraph [0024]). Therefore,
the address server operates as a remote control centre
and also constitutes a host. The address server 122 is
operable to automatically configure the network by:

(a) dynamically assigning IP addresses to devices 116
connected to the switches using a dynamic host
configuration protocol (DHCP)(cf. paragraph [0032]);

(b) automatically determining the network topology of
the automation system, in which each device
investigates its neighborhood and transmits
neighborhood information to the address server using a
link layer discovery protocol (LLDP)(cf. paragraph
[0034]);

(c) identifying subnetworks, by identifying, on the
basis of relationships between devices and ports
defined by LLDP information (see Fig. 3), the devices
which are associated to a particular switch; and

(d) relating the IP addresses of the devices contained
in a subnetwork to a respective identified switch (see
the table in Fig. 3, in which, e.g., the IP address
10.0.0.1 of "Gerät1" is related to "Switch1" by the
alias "Port4.Switch1", which includes the identifier
"Switch1" of the switch and the port ID "Port4" of the
port of the switch to which the device is connected).

1.2   The subject-matter of claim 1 differs from the system
        disclosed in D1 in that in claim 1:

- the system is a windfarm network comprising a plurality of wind turbines;
- each wind turbine comprises a respective identifier tag sending device;
- the IP address of a device connected to said windfarm network is uniquely related to a specific wind turbine in said windfarm via said identifier tag;
- wind turbine subnetworks are identified by identifying wind turbine switches from LLDP information by receiving wind turbine numbers from the wind turbine switches; and
- the IP addresses of the devices contained in a subnetwork of a specific wind turbine are related to a respective identified wind turbine.

1.3   The board does not concur with the appellant's formulation of the objective technical problem, which the latter defines as facilitating the identification of the geographic location of devices in a windfarm network (see also below, points 1.5(a) and 1.6(a)). In the board's view, this problem is not solved by the features of claim 1, since LLDP information describes the network topology only at a logical level, by defining neighbourhood relationships in terms of existing network connections between devices. The LLDP information does not, however, contain any geographic position information and does not allow any conclusions to be drawn about the exact location of a device.

The board, however, notes that D1 suggests that a device 116 may be any device used in automation engineering (cf. paragraph [0022]). Therefore, the objective technical problem to be solved by the skilled person starting out from D1 may be seen as conveniently and automatically configuring a network which includes

a plurality of switches and automation devices and applying it to a specific system.

1.4   At the priority date of the application, it was generally known to connect wind turbines in wind farms via a local area network to a central control of the wind farm (cf. see paragraphs [0002] and [0003] of the application; reference is made to the application published as No. EP 1 850 563 A1). This was not contested by the appellant. Therefore, the skilled person, faced with the above-mentioned technical problem, starting out from D1 and using common general knowledge, would consider applying the procedure disclosed in D1 to a windfarm network and configuring it accordingly. The skilled person would thus provide an identifier tag sending function, as disclosed in D1, in each device in a wind turbine. Consequently, each wind turbine would comprise a respective identifier tag sending device, composed by the collectivity of automation devices, each having an identifier tag sending function. The skilled person would be further led by D1 to uniquely relate, by the alias which includes the name of the switch and which is sent as the identifier tag of the device, the IP address of a device in the windfarm network to a specific wind turbine in said wind farm and identify as a windfarm subnetwork that group of devices the IP addresses of which are related to the respective switch by aliases which include the name of the switch (see Fig. 3 of D1). It is solely a matter of naming convention, which does not require any technical considerations, whether a switch (and, hence, the associated wind turbine or the wind turbine subnetwork) is identified by a name composed of alphanumeric characters as in D3 or by a number as in feature (c) of claim 1. This feature relating to device identification does not therefore

contribute to an inventive step. Finally, the skilled
person would be led by D1 to relate the IP addresses of
the devices contained in a subnetwork of a specific
wind turbine to a respective identified wind turbine,
by setting the IP addresses as outlined in the table in
Fig. 3, such that a more significant address portion is
the same for all devices in the subnetwork.

Therefore, the skilled person, starting out from D1 and
using common general knowledge, would arrive at the
subject-matter of claim 1 without the exercise of
inventive skill.

1.5   The appellant argued as follows:

(a) The application addressed the specific problem of
correctly identifying the physical location of devices
related to a particular wind turbine. This problem
specifically occurred in the field of wind turbines
arranged as a wind farm, since the geographic size of
the wind farm was considerable in view of the size of a
single wind turbine and the typical number of wind
turbines within the wind farm. The knowledge of the
exact geographic location of a device within the wind
farm was essential in case a device failed and had to
be replaced. According to the invention, the location
was known by sending the identifier tag from a device
to the remote control centre at which it was related to
the name of the wind turbine with which it was
associated.

