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Various ways of NC-programming

NC programming, i.e. the generation of controlling information for the machining of a workpiece on CNC-machines, was formerly manually executed in block format according to DIN 66025. Today this is done more and more with graphically supported CAM-programs. The geometric data of a workpiece is imported from a CAD-program, or generated directly in the geometry-creation module of the CAM-program, and then processed for NC-machining in the machine module. Contours are transformed into cutter lines and the required tools are chosen. In case of complex parts, the sequence of the various machining operations, as well as tool changes are also defined.

The various steps in the program can be simulated in real time on the screen for controlling purposes. The final NC-program is then automatically written by the machine's postprocessor.

CAM-systems aim at producing workable and to a large extent flawless NC-programs without going through the trial and error process. This does not only avoid longwinded trial runs and program changes; it also increases work safety records in manufacturing. In addition, complex workpiece geometries can not be created without problems by manual programming in DIN-oriented cycles. Only machine programming in CAM-programs allows further use of complex CAD data models.

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Various ways of NC-programming

Next to machine independent CAM-systems, workshop orientated programming systems have evolved the manuasl programming at the CNC-machine. Workshop orientated programming systems are machine-dependent and are usually offered by the manufacturers of CNC-machining centers. They are generally based on the same programming structure, but distinguish themselves through their degree of user-friendliness and in details.

Their graphic user surface and various Macros, i.e. subprograms for certain router operations, obtain data needed by the machine in a dialogue with the user. This facilitates and shortens programming, especially when parts, that need to be produced frequently, are available as a program for variants.