

# Automatic Tool Changer ZAT-650 & Model 4

## Product Guide

May, 2003

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**Built with precision. Backed with passion.**

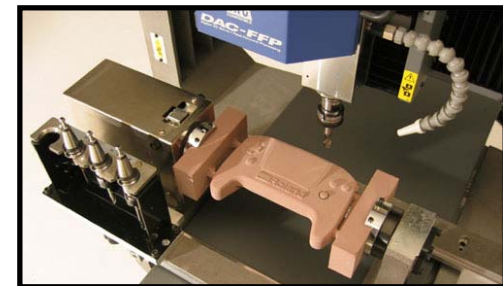
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# Features

- ZAT-650 is an optional ATC exclusively for MDX-650. The MDX-650 provides complete milling from roughing through finishing automatically changing tools during the operation.
- MDX-650 performs two or four sides milling fully automatically with Rotary Axis Unit, ZCL-650 and ZAT- 650.
- High-precision ATC spindle included
- Understands industry standard NC code and Roland DG [RML] original commands.

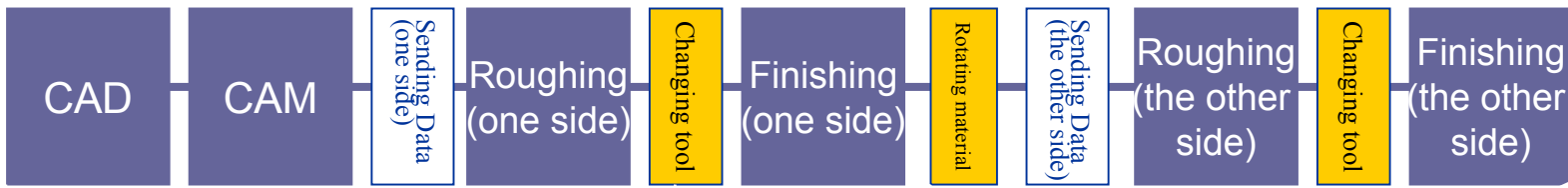


# Productivity

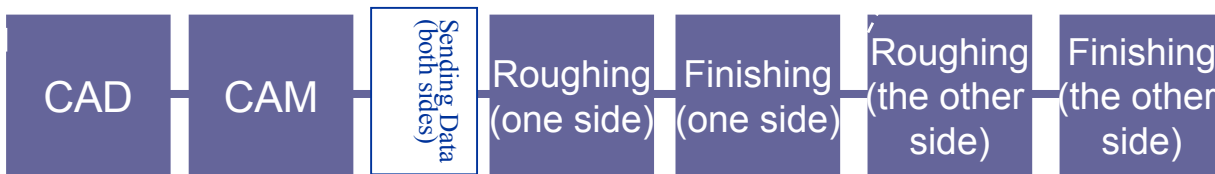
<Comparison of two-sided milling>

Seamless milling with ZAT-650 further enhances productivity.

## ■ MDX-650 only :



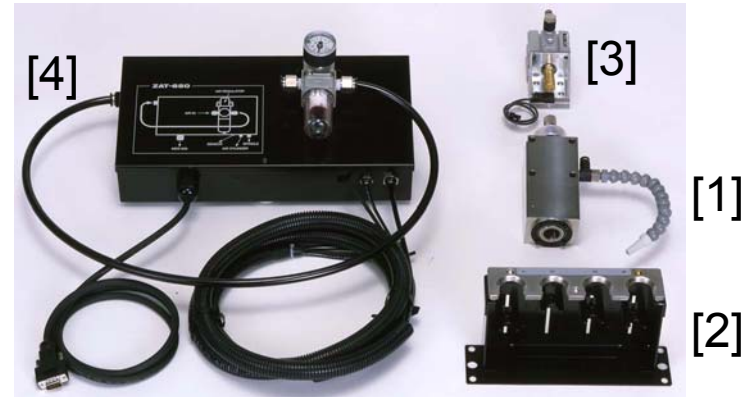
## ■ With ATC & Rotary Axis Unit:



*Seamless Work with MDX-650*

# Items included in ZAT-650

1. High-precision ATC spindle
2. Tool magazine
3. Air regulator  
Air compressor not included.
4. Control box  
10' Polyurthane10mm Hose



