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Datasheet for the decision of 10 April 2025

Case Number: T 0952/24 - 3.2.07

Application Number: 20209019.7

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Title of invention:
FIXTURELESS ROBOTIC ASSEMBLY

Applicant:
Divergent Technologies, Inc.

Headword:

Relevant legal provisions:
EPC Art. 54(2), 123(2)
RPBA 2020 Art. 12(3), 12(5)

Keyword:
Novelty - (no)
Amendments - added subject-matter (yes)
Discretion not to admit submission - requirements of Art. 12(3) RPBA 2020 met (no)

Decisions cited:
T 2324/14, T 2026/15, T 0166/86

Catchword:

Europäisches Patentamt
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Beschwerdekammern

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Case Number: T 0952/24 - 3.2.07

D E C I S I O N
of Technical Board of Appeal 3.2.07
of 10 April 2025

Appellant: (Applicant)	Divergent Technologies, Inc. 19601 Hamilton Avenue Los Angeles, California 90502 (US)
Representative:	Dentons UK and Middle East LLP One Fleet Place London EC4M 7WS (GB)
Decision under appeal:	**Decision of the Examining Division of the European Patent Office posted on 6 May 2024 refusing European patent application No. 20209019.7 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman	G. Patton
Members:	V. Bevilacqua
	Y. Podbielski

Summary of Facts and Submissions

I. This appeal, which was filed within the prescribed period and in the prescribed form, lies from the decision of the examining division to refuse European patent application No. 20 209 019.7.

II. The examining division rejected the main request finding that claim 1 thereof contravened Article 123(2) EPC (appealed decision, point 2.1 of the reasons).

The examining division also found that:

- the subject-matter of claim 1 of auxiliary request 1 did not involve inventive step starting from D1 or D2 (appealed decision, section 5 of the reasons),
- auxiliary requests 2-7 were not admissible under Rule 137(3) EPC as they contained subject-matter clearly not allowable (appealed decision, sections 9 to 21 of the reasons), because auxiliary requests 2 and 5 to 7 contained added subject-matter and auxiliary requests 3 and 4 lacked novelty over D1.

III. The following documents cited in the present decision were mentioned in the appealed decision:
D1: US 2015/336271 A1
D2: US 2017/050277 A1

IV. With the statement of grounds of appeal, the appellant requested:

- that the decision under appeal be set aside and

- that a patent be granted on the basis of the main request referenced in the appealed decision,
- alternatively, that a patent be granted on the basis of one of auxiliary requests 1 to 7 referenced in the appealed decision, or on the basis of auxiliary request 1A, first submitted with the statement setting out the grounds of appeal.

V. With its communication according to Article 15(1) RPBA the board expressed its preliminary opinion according to which the appellant failed to convincingly demonstrate that the findings of the appealed decision were not correct, and that the appeal was likely to be dismissed.

VI. The appellant reacted to the above mentioned communication with letter of 9 April 2025 announcing that it will not attend oral proceedings.

VII. Oral proceedings before the board took place on 10 April 2025, as scheduled, in the absence of the appellant, as announced, in accordance with Article 15(3) RPBA and Rule 115(2) EPC.

At the conclusion of the oral proceedings the present decision was announced.

VIII. Independent claim 1 of the main request reads as follows (amendments over claim 1 as originally filed are in bold, deletions are struck through, emphasis added by the board):

"An apparatus comprising:
a first robotic arm (507, 509, 511);
a second robotic arm (507, 509, 511) configured to engage with a second structure (525); and

a processor communicatively connected with a memory and configured to:
direct the first robotic arm to a first position based on a first set of coordinates,
cause the first robotic arm to engage with a first structure (523) based on the first position of the first robotic arm, and
direct the first robotic arm to a second position based on a second set of coordinates **~~such that~~ for joining** the first structure **to ~~is brought within a joining proximity of a~~ the** second structure without a fixture retaining the first structure and without a fixture retaining the second structure**~~, wherein the first structure is configured to be joined with the second structure when the first and second structures are within the joining proximity, the joining proximity being a proximity at which the first and second structures can be joined together~~**."

