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Datasheet for the decision
of 4 March 2011

Case Number: T 1818/08 - 3.5.03

Application Number: 01918818.4

Publication Number: 1269276

IPC: G05B 19/042

Language of the proceedings: EN

Title of invention:
Plug and play sensor integration for a process module

Patentee:
LAM RESEARCH CORPORATION

Opponent:
-

Headword:
Plug and play sensor/LAM RESEARCH CORPORATION

Relevant legal provisions:
EPC Art. 82, 111(1)

Relevant legal provisions (EPC 1973):
-

Keyword:
"Unity of invention - yes"
"Remittal to first instance - yes"

Decisions cited:
G 0002/92, T 0063/86, T 2287/08

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Beschwerdekammern   Boards of Appeal   Chambres de recours

Case Number: T 1818/08 **-** 3.5.03

D E C I S I O N
of the Technical Board of Appeal 3.5.03
of 4 March 2011

Appellant: LAM RESEARCH CORPORATION
                                 4650 Cushing Parkway
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Decision under appeal: **Decision of the Examining Division of the**
                                 European Patent Office posted 3 April 2008
                                 refusing European patent application
                                 No. 01918818.4 pursuant to Article 97(2) EPC.

Composition of the Board:

Chairman: A. S. Clelland
Members: A. J. Madenach
                  R. Moufang

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Summary of Facts and Submissions

I.   The present appeal is against the decision of the
        examining division to refuse application No. 01918818.4
        on the grounds that the application did not fulfil the
        requirement of unity (Article 82 EPC) and that the
        claims relating to a second invention had not been
        searched.

        In an *obiter dictum*, the examining division also
        observed that claim 1 lacked clarity (Article 84 EPC)
        and its subject-matter lacked an inventive step
        (Article 56 EPC), citing in this respect:

        D1: Lee et al.: "Internet-based distributed
             measurement and control applications", IEEE
             Instrumentation and Measurement Magazine, vol. 2,
             no. 2, June 1999 (1999-06), Pages 23-27

II.   An appeal was filed on 27 May 2008. The appropriate fee
        was paid and the corresponding statement of grounds was
        filed. The appellant requested that the decision be set
        aside and a patent be granted on the basis of the
        claims of a main or of an auxiliary request. On
        26 November 2010, the board summoned the appellant to
        oral proceedings. Together with the summons, the board
        issued a communication under Article 15(1) of the Rules
        of Procedure of the Boards of Appeal (RPBA).

III.   Oral proceedings took place on 4 March 2011.

        The appellant requested that the decision of the
        examining division be set aside and a patent be granted
        on the basis of the claims 1-15 of a revised main

request or of claims 1-9 of a revised auxiliary
request, both filed at the oral proceedings.

IV.   Independent claim 1 according to the main request reads
        as follows:

        "A computer-implemented method for communicating
        between a computing system (20) of a process module
        (12) and a first sensor (16), wherein the process
        module (12) has a process chamber (18), the method
        comprising the steps of:
        initializing (402) the computing system (20) of the
        process module (12);
        initializing (404) the first sensor (16) which is able
        to measure a first parameter in the process chamber
        (18);
        transmitting a request to connect message (408) from
        the first sensor (16) to the computing system (20) of
        the process module (12);
        transmitting a command to get reportable specification
        message [sic] from the computing system (20) of the
        process module (12) to the first sensor (16),
        having the first sensor (16) respond to the command by
        transmitting to the computing system (20) a reportable
        specification message (434) which informs the process
        module (12) of the type, range, frequency and
        distribution of data that will be provided by the first
        sensor (16) to the computing system (20) and such that
        the process module computing system is able to use data
        from the first sensor (24) without requiring additional
        programming of the computing system (20) of the process
        module (12);

transmitting, from the computing system (20) to the
first sensor (16), process related commands related to
the execution of process actions; and thereafter
at the computing system (20) of the processing module
(12) and during processing, receiving real-time sensor
data from the first sensor (16), the sensor data time-
stamped and synchronized to the process chamber (18);
and
making use of the reportable specification message
(434) at the computing system (20) to render the sensor
data in a form usable by the computing system (20) of
the processing module (12) to adjust processing in the
process chamber (18)."