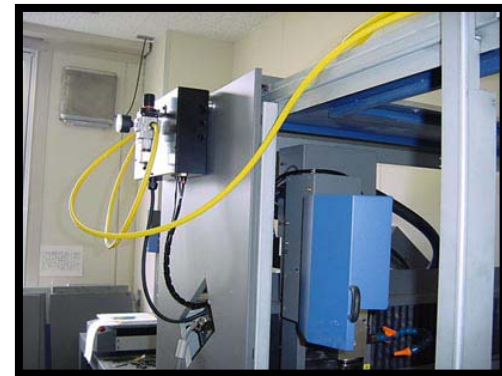
❖ The following items need to be installed on the MDX-650



Spindle unit



Tool magazine



Air regulator , control box & hose

# High-precision ATC spindle

- ZAT-650 includes the high-precision spindle exclusively for ATC.

- High precision spindle (ZS-650TY) or high torque spindle (ZS-650T) do not work with the ATC.

- Service life of Spindle

- Around 5,000 hours in total rotation time.
- Earlier inspection and replacement recommended.
- For replacement parts, contact Roland DGA service center.
- Replacement spindle part # ZS-650A

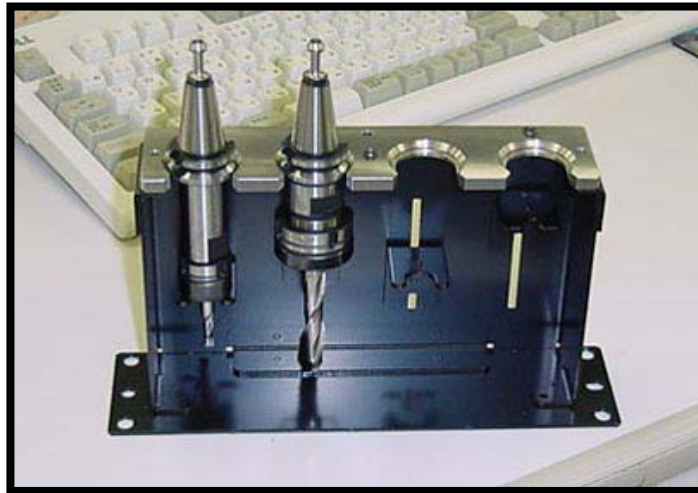


**ZAT-650**

\*ZAT-650 does not include a drill mill chuck, collet, or tool.

# Tool magazine

- Up to 4 tools can be set
- Maximum of 8 tools can be housed with an optional tool magazine.  
*\*The optional tool magazine cannot be used with Rotary Axis Unit*
- Tool diameter up to .40" or 10 mm can be used.
- Tool length up to 4.34" or 110 mm can be used.



# Air compressor

- ZAT-650 doesn't include a compressor or compressed-air supply.
- Use commercially available compressor.
- Air compressor requirements:
  - Oil free type  
Does not contain oil when providing compressed air
  - Air pressure: 0.7 Mpa to 1 Mpa or 100 to 120 PSI  
Do not supply compressed air to the regulator at higher than 1 Mpa. Doing so may damage the regulator.
  - Air volume: 50 L/min.or more
  - Air tank capacity: 60 L or more\*  
\* When an air tank capacity is less than 60 L, an additional tank can be used.

