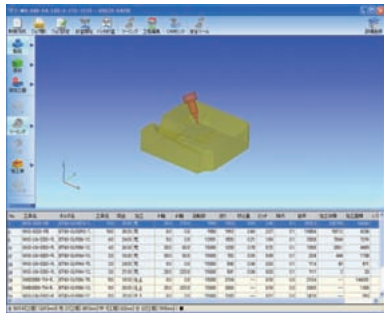


Mill-Plan*/UH 5Axis Support System for Designing 5-Axis Die Machining Processes



The following introduces the developed Mill-Plan/UH 5Axis die machining process support system, which allows for easy and highly efficient designing for indexing 5-axis machining processes, even by beginners.

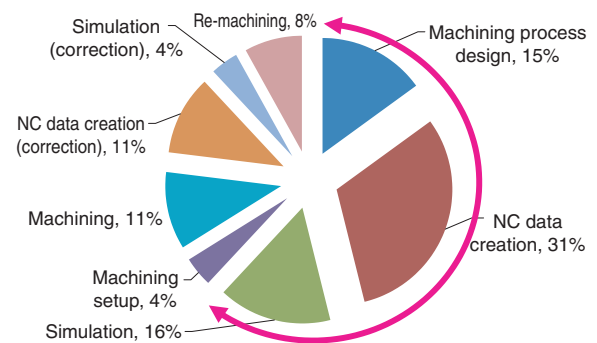
* Mill-Plan is a registered trademark of Toyota Central R & D Labs, Inc.

Background

Within the work time of processes for making dies, much of the time is spent on machining process design, NC data creation, and simulation.

For these processes, knowledge of CAD/CAM is necessary, in addition to machining knowledge such as tools appropriate for the materials and product shape and the selection of machining conditions. Acquiring the knowledge for each of these is difficult.

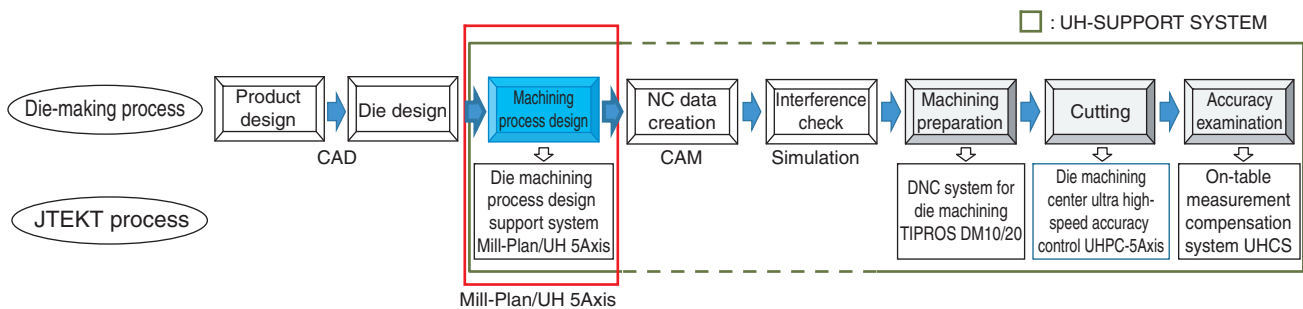
Due to this, the above-mentioned operations require the most time, and lead to many issues with quality dispersion by workers.



Example of results of die-making process lead time inquiry

Outline

This system is a die-making process (UH-SUPPORT SYSTEM) in which machining process design is automated. It is the result of collaborative research by Toyota Central R & D Labs, Inc. and JTEKT, developed on the basis of a unique JTEKT automated process design algorithm. This system automates process design such as complex tool selection in 5-axis machining, tool position, and machining conditions.