Since **auxiliary request 1** has not been admitted on the basis of the lack of substantiation thereof, it is not necessary to reproduce its text in the present decision.

Claim 1 of each of **auxiliary requests 1A and 2** corresponds to claim 1 of the main request.

Independent claim 1 of **auxiliary request 3** reads as follows:

"An apparatus comprising: a first robotic arm (507, 509, 511) comprising a first end effector that is configured to engage with a first structure (523); a second robotic arm (507, 509, 511) comprising a second end effector that is configured to engage with a second structure (525); and a processor communicatively

connected with a memory and configured to: direct the first robotic arm to a first position based on a first set of coordinates, cause the first robotic arm to engage with a first structure (523) based on the first position of the first robotic arm; cause the second robotic arm to move the second structure to join the first structure to the second structure; and direct the first robotic arm to a second position based on a second set of coordinates for joining the first structure to the second structure without a fixture retaining the first structure and without a fixture retaining the second structure;
wherein a fixture is a component other than the first and second end effectors that retains the first or second structure for joining, positions the first or second structure to allow joining, aids in the joining of the first and second structures or fixes the first or second structure for joining."

Independent claim 1 of **auxiliary request 4** corresponds to claim 1 of the auxiliary request 3, with the following features added at the end thereof:

"; and the processor is configured to direct the first robotic arm using a move-measure-correct procedure that comprises moving the first structure towards the second structure, measuring a difference between a current position of the first structure and a position at which the first and second structures can be joined, and correcting the current position of the first structure such that the first and second structures can be joined."

Independent claim 1 of **auxiliary request 5** reads as follows (amendments over claim 1 of auxiliary request 4 are in bold, emphasis added by the board):

"An apparatus comprising: a first robotic arm (507, 509, 511) comprising a first end effector that is configured to engage with a first structure (523); a second robotic arm (507, 509, 511) comprising a second end effector that is configured to engage with a second structure (525); and a processor communicatively connected with a memory and configured to: direct the first robotic arm to a first position based on a first set of coordinates **that is generated using a CAD model corresponding to the apparatus**, cause the first robotic arm to engage with a first structure (523) based on the first position of the first robotic arm; cause the second robotic arm to move the second structure to join the first structure to the second structure; and direct the first robotic arm to a second position based on a second set of coordinates for joining the first structure to the second structure without a fixture retaining the first structure and without a fixture retaining the second structure, **the second set of coordinates being generated using the CAD model**; wherein: a fixture is a component other than the first and second end effectors that retains the first or second structure for joining, positions the first or second structure to allow joining, aids in the joining of the first and second structures or fixes the first or second structure for joining; and the processor is configured to direct the first robotic arm using a move-measure-correct procedure that comprises moving the first structure towards the second structure, measuring a difference between a current position of the first structure and a position at which the first and second structures can be joined, and correcting the current position of the first structure such that the first and second structures can be joined."

Independent claim 1 of **auxiliary request 6** corresponds to claim 1 of the auxiliary request 5, with the following features added at the end thereof:

"; and the first structure is additively manufactured and is co-printed with a feature, wherein the feature is configured to engage with an end effector of the first robotic arm."

