Machining simulation software
NC Virtual Simulator

◆ **Features**   ◆ **Outline diagram**

A high-accuracy simulation that realistically reproduces CNC operation using the same machining conditions as the machine tool.

Realistic simulation that accurately simulates actual machining reduces the number of trial machining and scrap.

The pre- and post-process work can be improved by machine interference check and accurate calculation of machining time.

Color mapping of speed, acceleration and other properties can be used to analyze the surface quality and help to improve machining.


MITSUBISHI ELECTRIC
Changes for the Better

Machining simulation software
# NC Virtual Simulator

Work simulation (Cutting)

Work simulation estimates the machining time and depicts the surface contour accurately using the digital position data that simulates smoothing, acceleration/deceleration, and servo response delay.

(Pinpoint zoom display example)

Machining time 0:07:43

Highly accurate machining time estimation

Even the traces of the tool path are visible.

（Normal enlargement example）

MITSUBISHI ELECTRIC
Changes for the Better

Machining simulation software

NC Virtual Simulator

Workpiece simulation (CAD model overlay display)

You can check for omitted machining processes, etc. by reading in the product CAD model (STEP) and showing it overlaid with the cutting simulation.

(1) After executing simulation, select the product CAD model file using "Select product model".

(2) The simulation results and the product CAD model will be overlaid and shown.

Product CAD model (STEP)
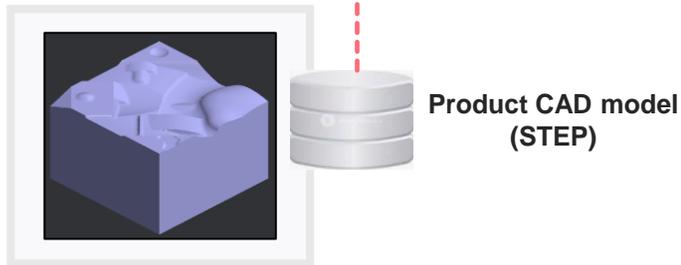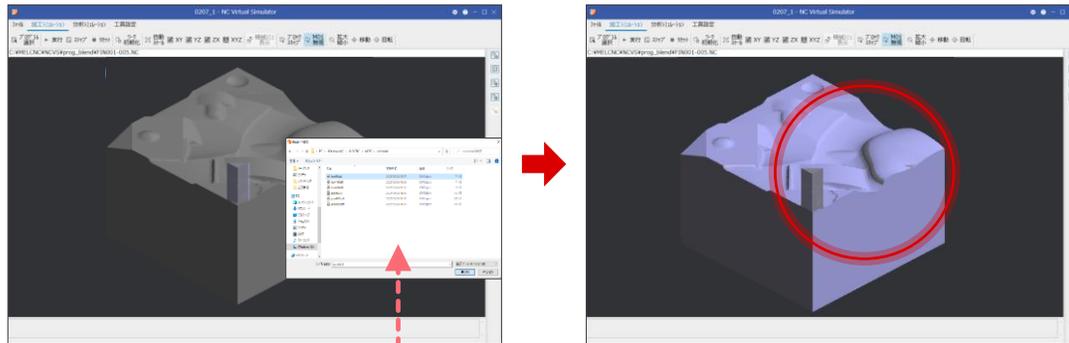
Machine simulation

You can check for machine interference during automatic operation using 3D machine models.
If interference occurs, the parts that interfere are shown in interference color as warning display.
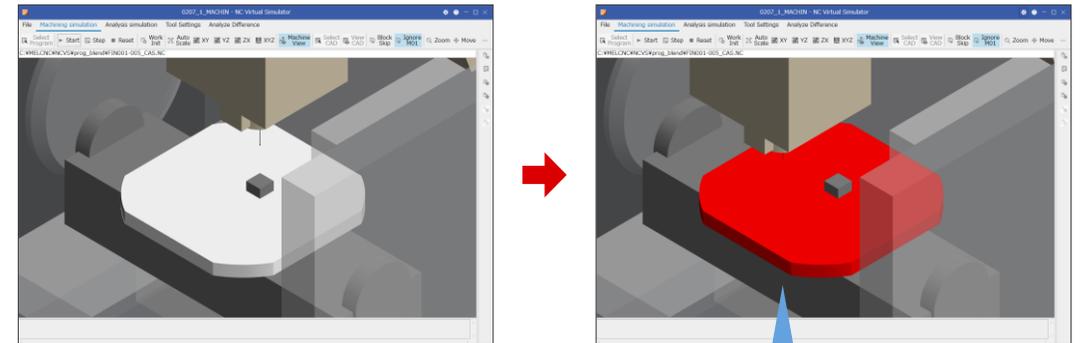
- The movement of machine parts is shown in 3D.
- If interference between parts is detected, a warning display takes effect.