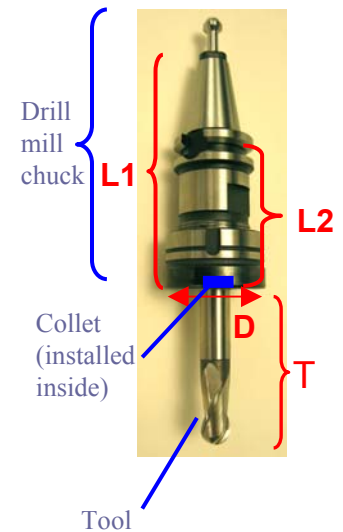
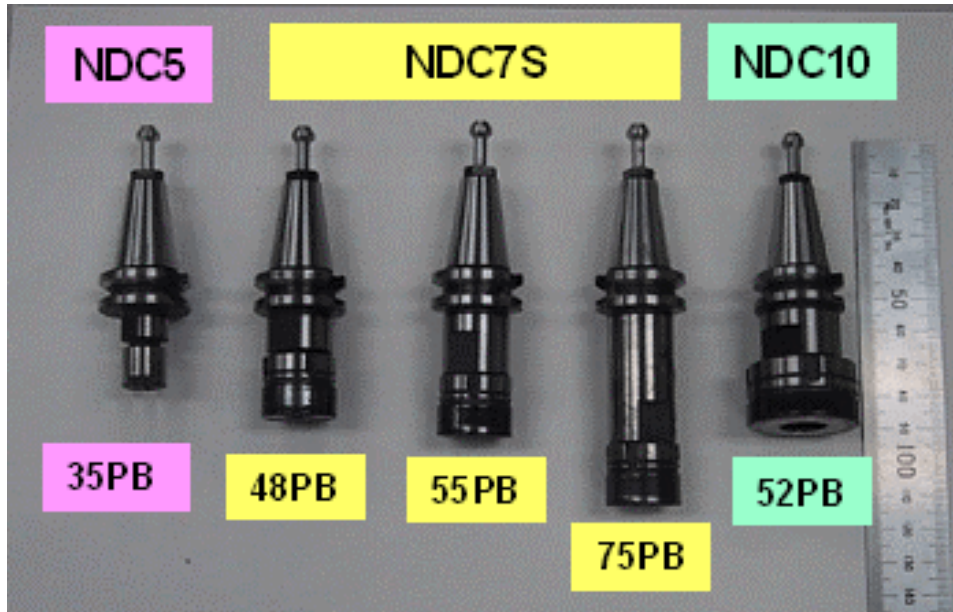
1 Mpa = approx. 1Kgf / cm<sup>2</sup>



# Accessories options

## ■ Drill mill chucks\*

Choose one according to the tool length out of drill mill chuck.

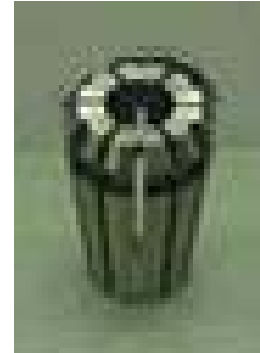
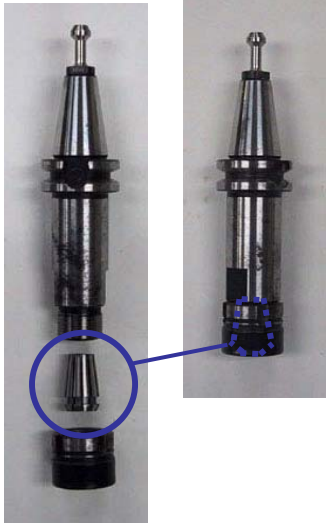


\*Drill mill chucks are also commercially available but are included in the ATC kit.

# Accessories options

## Collets

Exclusive for ZAT-650.



US-COL10-3.5	1/8"	- collet for US-DMC10-52	\$69.99
US-COL10-5	3/16"	- collet for US-DMC10-52	\$69.99
US-COL10-7	1/4"	- collet for US-DMC10-52	\$69.99
US-COL10-10	3/8"	- collet for US-DMC10-52	\$69.99

\*Drill mill chucks are also commercially available but are included in the ATC kit.

(Unit: mm)

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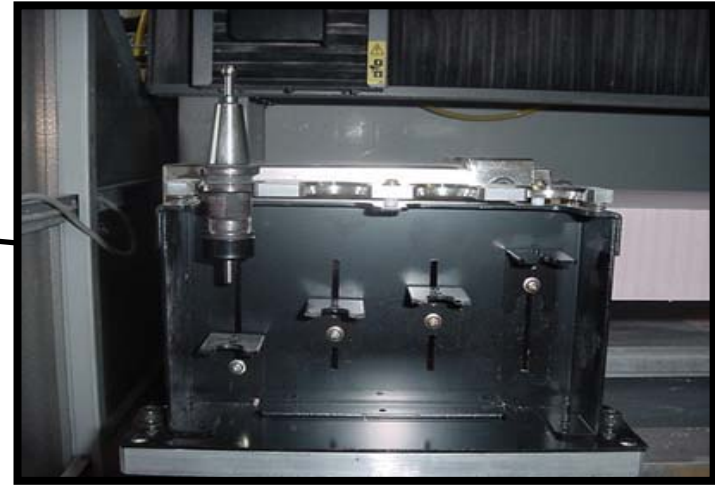
 **Roland**

