Computer Aided Process Planning with Help of a Decision Table Generator

Dipl.-Wirtsch.-Ing. M. Hüllenkremer
Fraunhofer Institute for Industrial Engineering, Stuttgart, Germany

The expense of introduction of computer aided process planning systems is very great, because such systems have a high company-specific part. For this reason, a program package was developed, which enables to enter the planning logic into the computer without the need of a programming command, and, based on this logic, process plans can be generated.

1 Introduction

CAP systems have been successfully used both in assembly and in parts manufacturing. The production task is entered into the computer in the dialog mode, with the descriptive data being stored for modification at a later time (figure 1).

In dependence on the degree of automation, a wide variety of different data is determined and complete assembly and/or process-plans are prepared.

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**figure 1:** computer aided process planning (CAP)
2 Formulation of the problem

The experience gained from projects carried out for the introduction of computer aided process planning has shown that the company-specific proportion of process plan generation systems, dependent on the problems involved, is very high and, thus, the expense of introduction is great, as well. No standard software is available for the generation of process plans which covers a wide range of the manufacturing spectrum of a company. Therefore, it is necessary to build up a comprehensive system under company-specific aspects, which includes the company-internal, production engineering know-how and the planners' experience.

It is known from experience, that the development of such systems requires considerable programming effort. Apart from this, it either implies a programming command in the process planning departments themselves, and in most cases this command is not available, or a problem-free communication between the specialized department and the EDP department. Due to the different training background of the staff in these departments, difficulties of understanding will often arise in this cooperation, which result in program errors and in problems of acceptance on the part of the user. This will then have a negative effect on the introduction and, in particular, the later program maintenance and development and, thus, on the economy of the system. For these reasons, a program package for the generation of process plans was developed at the IAO; with this program package, the process planner can enter the planning logic into the computer in the dialog mode, without the need for a programming command, and based on this logic, process plans can be generated with computer assistance. This program package is currently being introduced in several firms.

3 Input of the planning logic with the help of a decision table generator

The planning logic for the generation of a process plan can be structured in the form of decision situation in a clear, tabular form. The upper part of such a table specifies the influencing variables or conditions, while the lower part includes the measures or actions resulting from the given combination of the conditions. The conditions are mostly specifications, which describe part geometry technological data (e.g. size of the part, surface sectional element), while the measures reflect the process plan contents (e.g. machine lead time, operations text, wage group).

![Figure 2: Decision Table](image-url)