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# D E C I S I O N
## of 11 December 1998

**Case Number:** T 0634/97 - 3.5.1

**Application Number:** 89910929.2

**Publication Number:** 0407589

**IPC:** G05B 19/18

**Language of the proceedings:** EN

**Title of invention:**
NC Instruction System

**Applicant:**
Fanuc Ltd.

**Opponent:**
-

**Headword:**
NC Instruction System/FANUC

**Relevant legal provisions:**
EPC Art. 52(1), 56

**Keyword:**
"Inventive step - yes"

**Decisions cited:**
-

**Catchword:**
-

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**Case Number:** T 0634/97 - 3.5.1

# D E C I S I O N
## of the Technical Board of Appeal 3.5.1
## of 11 December 1998

**Appellant:** Fanuc Ltd.
3580, Shibokusa Aza-Komanba, Oshinomura
Minamitsuru-gun
Yamanashi 401-05 (JP)

**Representative:** Brunner, Michael John
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**Decision under appeal:** **Decision of the Examining Division of the European Patent Office posted 18 February 1997 refusing European patent application No. 89 910 929.2 pursuant to Article 97(1) EPC.**

**Composition of the Board:**

**Chairman:** P. K. J. van den Berg
**Members:** R. Randes
C. Holtz

## Summary of Facts and Submissions

I. This appeal is against the decision of the examining division to refuse the application on the ground that the subject-matter of the claims lacked an inventive step (Articles 52(1) and 56 EPC). Inter alia the following documents were cited in the decision:

D1a: US-A-4 457 193

D2: EP-A-0 267 288

D3: EP-A-0 380 685

D4: EP-A-0 310 219

D5: JP-A-57 144601

II. The appellant filed an auxiliary request for oral proceedings. Following a communication from the Board, oral proceedings were held on 11 December 1998. At the oral proceedings the appellant requested that the decision under appeal be set aside and a patent be granted on the basis of claims 1 and 2 as refused by the examining division.

Claim 1 reads as follows:

"A method of controlling a CNC lathe having a plurality of tool posts (1,2) the position of which can be independently controlled and a plurality of spindles (3,5) the rpm of which can be independently controlled, the method characterised by the steps of:

providing a machining program for each of the tool posts (1,2);

providing a spindle selection code in each of the machining programs; and

selecting a spindle control mode in accordance with one of the spindle selection codes whereby respective ones of the tool posts (1,2) are associated with corresponding ones of the spindles (3,5) during machining."

IV. The appellant argued as follows:

The invention provided a flexible method of reconfiguring a CNC lathe having multiple tool posts and multiple spindles. Each tool post was controlled by a separate program and the tool could be associated with any spindle. The programmer could change the spindle a particular tool was working on by simply changing the spindle mode in the relevant program; there was no need to change the whole program.

Although D1a disclosed two tool posts and two spindles, it did not mention how they were controlled, so that the skilled person would not even have considered using an NC program, let alone using two separate programs.

D2 disclosed only a single NC program to control two tools and two spindles. Moreover, the tools and spindles did not work independently of each other as in the invention.

## Reasons for the Decision

1. The is admissible.

2. *Inventive step*

2.1 The application concerns the control of a CNC lathe which has several tool posts and several spindles.

2.2 D1a discloses a possible arrangement of such a machine tool. In particular, D1a discloses at column 2, line 61 to column 3, line 5 that the tools can work simultaneously on different workpieces or simultaneously on the same workpiece. This is said to give the operator more liberty in determining the order of the machining operations.

2.3 D1a gives no details of how the described arrangement is controlled either by an operator or electronically. Claim 1 therefore differs from the prior art arrangement of D1a by the features of the characterising portion of the claim, namely:

(a) providing a machining program for each of the tool posts;

(b) providing a spindle selection code in each of the machining programs; and

(c) selecting a spindle control mode in accordance with one of the spindle selection codes whereby respective ones of the tool posts are associated with corresponding ones of the spindles during machining.