MITSUBISHI ELECTRIC
Changes for the Better

Machining simulation software
# NC Virtual Simulator

Analysis simulation

The change in position, speed, acceleration rate, and other data is displayed at the level of a micro segment in a color map.
In addition, by selecting a line segment in the contour, the corresponding block in the machining program can be displayed.

(1) Color map display

(2) Program link display

Click a path.

2133	X25.9749Y-18.6187Z-1.2775
2134	X26.Y-18.5937Z-1.5
2135	Y-18.523
2136	X25.9749Y-18.5481Z-1.2775
2137	X25.901Y-18.622Z-1.0561
2138	X25.7818Y-18.7412Z-.765
2139	X25.6235Y-18.8995Z-.182
2140	X25.4339Y-19.0891Z-.99
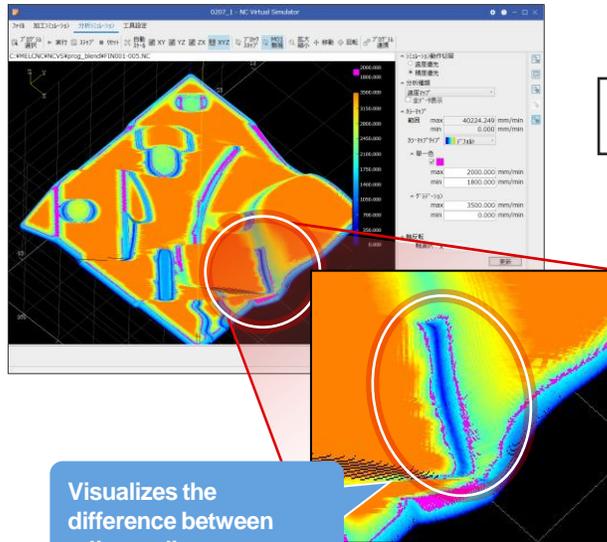
Visualizes the difference between adjacent line segments
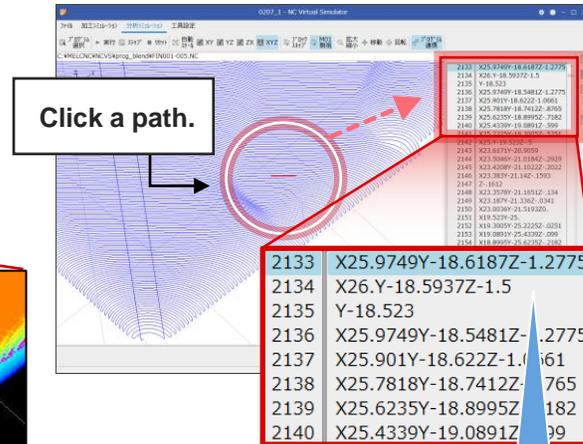
The corresponding block in the machining program is displayed.

Simulation comparison display

Simulation results are retained as history and used in simulation result comparison. You can see how the machining result changes depending on the machining conditions such as NC parameters.

