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Datasheet for the decision
of 18 December 2017

Case Number: T 2223/13 - 3.2.07

Application Number: 07727551.9

Publication Number: 2129498

IPC: B25J9/16, G05B19/042

Language of the proceedings: EN

Title of invention:
METHOD AND APPARATUS FOR PROGRAMMING AN INDUSTRIAL ROBOT

Patent Proprietor:
ABB Technology Ltd.

Opponent:
KUKA Roboter GmbH

Headword:

Relevant legal provisions:
EPC Art. 54(1)

Keyword:
Novelty - all requests (no)
Decisions cited:

Catchword:
Case Number: T 2223/13 - 3.2.07

DECISION
of Technical Board of Appeal 3.2.07
of 18 December 2017

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Decision under appeal: Interlocutory decision of the Opposition
Division of the European Patent Office posted on
16 August 2013 concerning maintenance of the

Composition of the Board:
Chairman G. Pricolo
Members: G. Patton
C. Brandt
Summary of Facts and Submissions

I. Appellant I (patent proprietor) lodged an appeal against the interlocutory decision of the Opposition Division maintaining European patent No. 2 129 498 in amended form.

Appellant II (opponent) likewise lodged an appeal against this interlocutory decision.

The opposition was directed against the patent as a whole and was based on the grounds of Article 100(a) EPC (lack of novelty and/or inventive step) and Article 100(b) EPC (insufficiency of disclosure).

The Opposition Division held that the grounds for opposition based on Article 100(b) EPC did not prejudice the maintenance of the patent and that the subject-matter of independent claims 1 and 11 of the then main request (patent as granted) lacked novelty over D1 (=WO-A-2006/043873), while the then first auxiliary request was found to meet the requirements of the EPC.

II. The Board provided a preliminary non-binding opinion annexed to the summons for oral proceedings that the disclosure of D1 was seen as novelty-destroying for the subject-matter of claims 1 of all appellant I's requests.

With letter dated 17 November 2017 appellant I filed new second and third auxiliary requests with a view to overcoming the lack of clarity objections raised by appellant II.
III. Oral proceedings were held on 18 December 2017, during which it was discussed whether the subject-matter of claims 1 of appellant I's requests was novel over the teaching of D1.

The present decision was announced at the end of the oral proceedings.

IV. Appellant I requested that the decision under appeal be set aside and that the patent be maintained as granted (main request), or, alternatively, that the patent be maintained in amended form according to the patent as upheld by the Opposition Division (first auxiliary request, dismissal of appellant II's appeal), or according to either the second or third auxiliary request, both of which were filed with letter dated 17 November 2017.

V. Appellant II requested that the decision under appeal be set aside and that European patent No. 2 129 498 be revoked.

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

"An apparatus (1) for programming an industrial robot working in a work cell including one or more workstations and the robot is visiting and performing work on the workstations characterized in that the apparatus comprises:
- a memory location (2) for storing preprogrammed robot code comprising program instructions where accommodations for optional parameters are made, and for storing a plurality of predefined workstations, each workstation having a plurality of different scenarios defining different ways to perform work on the workstation, each scenario including a set of
parameters defining how the robot will perform work on
the workstation,
- a graphical display and input device (3) adapted to
present a graphical user interface displaying graphical
objects representing the workstations, displaying
information about the different scenarios together with
the graphical objects representing the workstations and
allowing the user to select, for each of the
workstations, one of the scenarios associated with the
workstation, and
- a robot program generator (4) adapted to generate a
robot program based on user selected scenarios and the
preprogrammed robot code."