The Board agrees with the appellant that these features solve the problem of providing a flexible method of controlling the arrangement in D1a, in particular for simultaneous operation of the tools. It is not contested that the formulation of such a problem does not involve an inventive step.

2.4 Although D1a mentions an operator, it does not, as pointed out above, describe how the arrangement is controlled. It mentions neither that it is a CNC apparatus nor that it uses a program. In fact, it seems plausible that the operator himself could control the various carriages during the machining operations. Even the passage at column 2, lines 3 to 15, which states that the speed control voltage required for synchronising the motors could come from "the numerical control of the machine", only relates explicitly to the spindle control and not the tool control.

2.5 However, given that numerical control, involving an NC program, of machine tools is known per se, the Board agrees with the examining division that the skilled person would consider controlling the arrangement using an NC program.

2.6 D2 gives an example of using such an NC program to control a machine tool with two spindles and two different tools. In the example, the machine first turns the workpiece which is held between two chucks. The workpiece is then cut and one of the chucks is rotated through 180° so that a hole can be drilled in the cut face. It is clear from the description, including the program excerpt at page 4, lines 7 to 18, that the two machining steps are performed one after the other controlled by a single program.

2.7 The Board is of the opinion that, faced with the problem of designing a program control for the arrangement of D1a, the skilled person would either (i) adopt the single program solution disclosed in D2 without modification, or if simultaneous operation of the tools is required (ii) discard the solution of D2 because the machining steps are not performed simultaneously, or (iii) modify the single program disclosed in D2 to achieve simultaneous working. The latter would be possible by providing appropriate commands, such as an additional command for positioning in the Z-axis, to control each spindle and each tool post individually. In fact, it appears that the examining division was of the opinion at point 7.6 of the decision that D2 implicitly disclosed the required additional commands, although it appears to the Board from Figure 2 of D2, steps S6, S14, S9, and S18 to S20 that there are no separate commands for setting the spindle speeds individually or for positioning in the Z-axis. Be that as it may, the Board is of the opinion that the skilled person would consider modifying the single program in D2 rather than provide separate programs for the two tool posts as in difference( a), given that the former is clearly possible and that there is no suggestion of the latter anywhere in D2.

2.8 Regarding any suggestion of separate programs in D2, the Board disagrees with the examining division that the word "continuously" in the description of the cutting and drilling operations in D2 at page 8, lines 2 to 5 suggests using two programs. The Board understands "continuously" to mean that the operations are performed one after the other without a pause. The Board sees no reason why this passage would imply the use of two programs because, starting as it does with the word "Thus", the passage simply summarises what the single program of the previously described embodiment achieves.

2.9 Finally, regarding the claimed association of the spindles and tool posts as in difference (c), the Board also disagrees with the examining division that this results directly from the provision of individual control of the spindles and tools. The mere ability of a tool to work a particular spindle does not mean that it is associated with it in a selected mode as claimed. Although the detail of the association is not defined in the claim, the Board considers that this additional idea is not suggested by D2 and could well lead to the advantage offered by the appellant, namely that the programmer can more easily apply an existing set of machine commands for a given tool to a different spindle without rewriting all of the code.

2.10 The Board therefore agrees with the appellant that the combination of D1a and D2 does not render the claim obvious.

2.11 Regarding the other prior art documents cited in the decision under appeal (item I above) the Board agrees with the examining division that none of them is prejudicial to the novelty of claim 1. Furthermore, since D3 and D4 were published after the priority date of the application and the remaining document, D5, does not disclose any of the features of the characterising part of claim 1, these documents do not prejudice the inventive step of claim 1.

3. Claim 1 is accordingly allowable.

4. Claim 2 relates to a detail of the implementation of the selection code and is therefore also allowable.

## Order

**For these reasons it is decided that:**

1. The decision under appeal is set aside.

2. The case is remitted to the first instance with the order to grant a patent in accordance with the appellant's request.

The Registrar: The Chairman:

M. Kiehl P. K. J. van den Berg