DESIGNING THE LAYOUT AND THE CONTROL SYSTEM OF FMS

Prof. Dipl.-Ing. A. Reinhardt
University of Kassel (GhK) - FG Produktionssysteme
Monchebergstr. 7 D-3500 Kassel

ABSTRACT

An epistemological concept for the development of technical designing tools was developed in the early seventies and implemented in a simulator. It is based on an object-subject model that originate from sensory and intellectual perception and action cycle. Models depict a picture of the plant. They describe distinctive features and states of an installation. The simulator is a tool for experimental studies in the design of future factories. Simulation experiments could be used as a test bed of integration.
1. Production on Schedule

Being capable of a flexible and prompt reaction to market demands at reduced costs is an essential aim of all thoughts concerning production. Product development and manufacturing on schedule, just-in-time during the whole process, is a basic requirement for achieving this aim /1/.

The development of Flexible Manufacturing Systems (FMS) in the sixties was one approach to a solution of the task. A flexible manufacturing system was then a relatively clear system of interlocked individual machines. Today, a whole factory must be considered as an FMS, where production facilities are connected via data and material flow.

It is a common fact today in the electronical engineering and the automotive industry that the development of products and plants must go together in order to place a product on the market quickly and ahead of the competitors.

Methods and tools of the CAD/CAM-Line assist the development of a product. In this field, the companies have reached different levels. Some have already been working with CAD for a few years and try to include CAM. Integration of these methods is a task of immediate interest. Progress is considerably delayed by a lack of experts.

At present however, the development of factories is still carried on conventionally with few computer aided tools. In this field, simulation as a computer aided method is getting more and more important.