MITSUBISHI ELECTRIC
Changes for the Better
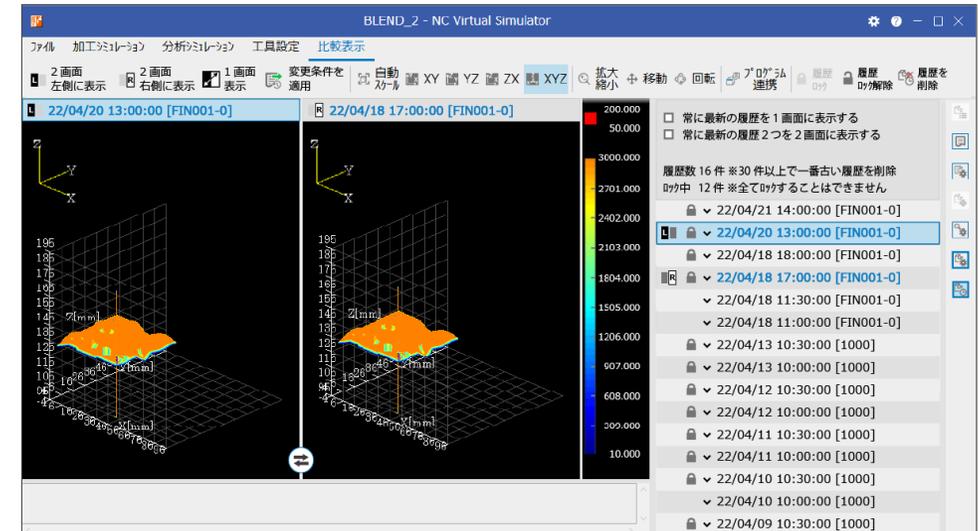
Machining simulation software
NC Virtual Simulator

NC Trainer2 plus linking functions

By linking with NC Trainer2 plus, the NC Virtual Simulator's machine simulation can be used as the simulation environment for the machine tool manufacturer's ladder design and machine design to check operation.
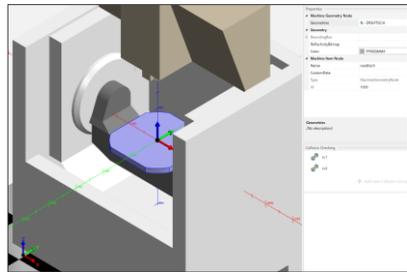
Machine model (CAD)
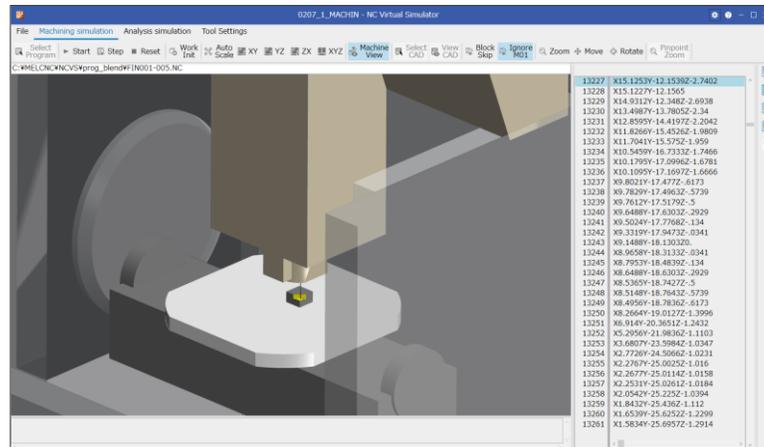
Import to NC Virtual Simulator
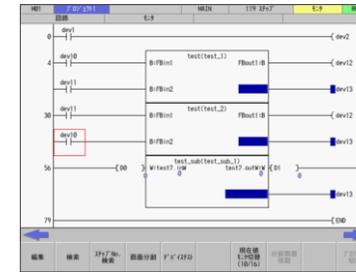
Ladder circuit

Import to NC Trainer2 Plus

MITSUBISHI ELECTRIC
Changes for the Better

Machining simulation software
NC Virtual Simulator

Comparison between simulation results and machined workpiece (1)

Actual machining	Machining simulation	Adjacent path speed differences	Adjacent path position differences

① Using machining **time-optimized** NC parameters

The sharpness of the edge at which shape changes from plane to hemisphere varies.

Shape change is unclear.

② Using machining **accuracy-optimized** NC parameters

Shape change is clear.