Independent claim 10 according to the main request
reads as follows:

"An apparatus for processing semiconductor related
devices, comprising:
a process chamber (18) for processing semiconductor
related devices;
a computing system (20) of a process module (12), the
computing system (20) electrically connected to the
process chamber (18) and arranged to control the
process chamber (18), the computing system (20) having
means for transmitting a command to get reportable
specification messages;
a network (14) electrically connected to the computing
system;
a connection monitor task which is spawned in the
computing system after the computing system is
initialized;
a first sensor (16) electrically connected to the
network, the first sensor (16) arranged to sense and

report time-stamped and synchronized process conditions within the process chamber (18), the first sensor (16) further including a reportable specification message that contains data uploadable by the first sensor (16) to the computing system (20) in response to the command, the reportable specification message configured to inform the process module (12) of the type, range, frequency and distribution of data that will be provided by the first sensor (16) and such that the computing system (20) of the process module (12) is able to use data from the first sensor (24) without requiring additional programming of the computing system (20) of the process module (12); and a first sensor messaging task which is spawned from the connection monitor task within the computing system of the process module after the first sensor initiates a connection with the computing system; wherein: the computing system (20) of the process module (12) is configured to transmit to the first sensor (16) process related commands related to the execution of process actions; and the computing system (20) of the processing module (12) is configured to receive, during processing in the processing chamber (18), sensor data from the first sensor (16) in real time and to make use of the reportable specification message (434) to render the sensor data in a form usable by the computing system (20) of the processing module (12) to control processing in the processing chamber (18)."

The claims of the first auxiliary request are identical to claims 1-9 of the main request, the apparatus claims 10-15 having been deleted.

Reasons for the decision:

1.   *Amendments (Article 123(2) EPC):*

1.1   Claim 1 is based on original claim 1. The board is
        satisfied that the further features of present claim 1
        (of both requests) do not contain subject-matter which
        extends beyond the content of the application as filed.

1.2   Specifically, the feature "having the first sensor (16)
        respond to the command by transmitting to the computing
        system (20) a reportable specification message (434)
        which informs the process module (12) of the type,
        range, frequency and distribution of data that will be
        provided by the first sensor (16) to the computing
        system (20) and such that the process module computing
        system is able to use data from the first sensor (24)
        without requiring additional programming of the
        computing system (20) of the process module (12);
        transmitting from the computing system (20) to the
        first sensor (16), process related commands related to
        the execution of process actions" essentially derives
        from page 8, lines 12-30 in combination with step 434
        in Figure 4 of the published application.

        The feature "at the computing system (20) of the
        processing module (12) and during processing, receiving
        real-time sensor data from the first sensor (16), the
        sensor data time-stamped and synchronized to the
        process chamber (18); and making use of the reportable
        specification message (434) at the computing system
        (20) to render the sensor data in a form usable by the
        computing system (20) of the processing module (12) to

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adjust processing in the process chamber (18)"
essentially derives from page 10, line 8-14 in
combination with step 448 in Figure 4 of the published
application.

1.3   Claim 10 according to the main request is based on
        original claim 10 with amendments corresponding to
        those in claim 1.

        The application accordingly complies with the
        requirement of Article 123(2) EPC.

2.   *Unity (Article 82 EPC):*

2.1   The examining division refused the application for lack
        of unity (Article 82 EPC). The board concludes that,
        after amendment, the present application complies with
        the requirements of Article 82 EPC for the following
        reasons:

2.2   Independent claim 1 of the main request relates to a
        computer-implemented method for communicating between a
        computing system and a sensor. This method essentially
        comprises steps for (i) initialisation of the computing
        system and of the sensor and steps for transmitting (ii)
        a request to connect message(s) from the sensor to the
        computing system, (iii) a command to get reportable
        specification message(s) from the computing system to
        the sensor, (iv) a reportable specification message of
        a specific format from the sensor to the computing
        system, (v) from the computing system to the sensor,
        process related commands, and (vi) receiving, at the
        computing system, sensor data which are in a form
        usable to the computing system by making use of the

reportable specification message, and for (vii) making
use of the reportable specification message to adjust
processing in the process chamber.

Independent claim 10 of the main request relates to an
apparatus for processing semiconductor related devices.
This apparatus comprises a process chamber, a computer
system, a network, a connection monitor task, a first
sensor and a first sensor messaging task.

2.3   According to Article 82 EPC, a European application
must "relate to one invention only or to a group of
inventions so linked as to form a single general
inventive concept". In relation to groups of inventions,
Rule 44(1) EPC further stipulates that "the requirement
of unity of invention under Article 82 shall be
fulfilled only when there is a technical relationship
among those inventions involving one or more of the
same or corresponding special technical features. The
expression "special technical features" shall mean
those features which define a contribution which each
of the claimed inventions considered as a whole makes
over the prior art."