# Accessories options



- Hook spanners for drill mill chucks are included with the Automatic Tool Changer kit [MDX-KIT-ATC]

# Available options



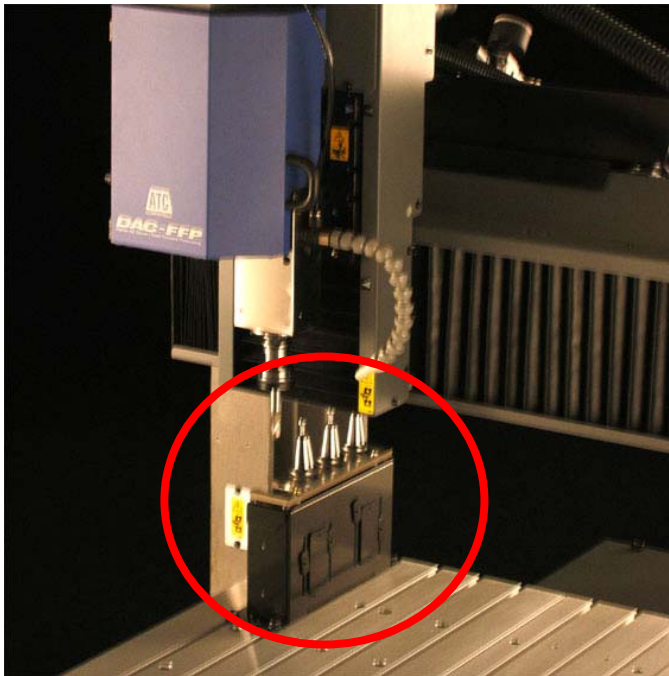
US-SC15 - \$499.00 US

- The ATC can house up to 8 tools in total. (The expansion magazine can house additional 4 tools.)

*\*The expansion magazine will not work with Rotary Axis Unit, ZCL-650.*

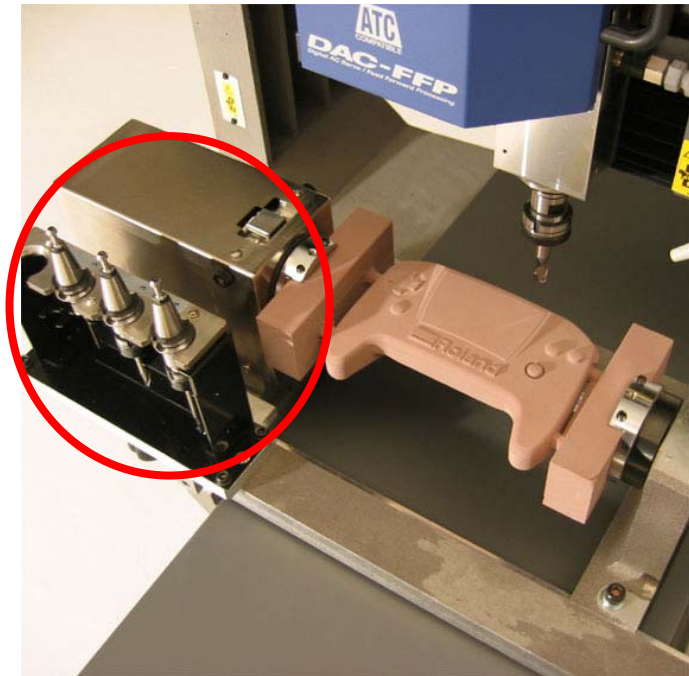
# Positioning the ATC

Flat table ATC



\*The ATC is installed in the upper left of the bed.

Rotary Axis Unit: and ATC



\*The ATC is installed in front of the Rotary Axis Unit.

# Specifications changed with ATC

## Work area using the ATC on the flat table:

*Before upgrade - 25-9/16(X) x 17-11/16(Y) x 6-1/16(Z) in*



*After upgrade - 21-1/4(X) x 17-11/16(Y) x 6-1/16(Z) in.*

## Firmware

- Upgraded ATC menu included

## Compatible CAM software

- Modela 4



# Notes

## **MDX-650 :**

- ATC can be installed on an MDX-650A (\*See next page)
- ATC cannot be installed in MDX-500.