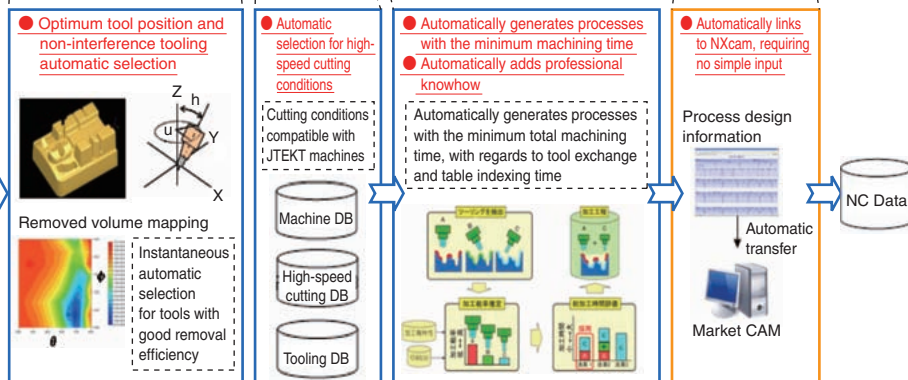
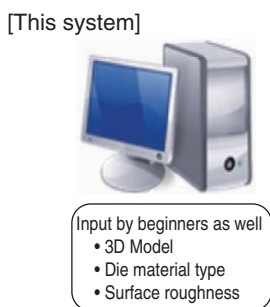
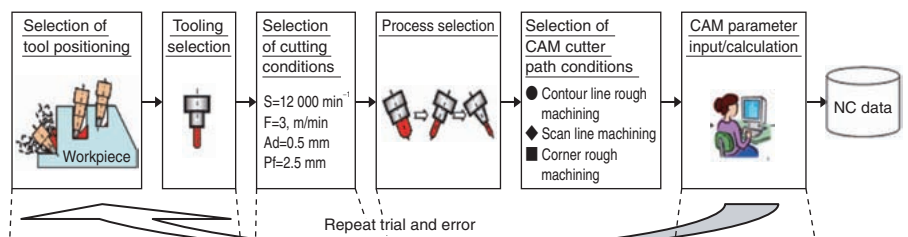
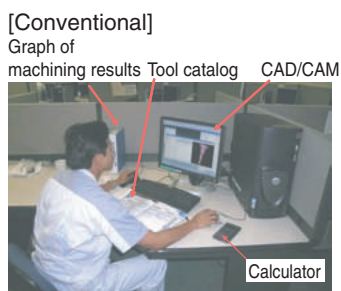
Features

- (1) Beginners can design machining processes like professionals, using simple operations.
- (2) The lead time from machining process design to NC data creation can be shortened.
- (3) Machining conditions that exhibit maximum performance of JTEKT machining centers can be selected from an enormous and abundant machining database.
- (4) Stable processes without individual variations can be designed.

Outline of System

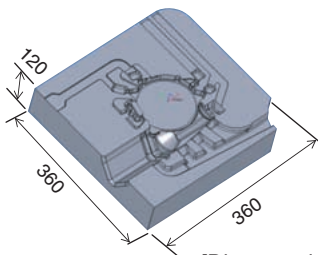
Machining processes can be automatically designed just by entering machining data such as material shape, product shape and finished surface roughness, which are the machining processes JTEKT traditionally creates by referring to past machining results and market tool catalogs.

Furthermore, due to automatic linking to a portion of market CAM systems, machining processes as well as NC data creation can be made automatic.

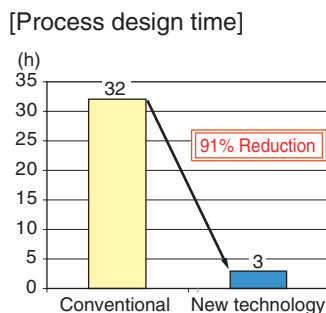


Applied Case Examples

When applied to the JTEKT aluminum die casting process for making dies, process design time was decreased by 91%.



[Die-casted die]
Tool diameter: $\phi 2$ through 10
Workpiece material: 50HRC



(Advanced Unitized Product Engineering Dept.,
Machine Tools & Mechatronics Operations Headquarters)