FANUC

Fine Surface Technology
Increase your workpiece quality with FANUC

Machining with Fine Surface Technology

In many applications such as milling of complex parts and free-form surfaces, the surface quality of the workpiece is crucial. FANUC's Fine Surface Technology is the ideal solution to achieve flawless workpiece surfaces.

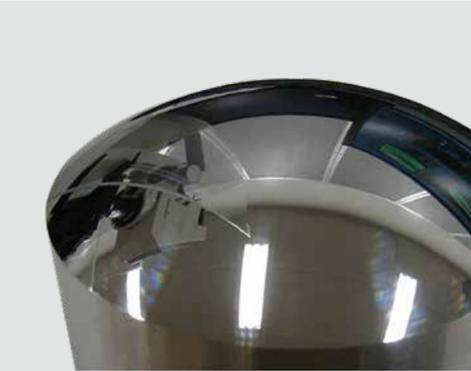CAD/CAM → CNC → SERVO → MACHINE TOOL

Fine Surface Technology

Fine Surface Technology is a set of functions that deals with different stages of the process chain: Beginning with improved accuracy from the CAM system, over sophisticated CNC algorithms and unrivaled servo control capabilities down to the machine tool.

Increase your CAM Accuracy
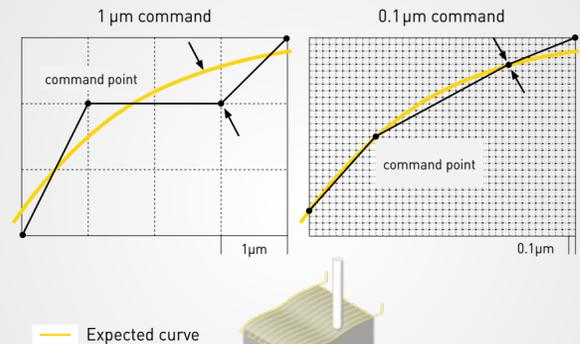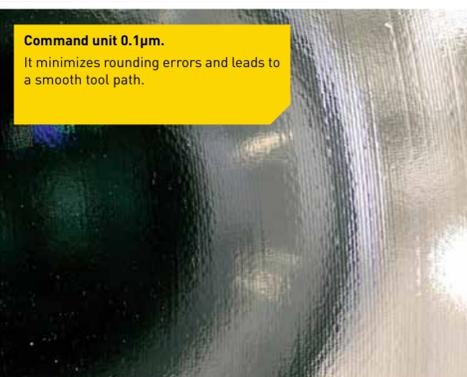# FANUC High Precision Program Command

Command unit 1μm.
The surface quality is already good, but the detail shows uneven tool path.
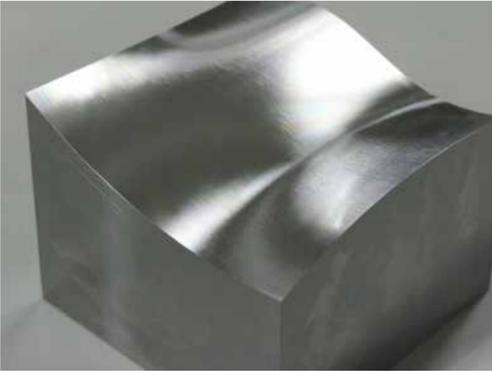
FANUC High Precision Program Command

Path errors caused by rounding can reduce the surface quality of a workpiece. You can easily reduce the path error by improving program accuracy with High Precision Program Command. This enables you to achieve much better surface results, while machining time stays the same.

Command unit 0.1μm.
It minimizes rounding errors and leads to a smooth tool path.

1 μm command   0.1 μm command

command point

command point

1μm   0.1μm

— Expected curve

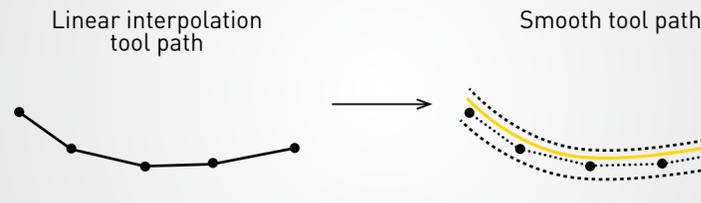## Smooth your CAM Paths
FANUC Smooth Tolerance+ Control

Smooth Tolerance+ Control OFF
Short line segments cause an uneven tool path that is visible on the surface

FANUC Smooth Tolerance+ Control

Do you sometimes have suboptimal surfaces of your workpieces? This is caused by tool paths consisting of many short line segments. Even though you can achieve a smooth workpiece surface with Smooth Tolerance+ Control. It smoothens the tool path and can even shorten machining time.