## **Rotary Axis Unit ZCL-650 :**

- ATC can be installed on the ZCL-650 upgraded to ATC compatible. (\*See next page)

## **Spindles :**

- Use the high-precision ATC spindle included in ATC.
- Other spindles ZS-650T or ZS-650TY are not compatible with ATC

## **Options cannot work with ATC :**

- Table Spacer ( ZA-500 series )
- Vacuum Adapter ( ZAD-500T/S )
- Vacuum Table ( ZV-500A )



# MDX-650 and ZCL-650 required to upgrade

- The MDX-650 and ZCL-650 in this type is required to be upgraded to use the ATC
- Changes on the MDX-650
  - Structural change in the spindle cover
  - Upgraded ATC menu included [Firmware]
  - CAM software MODELA Player 4 included
- Changes in ZCL-650
  - A part to install magazine
  - Installing holes and a reference point



Upgrade required model  
(Previous model)



ATC compatible



# ATC specifications

Model	ZAT-650 Automatic Tool Changer
Number of tools housed*	4 or 8 when an optional expansion magazine is installed.
Maximum tool length	4-5/16 in (110 mm)
Maximum tool diameter	3/8 in. (10 mm)
Tool-holder format	Taper shank: JBS4002 15T 7/24 taper Pull stud: JBS4002 15P (45°), special
Tool-selection method	Direct-changing type, fixed-address specification
Compatible compressed air**	Air pressure 0.7 to 1 Mpa, and Air volume 50 L/min. or more. Air tank capacity 60 L or more.
Spindle speed	3,000 to 12,000 rpm
Operation temperature / Operation humidity	5 to 40°C (41 to 104°F) / 35 to 80% (no condensation)
Packed dimensions and weight	31 (W) x 12-1/4 (D) x 9-1/4 (H) in.), 12.5 kg (27.6 lb.) 785 (W) x 310 (D) x 235 (H) mm
Included Items	ATC spindle unit, Air cylinder, Tool magazine, Control box, Air regulator, Z0 sensor base, Air hose, Air nozzle, Positioner, Hexagonal wrenches

# MODELA Player 4

CAM Software included with MDX-650

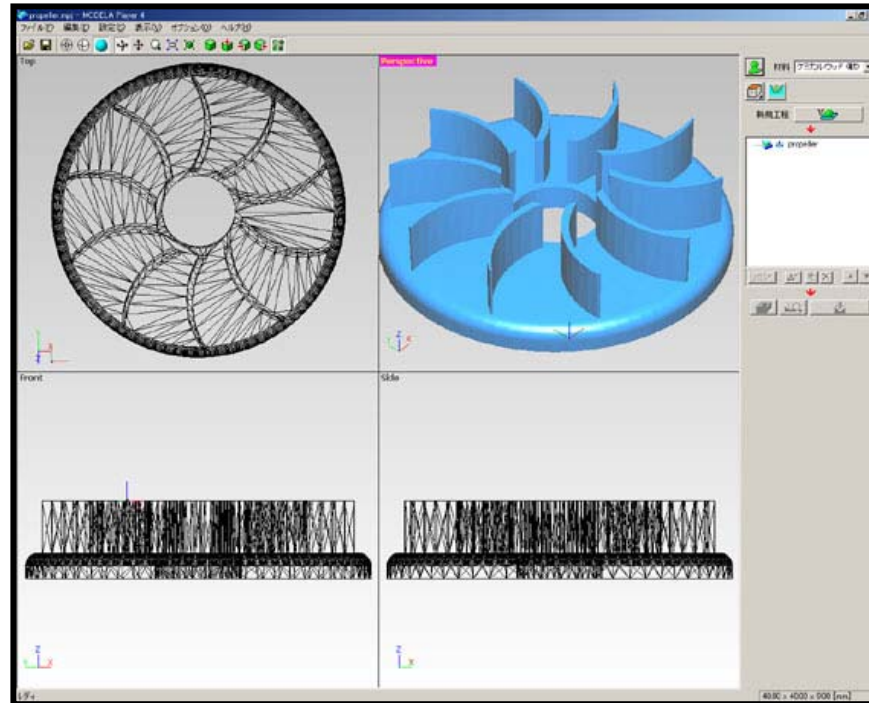


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# MODELA Player 4

- The included CAM software, MODELA Player has support for Automatic Tool Changing and operability.