Claim 1 of **auxiliary request 7** reads as follows:

"An apparatus comprising: a first robotic arm (507, 509, 511) comprising a first end effector that is configured to engage with a first structure (523), wherein the first end effector comprises a jaw, a gripper or a pin; a second robotic arm (507, 509, 511) comprising a second end effector that is configured to engage with a second structure (525), wherein the second end effector comprises a jaw, a gripper or a pin; and a processor communicatively connected with a memory and configured to: direct the first robotic arm to a first position based on a first set of coordinates that is generated using a CAD model corresponding to the apparatus, cause the first robotic arm to engage with a first structure (523) based on the first position of the first robotic arm; cause the second robotic arm to move the second structure to join the first structure to the second structure; and direct the first robotic arm to a second position based on a second set of coordinates for joining the first structure to the second structure without a fixture retaining the first structure and without a fixture retaining the second structure, the second set of coordinates being generated using the CAD model; wherein: a fixture is a component other than the first and second end effectors that retains the first or

second structure for joining, positions the first or second structure to allow joining, aids in the joining of the first and second structures or fixes the first or second structure for joining; the processor is configured to direct the first robotic arm using a move-measure-correct procedure that comprises moving the first structure towards the second structure, measuring a difference between a current position of the first structure and a position at which the first and second structures can be joined, and correcting the current position of the first structure such that the first and second structures can be joined; and the first structure is additively manufactured and is co-printed with a feature, wherein the feature is configured to engage with an end effector of the first robotic arm."

IX. The appellant's arguments relevant for the decision are discussed in the reasons for the decision below.

Reasons for the Decision

1. Right to be heard (Article 113(1) EPC)

1.1 In reaction to the board's communication pursuant to Article 15(1) RPBA, the appellant wrote (letter of 9 April 2025):

"Please note we will not be attending the oral proceedings scheduled for 10 April 2025."

1.2 The appellant has been informed of the board's preliminary assessment of the case with a communication under Article 15(1) RPBA taking its written submissions

fully into account.

Thus, the grounds and evidence upon which the present decision is based were known to the patent proprietor, and have neither been commented upon nor been contested by this party.

Accordingly, the principle of the right to be heard (Article 113(1) EPC) has been observed since that provision only affords the opportunity to be heard, and the party's submissions have been fully taken into account (see Case Law of the Boards of Appeal, 10th edition 2022, identified as "CLB" in the following, III.B.2.7.3).

2. Main request

2.1 The examining division found that the feature "a second robotic arm configured to engage with a second structure", added to claim 1 of the main request, represents an unallowable intermediate generalization and therefore extends beyond the content of the application as filed (decision, point 2.1 of the reasons).

2.2 The appellant argued (statement of grounds of appeal, point 3.1.1) that paragraphs [0066] and [0221] of the original description provided direct and unambiguous disclosure for this added feature.

This was because paragraph [0066] contains the following sentence:
"*robots 509 and 511 of assembly cell 505 may be similar to keystone robot 507 and, thus, may include respective end effectors configured to engage with structures that*

may be connected with the structure retained by the keystone robot."

Paragraph [0221] also disclosed a second robotic arm *"which may be configured to engage the second structure when the first structure is brought within the joining proximity".*

2.3 The board is not convinced by the above arguments, and concurs with the findings of the examining division that claim 1 of the main request extends beyond the content of the originally filed documents.

Paragraphs [0066] and [0221] of the original description do not provide a basis for the contentious feature, because extracting just this feature ("a second robotic arm configured to engage with a second structure") therefrom without including the features which are inextricably linked therewith constitutes an intermediate generalization violating Article 123(2) EPC.

2.3.1 This is because in paragraph [0066], the feature "configured to engage" is disclosed only in combination with "end effectors", which are not claimed, but clearly are functionally related to engagement capability. This technical relationship cannot be ignored when assessing the original disclosure.

2.3.2 This is also because in paragraph [0221], the second robotic arm's engagement capability is disclosed only in the specific context of "when the first structure is brought within the joining proximity". This feature is clearly an essential part of the disclosure of the second robotic arm given in this paragraph, which

cannot be omitted from the claim without contravening the requirements of Article 123(2) EPC.

3. Auxiliary Request 1

3.1 The examining division found that claim 1 of auxiliary request 1 lacked inventive step starting from D1 or D2 (appealed decision, section 5 of the reasons).

