DMG MORI

Press Release

June 1st, 2022

Start digital twin at your shopfloor with CELOS DYNAMIC*post*

DMG MORI Co., Ltd. (hereinafter referred to as "DMG MORI") released a new integrated software "CELOS DYNAMIC*post*" for post-processing[1], machining simulation and cutting-force optimization[2].

The diversification of industrial products is making workpiece shapes more complex. Therefore, many customers demand 5-axis & mill-turn machines to produce complex workpieces. They also need CAM software to help them create the required machining paths.

Before production, customers need to utilize post processors to convert the machining path created by CAM into a NC program that matches the NC of the machine tool. The selection of post processors is crucial to create high-quality NC programs that suit the specifications of the machine tool and its NC. However, the automatic conversion by post processor can be insufficient and requires a lot of manual adjustments to the NC program. Overlooking a mistake may lead to serious troubles such as machine stop and spindle interference. Accordingly, many customers wished for a post processor customized to DMG MORI machines to enable highly accurate machining simulations more efficiently.

Therefore, DMG MORI developed CELOS DYNAMIC*post* as a new software that integrates three functions in one – post processor, machining simulation and optimization of cutting force[2]. First, the post processor function converts the tool path into the NC program. After that, the machining simulation function evaluates machined features, checks interference, and estimates the machining time. At the end, the cutting force optimization function evaluates the machining load, and automatically creates an NC program with optimized machining conditions. The machining simulation function incorporates DMG MORI's digital twin technology. It accurately reproduces the features of DMG MORI machines including the machine structure, acceleration or deceleration of axis movement, and tool change time, providing accurate simulation of machining time and cutting force.

CELOS DYNAMIC*post* supports all the functions unique to DMG MORI machines as standard. The NC program created by CELOS DYNAMIC*post* is reliable and designed to maximize machine performance. By saving the time for NC program adjustment, customers can significantly reduce the lead time from programming to machining start. Moreover, CELOS DYNAMIC*post* can replace test cuts on real

machines by digital simulation. This saves energy and contributes to achieving Sustainable Development Goals.

CEL()S DYNAMIC*post*

CELOS DYNAMIC*post* logo

■Benefits:

① Integration of three functions - post-processing, machining simulation and cutting-force optimization[2].

・ Seamless data management and operation by integrated UI

・ One-stop maintenance by DMG MORI

・ Immediately usable after machine delivery – all functions in one software & no compatibility tests required

② Maximized machine performance

・ A post-processor to create NC programs customized to DMG MORI's machines

+ Supports DMG MORI's unique functions (Application Tuning Cycle and Quick M Code) as standard

→ Application Tuning Cycle: 20% time-saving for rough machining[3]

→ Quick M Code: 20% time-saving for tool change[4]

+ Automatic input to support operators

③ Accurate production planning. Secure and safe machining without interference.

・ Accurate machining simulation of NC program

+ Time study to predict accurate cycle time

+ Interference check before machining start

+ Simulation of NC programs possible for both CAM and MAPPS conversational[5]programming

+ Function to compare the cutting shape of the 3D model (CAD) with the simulation

+

④ 20% time-saving for rough machining[3]. Avoid tool breakage.

・ Cutting force optimization[2] for optimal control of machining conditions

+ Reduce machining time by controlling cutting force

+ Avoid tool breakage by managing load on cutting tools

+ Cutting force simulation visualized in graph for easy checking

DMG MORI will continuously provide highly functional, reliable and value adding solutions to capture the diverse demands of the global manufacturing industry.

Product	CELOS DYNAMIC*post*
Post processor supports CAM software of[*6]:	SIEMENS NX / Mastercam

Suitable machine models[*7]	・5-axis machining center;
	    DMU 50 3rd Generation, DMU monoBLOCK series,
	    DMU duoBLOCK series, DMU Gantry series,
	    DMU eVo series, DMU H monoBLOCK series
	・Mill-turn machine; NTX series
	・Horizontal machining center; NHX series

[*1] Post processor is a function to convert a tool path (machining path) created by CAM into a NC program matching to the NC of a machine tool.
[*2] Only applicable for optimized edition.
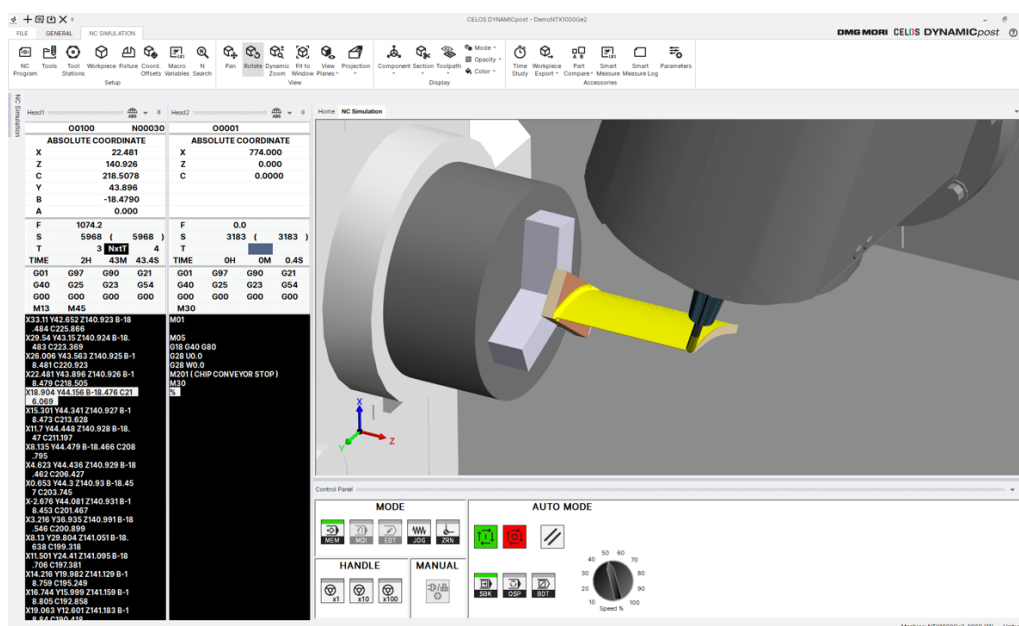[*3] Not guaranteed for all types of machining.
[*4] Chip-to-chip time of NTX 2000 / 2500 / 3000 2nd Generation
[*5] Not applicable for ShopMILL and ShopTURN, conversational programming software of SIEMENS
[*6] As of June 2022. More CAM software to be added.
[*7] As of June 2022. More machine models to be added. Not guaranteed for all specifications.
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Simulation by CELOS DYNAMIC*post*

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