MITSUBISHI ELECTRIC
Changes for the Better
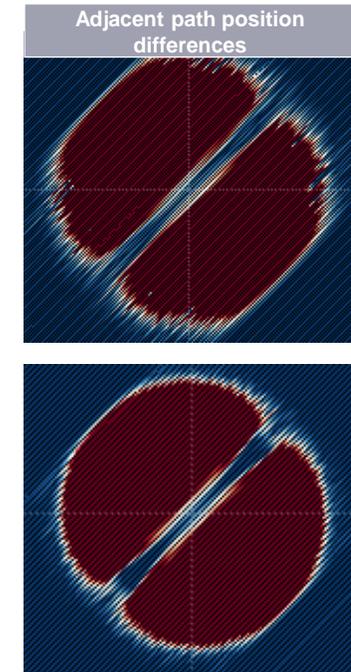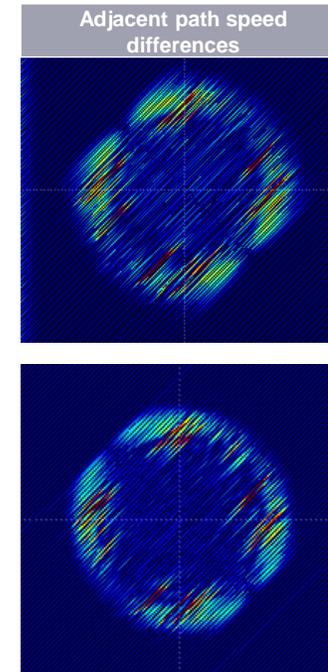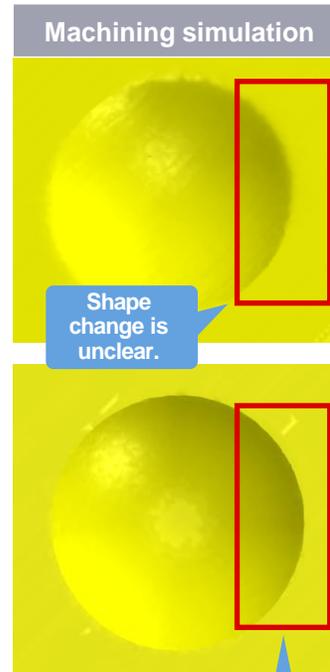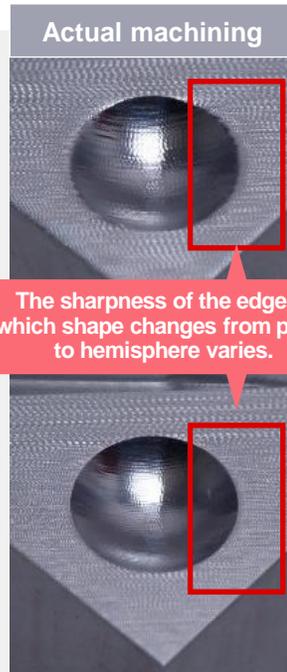
Machining simulation software
NC Virtual Simulator

Comparison between simulation results and machined workpiece (2)

	Actual machining	Machining simulation	Adjacent path speed differences	Adjacent path position differences
① Using machining **time-optimized** NC parameters				
② Using machining **accuracy-optimized** NC parameters				

Streaks occur in some places.
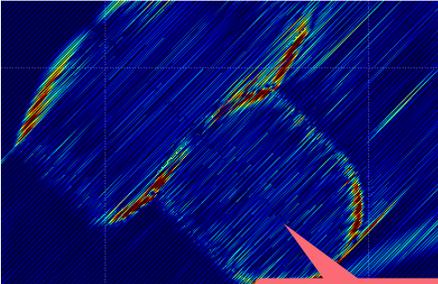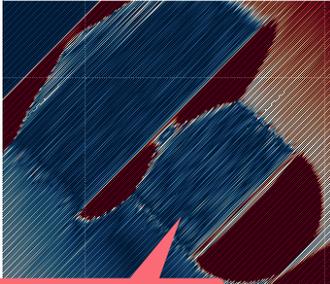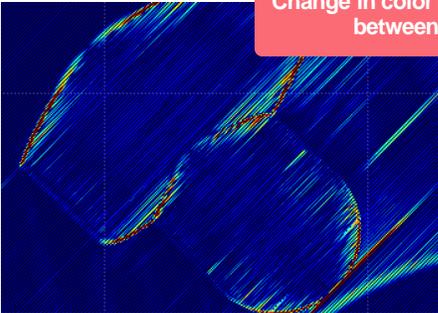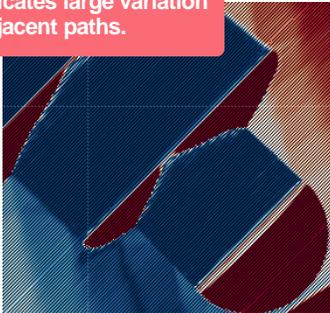
Change in color indicates large variation between adjacent paths.

MITSUBISHI ELECTRIC
Changes for the Better