3.2 The statement setting out the grounds of appeal does not contain any substantiation for auxiliary request 1.

3.3 According to Article 12(3) RPBA the statement of grounds of appeal shall contain a party's complete appeal case.

Under Article 12(5) RPBA, a board has discretion not to admit any part of a submission on appeal which does not meet the requirements in Article 12(3) RPBA (see CLB, V.A.4.3.5.a) and b)i)).

The board sees no reason as to why it should admit this request.

Therefore, auxiliary request 1 is not admitted into appeal proceedings.

4. Auxiliary Requests 1A and 2

4.1 Claim 1 of each of auxiliary requests 1A and 2 corresponds to claim 1 of the main request.

As a consequence of that, auxiliary requests 1A and 2 suffer from the same deficiency identified above when discussing the main request (Article 123(2) EPC) and

are therefore not allowable.

4.2 Therefore, the appellant's arguments regarding the allegedly incorrect application of Rule 137(3) EPC to auxiliary request 2 by the examining division (statement of grounds, point 5.1) does not need to be addressed in the present decision.

5. Auxiliary Request 3 - Lack of novelty

5.1 The examining division found that claim 1 of auxiliary request 3 lacks novelty over D1 (appealed decision, sections 11 to 13 of the reasons).

5.2 The appellant argued (statement of grounds, point 6.2.1 (d)) that the subject-matter of claim 1 of auxiliary request 3 was new over the content of the disclosure of document D1 because D1 did not disclose:
- moving parts to get to the assembly position, and
- cooperative control implying movement.

5.3 The board disagrees.

D1 directly and unambiguously discloses both features in paragraph [0162].

The feature "moving parts to get to the assembly position" is derivable from the last sentence of paragraph [0162] of D1 reading:
"the robotic arms 22, 22A could place the components 10, 12A in contact with one another".

This explicitly discloses that the robotic arms move the components to bring them into contact, which necessarily requires movement to get to the assembly position.

The feature "cooperative control implying movement" is derivable from the first sentence of the same passage, reading:
"one or more robots can be controlled cooperatively to hold the second vehicle component 12A in a desired position relative to the first vehicle component 10".

While this passage by itself could be interpreted as just holding without movement, when read in combination with the "place the components... in contact" passage, it clearly implies that the cooperative control includes the movement required to achieve the desired relative position.

Additionally, the fact that the robots need to "hold" the components "in a desired position" implies that they must first move the components to reach that position as the components cannot be in their final positions without being moved there by the robots.

Therefore, paragraph [0162] both explicitly (for movement) and implicitly (for cooperative control of movement) discloses directly and unambiguously both features that the appellant argued as missing from D1.

The disclosure of these features is further supported by figure 17, showing a configuration with first and second robots (23, 23A) with respective arms (22, 22A), end effectors (26, 26A) for holding components, together with the explicit teaching, given in the description, of placing components in contact.

5.4 As auxiliary request 3 cannot be allowed because of lack of novelty, it is not necessary to discuss the appellant's arguments regarding the allegedly incorrect

application of Rule 137(3) EPC to this request by the examining division (statement of grounds, points 6.1 and 6.3).

Specifically, it is not necessary to discuss the appellant's argument (grounds, paragraph 6.3) that

- the examining division had fully considered the auxiliary requests and therefore had implicitly admitted them under Rule 137(3) EPC, citing T 2324/14,
- according to T 2026/15, providing full consideration of an auxiliary request means the division had given its consent under Rule 137(3) EPC.

For the same reasons, it is also not necessary to discuss the appellant's reference to T 166/86 and the related argumentation that late amendments should be admitted if the applicant was only at that late stage in a position to request them.

6. Auxiliary Request 4 - Novelty

6.1 Claim 1 of auxiliary request 4 adds the following features over claim 1 of auxiliary request 3:

"the processor is configured to direct the first robotic arm using a move-measure-correct procedure that comprises moving the first structure towards the second structure, measuring a difference between a current position of the first structure and a position at which the first and second structures can be joined, and correcting the current position of the first structure such that the first and second structures can be joined".

