Digital Manufacturing Innovation

MAZATROL SMOOTH Ai
Next Generation MAZATROL Smooth CNC
Innovation for Higher Productivity

The newest MAZATROL Smooth CNC system is designed to meet your production requirements in today’s constantly changing manufacturing environment.

MAZATROL SMOOTHAi
Next generation MAZATROL Smooth CNC

AI
Increase your productivity with AI technology

MAZATROL TWINS
Virtual TWINS of machines equipped with the MAZATROL SmoothAi

Digital Twin
Make programs in an office with machine specific data

Automation
Advanced automation utilizing robot and software

Shown with optional Smooth Ai second monitor for
SMOOTH Ai Spindle, SMOOTH PMC and SMOOTH RCC
Innovative Functions for Higher Productivity

MAZATROL SmoothAi
AI support for operations normally requiring extensive experience and skills

// Solid MAZATROL  Optimize machining process through AI determination
Extremely fast programming using 3D CAD data

Required time for programming 2.5 min.

Optimum machining process thanks to AI learning
Thanks to AI learning, which utilizes machining expertise from accumulated programming experience, the optimum machining processes will be automatically determined and programs will be generated. Standard equipment for the INTEGREX i-H series is equipped with the SmoothAi CNC.

Example of machining process determination

Without AI learning
1st process: Turning, Drilling
2nd process: Turning

Interrupted cutting will be required in 2nd process which will affect finished surface.

With AI learning
1st process: Turning
2nd process: Drilling

Drilling is performed in the 2nd process for high accuracy in finished surface.

// SMOOTH Ai Spindle  Optimized cutting conditions
Advanced spindle vibration detection by AI improves finished surfaces and productivity

When milling spindle vibrations are detected, this AI-powered software automatically adjusts spindle speed for unsurpassed surface finishes and higher productivity.

// Ai Thermal Shield  Ensures stable machining accuracy
Ai Thermal Shield ensures enhanced heat displacement compensation

New algorithms automatically determine the amount of compensation required by ambient temperature changes. As inspection results are accumulated, machine learning algorithms optimize the accuracy of compensation for the highest possible machining performance.
Cutting Adviser

Cutting adviser optimizes machining conditions by MAZATROL SmoothAi CNC and MAZATROL SMOOTH CAM Ai simulation.

Select data

Simulation results Machining results

Machining data

- Tools
- Material removal amount
- Machining load
- Machining time

Spindle : servo load data

Change of machining conditions

- Cutting speed
- Feed rate
- Depth of cut

Tuning machining features

Machining features including cycle time, finished surface and machining shape can be adjusted by slider switches on the display according to material requirements and machining methods. This is especially effective for complex workpiece contours defined in small program increments. Once the desired results are obtained, the settings can be stored in memory so they can easily be used again in the future. Additionally, the rotary axis acceleration tuning parameter can be adjusted by a slider switch as well as selecting speed or accuracy priority. These operations can be performed by both the SMOOTH CAM Ai and MAZATROL SmoothAi CNC.

SMC (SMOOTH MACHINING CONFIGURATION)

Optimize EIA programs utilizing 3D models

Compare tool contact point of EIA program with 3D model so program points can be changed to ensure the correct tool path and high accuracy finished surfaces. This is an available option for the MAZATROL SmoothAi.
The SMOOTH Tool Management software manages data of the large number of tools in use by a factory. By centrally managing tools and registering tool data as well as tool setup, machine non-cutting time can be reduced. This software can also eliminate tool information input errors in the CNC to improve productivity.

Programs can be made and edited, and simulation and analysis can be performed, on the SMOOTH CAM Ai for multiple machines.

Advanced Digital Technology for Manufacturing

SMOOTH CAM Ai

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SMOOTH Project Manager

File management

Convenient management of data required to execute machining programs.

- Tool data
- Parameters
- Coordinate system
- Workplace 3D model

Project data synchronization

Project data is synchronized between machines and SMOOTH CAM Ai and other CAD/CAM software. Data produced by virtual machines is outputted to machines equipped with the MAZATROL SmoothAi CNC for fast setups.

SMOOTH Tool Management

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Advanced Automation Utilizing Robots

Dedicated management software for high-mix, low-volume production utilizing a robot — operator can easily make the production schedule for extended periods of operation and check resources on the dedicated screen.

### Functions to reduce automatic operation setup time

#### Resource check

**Prevent missing items which will stop automatic operation**

SMOOTH RCC displays missing programs and tools thanks to resource check. During automatic operation, real-time tool simulation displays tools which have short remaining tool life to indicate which tools require setup.

- **Before start of operation**
  - Workpiece/fixture set up
  - Required program in CNC memory
  - Confirm required tools for machining are in magazine and tool life is sufficient for scheduled machining

- **During operation**
  - Continue to check remaining tool life to confirm there is sufficient tool life to perform production over the next 16 hours

#### Robot setup assist

**Fast and easy robot setup**

Automatically makes robot programs by inputting length and diameter of material and robot hand specification into the MAZATROL SmoothAi. For exceptional ease of operation, this conversational programming eliminates robot teaching.

- Workpiece display from MAZATROL machining program
- Robot setup data
- Input data for robot operation