Claim 1 of the first auxiliary request reads as follows
(the amendments with respect to claim 1 of the main
request are in bold; emphasis added by the Board):

"An apparatus (1) for programming an industrial robot
working in a work cell including one or more
workstations and the robot is visiting and performing
work on the workstations characterized in that the
apparatus comprises:
- a memory location (2) for storing preprogrammed robot
code comprising program instructions where
accommodations for optional parameters are made, and
for storing a plurality of predefined workstations,
each workstation having a plurality of different
scenarios defining different ways to perform work on
the workstation, each scenario pointing out
preprogrammed robot code to be used for carrying out
the scenario and including a predefined set of
parameters defining how the robot will perform work on
the workstation,
- a graphical display and input device (3) adapted to
present a graphical user interface displaying graphical
objects representing the workstations, displaying information about the different scenarios together with the graphical objects representing the workstations and allowing the user to select, for each of the workstations, one of the scenarios associated with the workstation, and
- a robot program generator (4) adapted to generate a robot program based on user selected scenarios and the preprogrammed robot code by filling in the parameters in the preprogrammed robot code in dependence on the users choice of scenarios."

Claim 1 of the second auxiliary request reads as follows (the amendments with respect to claim 1 of the main request are in bold; emphasis added by the Board):

"An apparatus (1) for programming an industrial robot working in a work cell including one or more workstations and the robot is visiting and performing work on the workstations, characterized in that the apparatus comprises:
- a memory location (2) including a library offer
storage of preprogrammed robot code comprising program instructions where accommodations for optional parameters are made, and offer a storage
of a plurality of predefined workstations, each workstation having a plurality of different scenarios defining different ways to perform work on the workstation, said preprogrammed robot code including robot code for carrying out work on the workstations in different ways and each scenario including preprogrammed robot code for performing the scenario or a reference to said preprogrammed robot code and a set of default parameters for said robot code defining how the robot will perform work on the workstation,"
- a graphical display and input device (3) adapted to present a graphical user interface displaying graphical objects representing the workstations, displaying information about the different scenarios together with the graphical objects representing the workstations and allowing the user to select, for each of the workstations, one of the scenarios associated with the workstation, and
- a robot program generator (4) adapted to generate a robot program based on user selected scenarios and the preprogrammed robot code."

With respect to claim 1 of the second auxiliary request, claim 1 of the third auxiliary request comprises the following features at its very end (the same features as those at the end of claim 1 of the first auxiliary request):

"...by filling in the parameters in the preprogrammed robot code in dependence on the users choice of scenarios."

VII. Appellant I argued in substance essentially as follows:

Main request

D1 discloses only one scenario to choose from, i.e. the movement path, and the user is guided for each workstation through an at least two-step procedure for selecting the basic and advanced settings. There is no possibility to return to a previously valid set of parameters, since, when amending the only available scenario in D1, the previous settings are discarded.
In D1, optional parameters cannot be inserted into the program instructions in place of the accommodations as claimed.

In view of the above, the following features (i) and (vii) of claim 1 are to be regarded as distinguishing features over D1:

(i) each workstation having a plurality of different scenarios defining different ways to perform work on the workstation, each scenario including a set of parameters defining how the robot will perform work on the workstation;

and

(vii) a memory location for storing preprogrammed robot code comprising program instructions where accommodations for optional parameters are made.

Novelty of the subject-matter of claim 1 of the main request over D1 should therefore be recognised.

First auxiliary request

D1 does not disclose the following features of claim 1 of the first auxiliary request:

(v) each scenario pointing out preprogrammed robot code to be used for carrying out the scenario and including a predefined set of parameters defining how the robot will perform work on the workstation;

and
(vi) by filling in the parameters in the preprogrammed robot code in dependence on the users choice of scenarios.

"Pointing out" in features (v) should read "referring to" as described in paragraph 33 of the contested patent.

Features (v) make it clear that the user can select via a single selection process a combination of a specific preprogrammed robot code and a specific set of parameters so as to define how the robot performs work on the workstation. One single user selection has the power to change the robot code and a plurality of parameters, all in one go.

Such a powerful and effective selection process is not obtained with the apparatus of D1 since there is only ever one scenario present at any one time.

Feature (vi) enables specification of the aspect of plug-and-socket mechanism as the robot program generator performs the operation of filling in the parameters into the accommodations of the preprogrammed robot code.

Novelty of the subject-matter of claim 1 of the first auxiliary request over D1 should therefore be recognised.

Second and third auxiliary requests

The amendments introduced in claim 1 of each of the second and third auxiliary requests clarify the "logical link" between a scenario and the respective preprogrammed robot code in comparison with features
(v) of claim 1 of the first auxiliary request. The amendments should be seen as providing novelty of the claimed subject-matter over D1 on the basis of the arguments presented for claim 1 of the first auxiliary request.