The examining division found that also these additional features are disclosed in D1.

6.2 The appellant argued (statement of grounds, point 7.2) that paragraphs [0170] and [0171] of D1 did not disclose this move-measure-correct procedure. In particular, the appellant argued that D1 merely disclosed finding the location of fastening features and aligning them, but not sequential steps of moving, measuring a difference, and correcting.

6.3 The board is not convinced by the arguments of the appellant.

D1 also discloses this procedure.

This is because the first two sentences of paragraph [170] read as follows:

"The vision system 16 can be utilized to align the first fastening feature 454 and the second fastening feature 456 relative to each other [...] the vision system 16, such as the cameras 18, can be used to find the location that the first and second fastening features 454, 456 or the coordinate locator can be utilized to align the first fastening feature(s) 454 and the second fastening feature(s) 456 to a particular location to engage each other[...]"

Contrary to what has been argued by the appellant this disclosure inherently includes:
- moving (aligning implies movement)
- measuring (finding location implies measurement)
- correcting (aligning to "engage each other" implies correction based on the found location).

Furthermore, the sequence is inherent as alignment cannot be achieved without first moving, then measuring position, and finally correcting based on the measurement.

6.4 As auxiliary request 4 cannot be allowed because of lack of novelty, it is again not necessary to discuss the appellant's arguments regarding the allegedly incorrect application of Rule 137(3) EPC to this request by the examining division (statement of grounds, points 7.1 and 7.3).

7. Auxiliary Request 5 - Article 123(2) EPC:

7.1 The examining division found that the added feature *"set of coordinates that is generated using a CAD model corresponding to the apparatus"*
cannot be directly and unambiguously derived from the application as filed.

7.2 The appellant argued (statement of grounds, point 8.2) that the following sentences of paragraph [0088] of the original description provides basis for the above mentioned feature:

"The instructions loaded from memory and executed by the processor of the computing system, which cause the controllers to control actions of the robots may be based on computer-aided design (CAD) data. For example, a CAD model of assembly cell 505 (e.g., including CAD models of the physical robots) may be constructed and used to generate the commands issued by the computing system."

7.3 The board disagrees. This argument is not convincing because the passage mentioned by the appellant only reveals that CAD data may be used as a basis for instructions and that a CAD model "may be constructed and used to generate commands".

There is no direct and unambiguous disclosure that coordinates specifically are generated using the CAD model, that the CAD model "corresponds" to the apparatus in the specific way claimed or that there is a direct link between CAD model and coordinate generation.

Following the "gold standard" for assessing added subject-matter (CLB, II.E.1.3.1), the skilled person would not directly and unambiguously derive the claimed feature from the original disclosure, even using their common general knowledge. The application only discloses CAD models being used generally for command generation, but not specifically for coordinate generation in the claimed manner.

In other words, and in accordance with the findings of the appealed decision, the claimed feature represents an intermediate generalization by extracting specific aspects (coordinate generation) from the broader original disclosure (general command generation) without proper basis, thereby violating Article 123(2) EPC.

Therefore, the examining division correctly found this feature to add subject-matter extending beyond the content of the application as originally filed.

7.4 Again, as auxiliary request 5 does not fulfil the requirements of Article 123(2) EPC, it is not necessary

to discuss the appellant's arguments regarding the allegedly incorrect application of Rule 137(3) EPC to this request by the examining division (statement of grounds, points 8.1 and 8.3).

8. Auxiliary Requests 6 and 7

Since claim 1 of auxiliary requests 6 and 7 also contains the feature "set of coordinates that is generated using a CAD model corresponding to the apparatus", these requests suffer from the same Article 123(2) EPC deficiency as auxiliary request 5.

Therefore, leaving aside the issue that none of auxiliary requests 6 and 7 has been substantiated, none of these requests can be allowed.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

G. Nachtigall G. Patton

Decision electronically authenticated