Smooth Tolerance+ Control ON
Smoothened tool path leads to better surface quality

Linear interpolation tool path   Smooth tool path

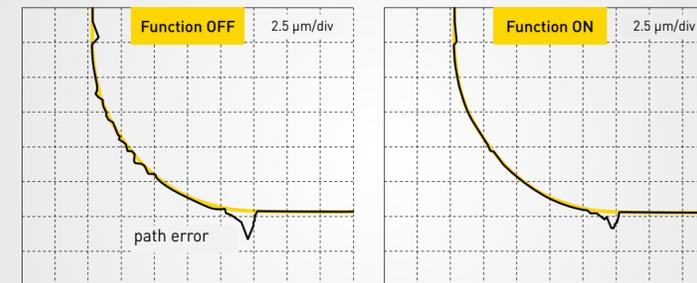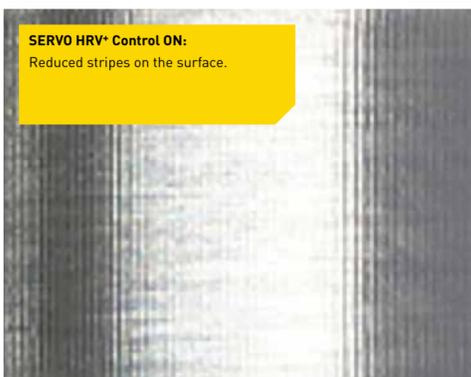## Ultra Fine Servo Control
FANUC SERVO HRV+ Control

SERVO HRV+ Control OFF:
Disturbances in the servo system cause stripes on the surface.

FANUC SERVO HRV+ Control

Some surface imperfections can be caused by disturbances in the servo system. You can effectively counter these imperfections with SERVO HRV+ Control. Its optimal current control and newly enhanced velocity control suppresses disturbances in the servo system and improves surface quality.

SERVO HRV+ Control ON:
Reduced stripes on the surface.

Function OFF   2.5 μm/div

Function ON   2.5 μm/div

path error

Is your path well planned?
FANUC AI Contour Control II+

Short machining times require high feed rates. But contour accuracy often requires reduced feed rates. You can achieve both short machining time and high contour accuracy with AI Contour Control II+. In addition, machine vibration and machining errors are reduced and lead to better surface quality.

The improved block processing capability of AI Contour Control II+ allows you to machine part programs which have been created with small CAM tolerances. Achieve improved surface quality without compromising short machining times.

A CAM Tolerance of 5 μm produces smaller part programs, but leads to facets on the surface

A CAM tolerance of 1 μm makes for good surface quality without extending machining time.

Machining Condition Easy Setting

The patterns can be fine-tuned with cursor keys

Machining Condition Easy Setting lets you switch between patterns for roughing, semi finishing and finishing easily. This makes the setup of proper parameters for these operations very simple. In addition, the patterns can be fine-tuned to be faster or more accurate by simple cursor key operation. You don't have to deal with the actual parameter values, making the fine-tuning easier. The patterns can also be selected by G-code commands.

CAM	MAKER
CAM-TOOL	C&G Systems
CATIA	Dassault Systems
Cimatron E	3D systems
edgecam	Vero Software
ESPRIT	DP Technology
hyperMILL	OPEN Mind Technologies
MAstercam	CNC software
NX	Siemens PLM Software
PowerMill	AUTODESK
Tebis	Tebis AG
TOP solid'cam	Missler Software
VISI-Series	Vero Software
worknc	Vero Software

A large number of CAM systems already support these commands.

One common servo and control platform –
Infinite opportunities
THAT's FANUC!

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Servo Motors
and Lasers

ROBOTS
Industrial Robots,
Accessories
and Software

ROBOCUT
CNC Wire-Cut
Electric Discharge
Machines

ROBODRILL
Compact
CNC Machining
Centres

ROBOSHOT
Electric CNC
Injection Moulding
Machines

IoT
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