VIII. Appellant II argued in substance essentially as follows:

Main request

Claim 1 comprises non-technical features which should not be taken into consideration for assessing its patentability over the prior art.

In any case, these features are known from D1, which further discloses that the user has to select for each workstation one of the predefined movement paths for the robot, said "predefined movement paths" corresponding to the scenarios as defined in claim 1. Furthermore, claim 1 does not exclude the editing of default parameters as in D1 and does not include any step of "saving" a previously amended scenario.

Hence, since D1 discloses all the features of claim 1 of the main request, its subject-matter should be regarded as lacking novelty over D1.

First auxiliary request

The scenarios proposed to the user in D1 are unambiguously "logically linked" with the preprogrammed robot codes, as the user does not need to have any knowledge of the robot programming language for running the industrial robot. Furthermore, claim 1 unambiguously refers to a predefined set of parameters
defining how the robot will perform work on the workstation, which cannot depart from the basic or advanced settings inherited for the waypoints in D1. Features (v) cannot be seen as a distinguishing feature over D1.

Finally, the parameters are to be changed and inevitably applied, i.e. "filled in" the preprogrammed robot code, in order to generate the robot program, in accordance with feature (vi).

Hence, since D1 discloses all the features of claim 1 of the first auxiliary request, its subject-matter should be regarded as lacking novelty over D1.

**Second and third auxiliary requests**

D1 discloses that the memory location includes a library of stored preprogrammed robot code as defined in claim 1. Since the "logical link" between a scenario and the respective preprogrammed robot code has already been taken into account for assessing the lack of novelty of the subject-matter of claim 1 of the first auxiliary request over D1, the subject-matter of claim 1 of each of the second and third auxiliary requests should be considered as lacking novelty for the same reasons as those given for the first auxiliary request.

**Reasons for the Decision**

1. **Main request** *(patent as granted)*

1.1 Claim 1 - novelty over D1

1.1.1 Non-technical features
In the annex to the summons to oral proceedings, the Board provided the parties with its preliminary opinion that it concurs with the finding of the impugned decision, point 4.1, that the following features of claim 1:

a graphical user interface displaying graphical objects representing the workstations, displaying information about the different scenarios together with the graphical objects representing the workstations

are technical features, in view also of the fact that appellant II's statement setting out the grounds was lacking arguments as for which reasons and to what extent the impugned decision should be considered as wrong in this respect.

Since appellant II has not subsequently argued against the Board's preliminary opinion, either in writing or orally at the oral proceedings, the Board considers these features in the following for assessing novelty of the claimed subject-matter.

1.1.2 D1 discloses an apparatus for programming an industrial robot ("system for programming an industrial robot") working in a work cell including one or more workstations and the robot is visiting and performing work on the workstations (claim 1).

The apparatus of D1 comprises:
- a memory location (5) for storing preprogrammed robot code and for storing a plurality of predefined workstations (page 10, lines 24-27; Figures 1 and 5), said preprogrammed robot code comprising program instructions where accommodations for optional
parameters are made, i.e. settable default parameters as defined in the contested patent, paragraph 14, lines 12-15 and 28-32 (page 13, lines 25-32; Figure 6), each workstation having a plurality of different scenarios defining different ways to perform work on the workstation (page 13, lines 33-34, "one or more predefined movement paths are displayed for each workstation"; page 14, line 31 to page 15, line 4; Figure 7), each scenario including a set of parameters defining how the robot will perform work on the workstation (default waypoints for the basic settings; page 10, lines 31-36; page 14, lines 4-7; Figure 6), - a graphical display and input device (1, 2, 3, 7, Figure 1) adapted to present a graphical user interface displaying graphical objects representing the workstations (page 10, lines 14-22; page 11, line 4-5), displaying information about the different scenarios (page 11, line 6; second layer of graphical representation: "one or more robot paths") together with the graphical objects representing the workstations and allowing the user to select, for each of the workstations, one of the scenarios, i.e. one of the displayed robot paths according to the second layer of graphical representation, associated with the workstation, and - a robot program generator (8) adapted to generate a robot program based on user selected scenarios and the preprogrammed robot code (page 11, lines 17-22).