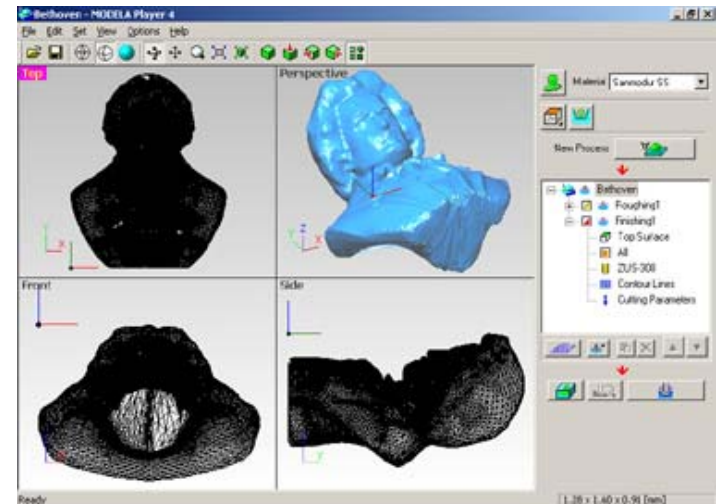
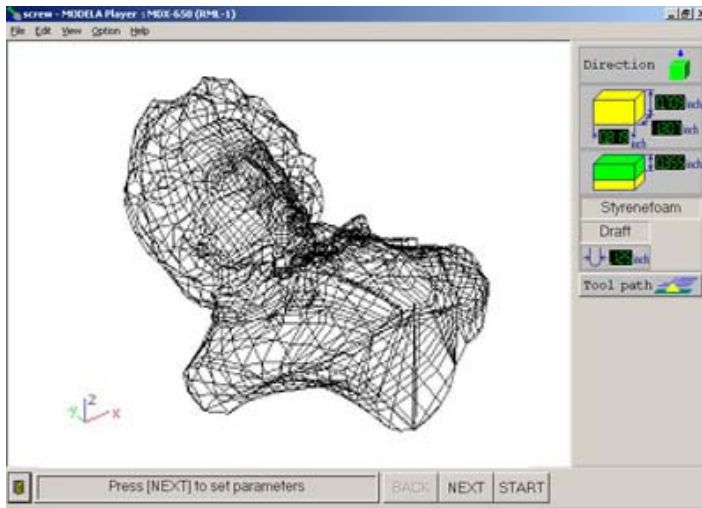


# Features

- New user-friendly interface
- Supports automatic tool changing
- Supports IGES file format
- Project control with multiple processes
- Supports partial milling
- Supports drilling

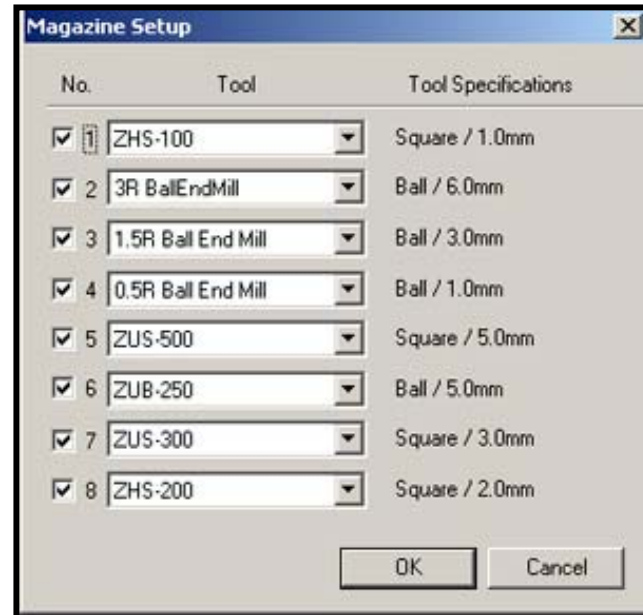
# New user-friendly interface

- Includes basic CAM software functionality such as four window CAD/CAM views of your part and improved rendering of part.