(b) D1 did not disclose specific devices, such as the
sensor or the controller indicated in the present
application. Instead, the disclosure of D1 was limited
to a rather abstract level as regards how to connect

devices of unspecified kind to a switch, i.e. by
associating IP addresses to a device.

(c) D1 taught away from connecting devices to a
windfarm network, since it was suggested in D1 that a
faulty device may be replaced by a replacement device
without the need for manual intervention. However,
failure of a physical component within a wind turbine
mandatorily required its replacement and it could not
simply be replaced by an alternative network component
provided at a different location, which is remotely
switched in.

(d) D1 did not disclose how a device which was not
directly connected to the switch, e.g. "Gerät3" in
Fig. 3, could be included in a subnetwork.

1.6   The board is not convinced by these arguments for the
       following reasons:

       Re. (a) The board notes that the configuration of the
       windfarm network as claimed is not defined in terms of
       geographic location information, but only in terms of
       IP addresses relating to the "logical" location of a
       device, i.e. specifying the topology of network
       connections of devices within a network. The geographic
       location of the devices which constitute the network,
       on the one hand, and the assignment of addresses to
       devices, on the other hand, are, however, separate and
       mutually independent issues. Therefore, the specific
       problem of identifying the geographic locations of
       devices is not addressed by the windfarm network as
       defined in claim 1.

       Re. (b) Contrary to the appellant's opinion, D1
       discloses specific types of devices ("Messwertgeber",

"Antrieb", "Steuerung", see paragraph [0022]). Further,
the process of associating an IP address to a device as
described in Fig. 2 of D1 is not at a more abstract
level than it is in the present application.

Re. (c) In the board's understanding, the passage in
paragraph [0014] of D1 ("Beispielsweise kann ein
defektes Gerät durch ein Austauschgerät ersetzt werden,
ohne dass manuell in das Netzwerkmanagement
eingegriffen werden muss. Die Zuordnung der IP-Adresse
zu dem Austauschgerät kann automatisch ohne jede
Nutzerinteraktion erfolgen.") is merely concerned with
the question of the extent to which manual intervention
is required as regards the network management. However,
this does not concern, and is separate from the
question of, whether or not a faulty device has to be
physically replaced.

Re. (d) The table in Fig. 3 of D1 clearly teaches that,
as a rule, the location of a device in the network is
defined by the device identification ("Identifikator")
and the "Alias" which includes the name of the
connecting device and the connecting port of this
device. Hence, the skilled person would easily
understand that a device which is not directly
connected to a switch but indirectly via a bridging
device (e.g. "Gerät3" via "Gerät1" in Fig. 3 of D1)
would be connected to the network according to the same
rule.

1.7   For the above reasons, the subject-matter of claim 1
        lacks an inventive step. The main request is therefore
        not allowable (Articles 52(1) and 56 EPC).

2.   *Claim 1 of the auxiliary request – inventive step
        (Articles 52(1) and 56 EPC)*

2.1   As regards claim 1 of the auxiliary request, the board
       considers that the difference in wording does not
       establish any difference in substance.

2.2   In particular, the word "allocating" in feature (a) of
       claim 1 of the auxiliary request is considered as being
       synonymous with "assigning" in claim 1 of the main
       request. Features (b) and (f) are identical in wording
       with features (b) and (d) in claim 1 of the main
       request. Feature (c) is the same as in claim 1 of the
       main request, except that "wind turbine numbers from"
       is replaced by the synonymous term "device numbers
       of". Features (d) and (e) introduce a separation
       between an identifier tag read from a database and on
       the basis of which a wind turbine including the switch
       is identified, and a switch device number to which the
       identifier tag corresponds. However, this separation
       does not further distinguish the claimed network from
       D1, since the chassis ID, which is considered in the
       present application (cf. paragraph [0025]) as being a
       device number, is included in the identifier tag in D1
       (see paragraph [0031] in D1) and is therefore
       implicitly included by the identification tag sent to
       the address server. Hence, no difference in substance
       is introduced by features (d) and (e).

2.3   Therefore, claim 1 of the auxiliary request seeks
       protection for essentially the same windfarm network as
       claim 1 of the main request, and does not contain any
       feature which could contribute to an inventive step.

       The appellant did not argue otherwise.

2.4   For these reasons and the reasons set out above in
       respect of the subject-matter of claim 1 of the main

request, the subject-matter of claim 1 of the auxiliary
request lacks an inventive step (Article 52(1) and 56
EPC). The auxiliary request is therefore not allowable
either.

3.   There being no allowable request, it follows that the
         appeal is to be dismissed.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

G. Rauh   F. van der Voort

Decision electronically authenticated