Hence, all the features of claim 1 of the main request are disclosed in D1.

1.1.3 Appellant I holds the view that the following features (i) and (vii) of claim 1 are not disclosed in D1:
(i) each workstation having a plurality of different scenarios defining different ways to perform work on the workstation, each scenario including a set of parameters defining how the robot will perform work on the workstation;

and

(vii) a memory location for storing preprogrammed robot code comprising program instructions where accommodations for optional parameters are made.

It considers that these features enable the user to select one of the plurality of scenarios for each workstation. By performing this selection, the way the robot will perform work on the workstation is defined by means of the specific set of parameters of the selected scenario. The program generator then fills in the preprogrammed robot code with the parameters of the selected scenario. Selecting a scenario is a one step-procedure capable of entirely changing the behaviour of the robot.

Contrary to this, still according to appellant I, D1 discloses to select options for the movement path of the robot which is the only one scenario to choose from. D1 does not disclose the feature of selecting one of a plurality of different, alternative scenarios for each workstation, said selected scenario enabling to entirely change the behavior of the robot. In D1, the user is guided for each workstation through basic and advanced setting dialogs, i.e. there is at least a two-step procedure for each workstation, which is not the case for the apparatus of claim 1. Moreover, there is in D1 no possibility to return to a previously valid set of parameters in the sense of a scenario, i.e.
there is only one scenario for each workstation and, hence, a selection from a plurality of scenarios which are independent from each other is not provided.

Furthermore, appellant I also argues that in D1 optional parameters cannot be inserted into the program instructions in place of the accommodations as claimed.

1.1.4 The Board cannot follow appellant I's opinion, in view of the disclosure of D1 as discussed under point 1.1.2 above alone, and for the following reasons.

The scenarios as defined in feature (i) of claim 1 are disclosed in D1. As a matter of fact, D1, page 13, lines 32-34, explicitly discloses that "[A]s a help to the user, one or more predefined movements paths are displayed for each workstation" (see also page 11, lines 4-7, page 12, lines 15-17, page 13, line 24 to page 14, line 2 and page 17, lines 7-10; impugned decision, points 4.2.1 and 4.2.2; appellant II's statement setting out the grounds, point 1).

The said predefined movement paths of the robot of D1 unambiguously fall within the definition of the scenarios according to the contested patent, paragraph 11, which states that "[D]ifferent scenarios can have different movement paths...". The scenarios according to the contested patent can indeed comprise actions of four types: robot motion actions, tool method actions, logic actions and calculation actions (contested patent, paragraphs 39 to 46), and the predefined movement paths of D1 can similarly also comprise default movement path (robot motion action), including data for speed, type of movement and robot tool to be used (tool method action), including input and output
signals of the workstation (logic action) (see page 10, lines 29-36).

Hence, each workstation comprises explicitly one or more robot paths, i.e. one or more scenarios, and the user has first to select one of the proposed robot paths, as in claim 1. This proposal to the user of the apparatus of D1 to select one of the robot paths occurs before the selection of the basic and advanced settings of Figures 6 and 7. As one set of basic as well as advanced settings are inherited for each waypoint of the robot path (see Figures 6 and 7), the selected scenario inevitably includes a set of parameters (said basic and advanced settings).

Furthermore, a multi-step procedure is not excluded from claim 1; see for instance paragraph 53 of the contested patent, which enables the default setting to be changed. Hence, the fact that the user has to select basic and advanced settings in D1 cannot be regarded as providing novelty to the subject-matter of claim 1 of the main request.

Finally, appellant I's argument that there would be no possibility in D1 to return to a previously valid set of parameters in the sense of a scenario is also not convincing since, as discussed at the oral proceedings, there is in claim 1 no step of saving a scenario. In addition, the user of the apparatus of D1 can unambiguously come back to the initial step of selecting one of the predefined robot paths for the workstation, i.e. to a previously saved scenario.