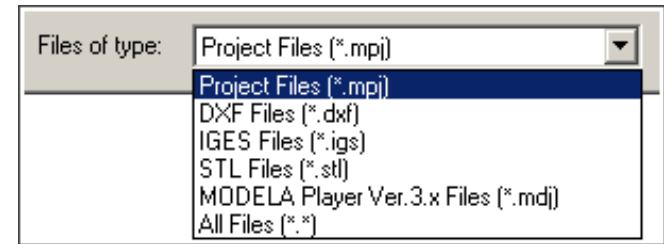
# Automatic Tool Changing

- Supports ATC for MDX-650
- Supports both ATC and Rotary Axis Unit together
- Supports RML-1 tool changing command



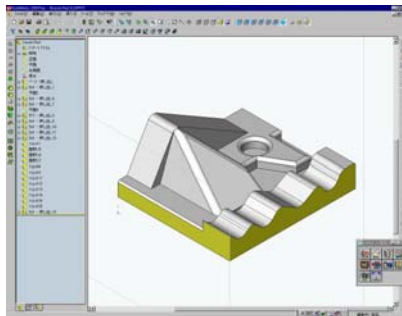
# Supports IGES file format

— New – Modela 4 supports IGES file

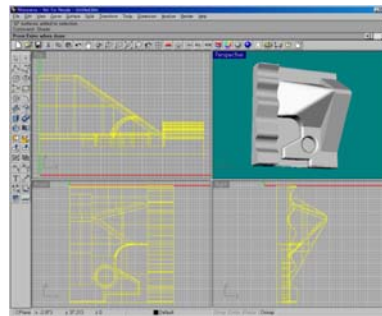


— ***Supports the following file formats:***

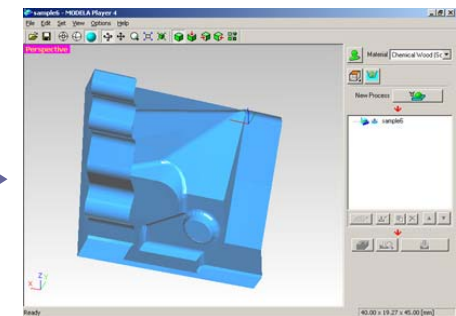
- **IGES:** IGES 5.2 (surfaces only; solids and 2D drawings cannot be imported) (IGES files exported by Dr. PICZA version 2.90 or earlier cannot be imported.)
- **DXF:** AutoCAD(R) Release 12 (3D faces only; 2D data cannot be imported)
- **STL:** Either ASCII (text) or binary can be imported
- **MODELA Player:** Project files in version 3 format



SolidWorks



Rhinoceros



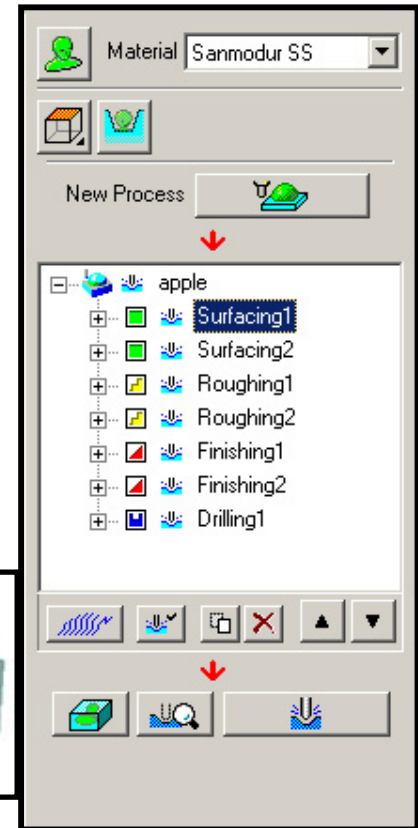
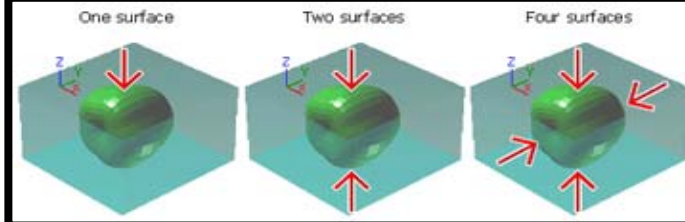
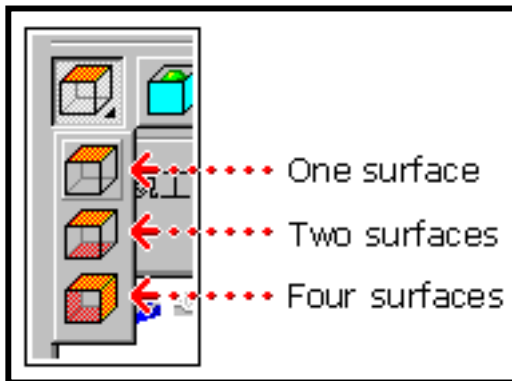
MODELA Player 4