2.4   The inventions defined in claims 1 and 10 pertain to
different categories, *i.e.* claim 1 to a method and
claim 10 to an apparatus. They do, in the board's
opinion, fall into the category (ii) listed in the
Guidelines for Examination C III-20, 7.2:

"(ii) in addition to an independent claim for a given
process, an independent claim for an apparatus or means
specifically designed for carrying out the said
process".

The amended apparatus claim 10 is specified as being
for processing semiconductor related devices and now
specifically comprises both the feature that the
computing system has means for transmitting a command
to get reportable specification messages and the
feature that the first sensor includes a reportable
specification message having the specific data format
as recited in claim 1 and being configured to inform
the process module about the data format. The computing
system is specifically designed to transmit process
related commands to the sensor. These features serve to
carry out the method steps (iii) to (v) referred to at
point 2.2 above. The claimed apparatus also specifies
that the computing system spawns a connection monitor
task. The presence of this task implies the generation
and transmission of a request to connect message which
is to be monitored by it. The apparatus according to
claim 10 is thus specifically designed for carrying out
the method step (ii) of paragraph 2.2 above. The
claimed apparatus is also specifically designed for
carrying out the above initialisation step, explicitly
as far as the computer is concerned and implicitly as
far as the sensor is concerned. Finally, the claimed
apparatus is specifically configured to carry out
method step (vi) of paragraph 2.2 above, *i.e.*
receiving, at the computing system, sensor data which
are in a form usable by the computing system, and the
step of making use of the reportable specification
message to adjust, *i.e.* control, processing in the
process chamber (method step (vii) of paragraph 2.2
above).

2.5   The amended claims thus fulfil the requirements of
        Article 82 EPC.

2.6   The examining division also indicated in the impugned
        decision that the subject-matter of (original) claim 10,
        i.e. that of a second invention, had not been searched.
        This was said to be in contravention of the principle
        established in G 2/92 that an application cannot be
        pursued for subject-matter in respect of which no
        search fees have been paid.

2.7   The ruling of G 2/92, *i.e.* that an applicant who fails
        to pay the further search fees for a non-unitary
        application when requested to do so by the Search
        Division under Rule 46(1) EPC [1973] (now Rule 64(1)
        EPC) cannot pursue that application for the subject-
        matter in respect of which no search fees have been
        paid and that such an applicant must file a divisional
        application in respect of such subject-matter if he
        wishes to seek protection for it, no longer applies to
        the present case since for the reasons set out at
        paragraphs 2.1-2.5 above the independent claims 1
        and 10 are directed to the searched invention.

3.   *Clarity (Article 84 EPC):*

3.1   The examining division found in an obiter dictum to its
        decision that claim 1 did not satisfy the requirements
        of Article 84 EPC.

3.2   The specific deficiencies indicated by the examining
        division in this respect have been overcome by
        amendment.

The board is, thus, satisfied that claim 1 of both
requests now fulfils the requirements of Article 84
EPC.

4.   *Inventive step, main and auxiliary request (Article 56
        EPC):*

4.1   The examining division found in an obiter dictum to its
        decision that claim 1 did not satisfy the requirements
        of Article 56 EPC.

4.2   The examining division considered during the
        examination procedure that D1 represents the closest
        prior art. The board agrees.

        D1 relates to the same problem as the present
        invention, *i.e.* how to connect a variety of sensors to
        a system without having to program the system to match
        the various sensor protocols (see paragraph "Smart
        Transducer Interface Standards" bridging pages 24
        and 25).

        According to the solution described in D1, sensors
        include a memory chip with identification data
        including information such as manufacturer name,
        identification number, type of device, serial number
        and calibration data (paragraph bridging pages 24
        and 25). These data are uploaded to the system upon
        power up or upon request thus enabling "plug and play"
        for replacement (of sensors) and upgrade (*loc. cit.*).
        In the board's view, the uploading of such data
        corresponds to transmitting a reportable specification
        message which at least implicitly informs the computer

system, via the sensor identification, of the type of
data that will be provided by the first sensor.

The system in D1 refers to a distributed measurement
and control system comprising *inter alia* control
networks (see opening paragraph on page 23). It is
self-evident that such systems require a computing
system.

Therefore, D1 discloses a computer-implemented method
for communicating between a computing system and a
sensor.

Computing systems need to be initialised. The same
applies to intelligent devices such as sensors
connected to computing systems via digital
communications protocols of the kind used in D1
(paragraph bridging pages 24 and 25). Thus the method
according to D1 comprises (implicitly) the steps of
initializing the computing system and the sensor.