The scenarios of D1, i.e. the predefined movement paths, are unambiguously linked with preprogrammed robot code and set of parameters (see for instance page
10, lines 29-31). Appellant I's argument that there would be only one preprogrammed robot code in D1 while there could be more than one according to claim 1, such as one for each scenario, and that the user selection of the scenario has the power to change the robot code and a plurality of parameters in one go, cannot be seen as providing novelty over D1 either. Indeed, as also admitted by appellant I at the oral proceedings, it is not excluded from claim 1 that the scenarios can share the same preprogrammed robot code (see contested patent, paragraph 14, lines 24-30). Therefore, claim 1 also covers an apparatus which can comprise only one preprogrammed robot code, i.e. the same one shared by all scenarios. As a result, even assuming appellant I's argument as being correct that there would be only one preprogrammed robot code in D1, which has still to be proven, this would still not render the subject-matter of claim 1 novel over D1.

Regarding feature (vii), the Board considers that D1 discloses a memory location for storing preprogrammed robot code (see page 10, lines 24-27), and that it comprises program instructions where accommodations for optional parameters are made within the meaning of the contested patent, paragraph 14, i.e. of enabling the editing of the default parameters. D1, page 14, line 36 to page 15, line 1, further discloses the possibility to select from several options (see also impugned decision, point 4.2.3).

1.1.5 At the oral proceedings, appellant I further argued that the user of the claimed apparatus could select one scenario, change its parameters, save the selected scenario as amended, then select and amend another one. As the first amended scenario has been saved the user could come back to it. Hence, he would not need to take
notes, for instance on paper, of all the changes he performed should he wish to come back for any reason to the previous settings. This would represent a considerable advantage in a complex industrial working environment like the one of the contested patent, with possibly several days necessary for programming the robot. This flexibility of the claimed apparatus would be provided by the feature of claim 1 that each scenario includes a set of parameters.

Still according to appellant I, the user of the apparatus of D1 can, on the contrary, select only one scenario at a time, e.g. the robot movement path, the selection among scenarios representing a unique parameter. When amending the options in the movement path in D1, the previous settings are discarded. Hence, the user cannot come back to the original settings, except by entering them again, possibly manually. The user would then be obliged to make a note of any changes he has performed.

1.1.6 The Board cannot share the appellant I's view for the reason discussed at the oral proceedings, namely that a step of saving a scenario as mentioned by appellant I is not a feature included in claim 1. Therefore, since appellant I's argument is not supported by the wording of claim 1 of the main request it cannot be regarded as convincing.

Furthermore, as already discussed under point 1.1.4 above, the user of the apparatus of D1 will be able, as in claim 1, to select one of several proposed scenarios ("one or more predefined movement paths are displayed for each workstation"), each of them having a predefined set of parameters ("default waypoints relative to the robot") (see, for instance, page 13,
1.2 In view of the above, the Board cannot find fault in the finding of the impugned decision, point 4.2, that the subject-matter of claim 1 of the main request lacks novelty over D1 (Article 54(1) EPC).

2. First auxiliary request (patent as upheld)

Since the Board considers that the subject-matter of independent claim 1 of the first auxiliary request lacks novelty over D1 (see below), there is no need to discuss in this decision the other objections raised by appellant II against this auxiliary request.

2.1 With respect to claim 1 of the main request, claim 1 of the first auxiliary request further comprises the following additional features in bold, emphasis added by the Board (see impugned decision, point 6 and point VI above):

(v) each scenario pointing out preprogrammed robot code to be used for carrying out the scenario and including a predefined set of parameters defining how the robot will perform work on the workstation;

and

(vi) by filling in the parameters in the preprogrammed robot code in dependence on the users choice of scenarios.
2.2 Appellant I considers that features (v), in combination with the following features of claim 1:

"...each workstation having a plurality of different scenarios defining different ways to perform work on the workstation (...) allowing the user to select, for each of the workstations, one of the scenarios associated with the workstation..."

make it clear that the user can select via a single selection process a combination of a specific preprogrammed robot code and a specific set of parameters. This selection defines how the robot performs work on the workstation. Claim 1 enables the selection of one scenario which for instance calls a first preprogrammed robot code and a first set of parameters, the selection of another scenario which may call again the first preprogrammed robot code but a second set of parameters, whilst the selection of yet another scenario will call a second preprogrammed robot code and some third set of parameters. One single user selection therefore has the power to change the robot code and a plurality of parameters, all in one go.

Such a powerful and effective selection process is not obtained with the apparatus of D1, since there is only ever one scenario present at any one time. If the user of the apparatus of D1 accepts one set of parameters but wants to select another set of parameters, he will erase the previous set of data.

Still according to appellant I, in D1 several options are available for how the robot should perform the movement (the only scenario available), which is different from claim 1, which enables the user to select from among several scenarios, each including a
set of parameters that define in one go how the robot should perform the work on the workstation.

With respect to feature (vi), appellant I holds the view that it enables to specify the aspect of plug-and-socket mechanism, as the robot program generator performs the operation of filling in the parameters into the accommodations of the preprogrammed robot code. Hence feature (vi) should be seen as a distinguishing feature over D1.

The Board cannot share the appellant's view, if only for the reason given under point 1.1.4 above that the movement paths in D1 fall within the definition of the scenarios of claim 1. Furthermore, claim 1 of the first auxiliary request unambiguously refers to a predefined set of parameters defining how the robot will perform work on the workstation, which cannot depart from the basic or advanced settings inherited for the waypoints in D1 (Figures 6 and 7). As disclosed in D1, page 13, lines 31-32, the user can choose to select the default data, i.e. a predefined set of parameters, or edit the default data.

Furthermore, the scenarios proposed to the user in D1 are unambiguously "logically linked" with the preprogrammed robot codes, as the user does not need to have any knowledge of the robot programming language for running the industrial robot (see page 3, lines 23-28). This logical link falls within appellant I's interpretation that "pointing out" in features (v) should read "referring to" as mentioned in paragraph 33 of the contested patent.

Consequently, features (v) are known from D1.
Finally, as put forward by appellant II, in D1 the parameters are to be changed and *inevitability* applied, i.e. "filled in" the preprogrammed robot code in order to generate the robot program, in accordance with feature (vi). Consequently, feature (vi) is also known from D1.

2.4 As a consequence of the above, the Board cannot concur with the finding of the impugned decision, point 6.3. Hence, the subject-matter of claim 1 of the first auxiliary request lacks novelty over D1 (Article 54(1) EPC).

3. *Second and third auxiliary requests*

Since the Board considers that the subject-matter of independent claim 1 of each of the second and third auxiliary requests lacks novelty over D1 (see below), there is no need to discuss in this decision the other objections raised by appellant II against these auxiliary requests.

3.1 The second and third auxiliary requests were filed by letter dated 17 November 2017 in order to overcome lack of clarity objections raised by appellant II with respect to the wording "pointing out" used in claim 1 of the first auxiliary request (see features (v) above under point 2.1 and also point VI for the wording of the claims 1 of the second and third auxiliary requests).

At the oral proceedings, appellant I provided the same arguments as those presented for the objection of lack of novelty raised against claim 1 of the first auxiliary request, arguing that the new wording made it possible to explicitly define and better clarify the
"logical link" between a scenario and the respective preprogrammed robot code.

Since the "logical link" put forward by appellant I was already considered for assessing novelty of the subject-matter of claim 1 of the first auxiliary request over D1 (see point 2.3 above), the Board cannot see how said amendments introduced in claim 1 of each of the second and third auxiliary requests would overcome the lack of novelty objection.

Furthermore, as pointed out by appellant II and undisputed by appellant I, D1, page 10, line 24 to page 11, lines 11, discloses that the memory location includes a library of stored preprogrammed robot code, as now specified in claim 1 of each of the second and third auxiliary requests.

3.2 Consequently, the subject-matter of claim 1 of each of the second and third auxiliary requests lacks novelty over D1 for the same reasons as those given for the first auxiliary request.
Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. European patent No. 2 129 498 is revoked.

The Registrar: The Chairman:

G. Nachtigall G. Pricolo

Decision electronically authenticated