Likewise, connecting a sensor of the above type
requires transmitting a request to connect message(s)
from the first sensor to the computing system.

4.3   The fact that the computing system used in the method
       of claim 1 is specifically part of a process module
       having a process chamber relates to a specific
       industrial environment. The board fails to see any
       connection between the problem to be solved by the
       claimed invention, i.e. connecting a process module to
       a plurality of sensors, without the need for
       reprogramming to match various protocols of various
       sensors (page 2, lines 9-12 of the published

application) and the specific environment in which the
invention is to be used according to the claim. Instead,
the claimed method considered so far appears to be a
particular application of the method known from D1 to a
specific industrial environment. The application of a
generic method to a particular environment which does
not require any specific adaptation to the environment
does not, in the board's opinion, require inventive
skill.

Furthermore, the fact that according to claim 1 the
sensor is able to measure a first parameter in the
process chamber corresponds to what would be understood
by the skilled person to be the routine function of a
sensor.

The feature that "the process module computing system
is able to use data from the first sensor (24) without
requiring additional programming of the computing
system (20) of the process module (12)" is intended to
more clearly restrict the "specification message" in
such a way that it comprises details of their specific
operation, thus obviating the need for additional
programming of the computer system (*cf.* point IV.1 of
the grounds of appeal).

D1 is silent as to whether there is any need for
additional programming of the computing system after
the attachment of a sensor. However, the board
interprets D1 as not requiring such additional
programming. D1 mentions in the chapter "Smart
Transducer Interface Standards", at page 24, see
2nd paragraph, that the problem of a time consuming and
costly redesign of the application's interface being

required for any new environment can be overcome by the
standard discussed in the document. This suggests that
the standard described in D1 does not require
additional programming upon the connection of a new
sensor.

In the board's view, the process according to D1 does
not necessarily require transmitting a "request to
connect" message from the sensor to the computing
system; connection of the sensor could be performed
without transmitting such a request. It would, however,
appear to be common practice to introduce such a step
into the protocol controlling the connection of a
sensor to a computing system in order to provide a
reliable and systematic connection routine.

4.4   The same considerations apply to the subject-matter of
        claim 10 according to the main request, which
        essentially defines in more detail the industrial
        environment in which the method is to be used, namely
        an apparatus for processing a semiconductor related
        device. Here again, the application of an apparatus for
        a generic method to a particular environment which does
        not require any specific adaptation of the apparatus to
        the environment does not, in the board's opinion,
        require inventive skill.

4.5   D1 does not, however, contain any disclosure of the
        additional process steps, namely "transmitting from the
        computing system (20) to the first sensor (16), process
        related commands related to the execution of process
        actions; and thereafter at the computing system (20) of
        the processing module (12) and during processing
        receiving real-time data from the first sensor (16),

the sensor data [being] time-stamped and synchronized
to the process chamber (18); and making use of the
reportable specification message (434) at the computing
system (20) to render the sensor data in a form usable
by the computing system (20) of the processing module
(12) to adjust processing in the process chamber (18)",
nor of the further details relating to the reportable
specification message, *i.e.* range, frequency and
distribution of data provided by the first sensor.

These features were not part of the claims as
originally filed or of the claims the examining
division based its decision upon.

The board accordingly concludes that the observations
of the examining division as regards inventive step do
not apply to present claim 1 of both requests or to
claim 10 of the main request.

5.   *Remittal to the first instance, Article 111(1) EPC*

5.1   According to Article 111(1) EPC a "Board of Appeal may
        either exercise any power within the competence of the
        department which was responsible for the decision
        appealed or remit the case to that department for
        further prosecution".

        In the present case, there is no formal decision of the
        examining division on the questions of novelty and
        inventive step. Moreover, as noted above, the
        observations on inventive step raised in an *obiter
        dictum* to the impugned decision concerned a claim 1 of
        broader scope.

The amendments to claim 1 must thus be considered substantial amendments.

According to established case law, in a case where substantial amendments to the claims which require substantial further examination are proposed on appeal, the case should be remitted to the Examining Division (see *e.g.* T 63/86, OJ EPO 1988, 224 and T 2287/08, not published in the OJ EPO).

5.2 For these reasons, the board decides to remit the case to the department of first instance for further prosecution.

Order

For these reasons it is decided that:

1.   The decision under appeal is set aside.

2.   The case is remitted to the department of first
        instance for further prosecution on the basis of the
        Revised Main Request filed at the oral proceedings.

The Registrar   The Chairman

G. Rauh   A. S. Clelland

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