# Project control with multiple processes and surfaces

## Improved Project Manager Wizard -

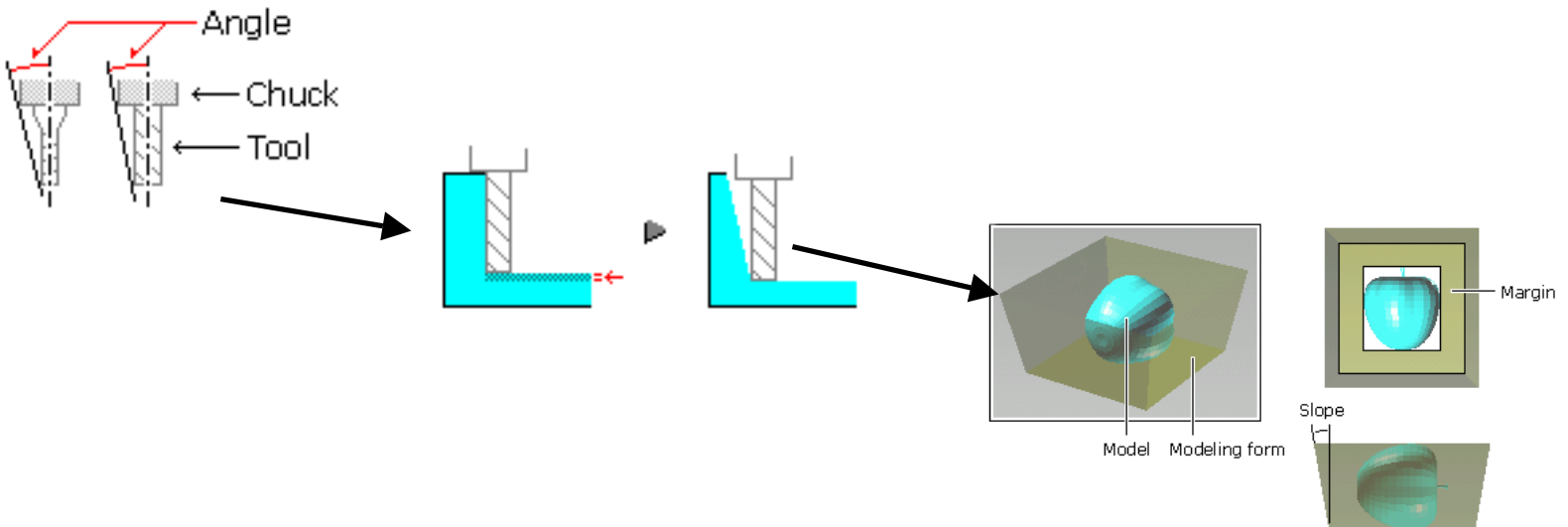
Milling functions are saved as one project, which consists of a list of milling processes. After you have programmed your part, you can save the information without reprogramming. Modela 4 supports up to four surface milling.





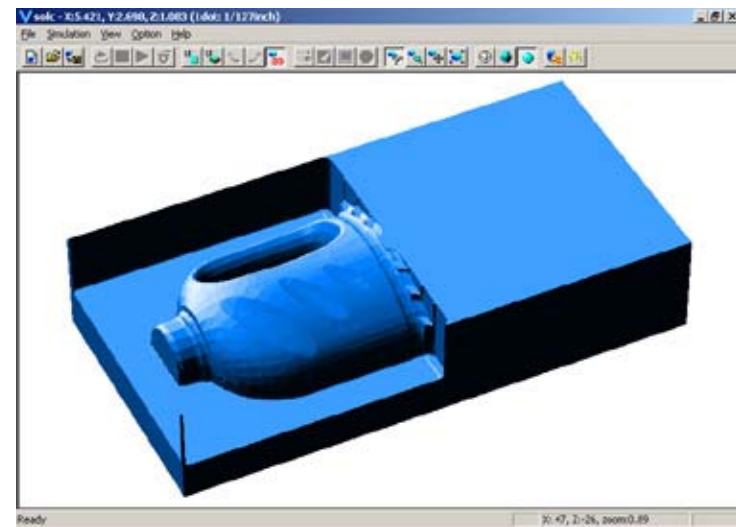
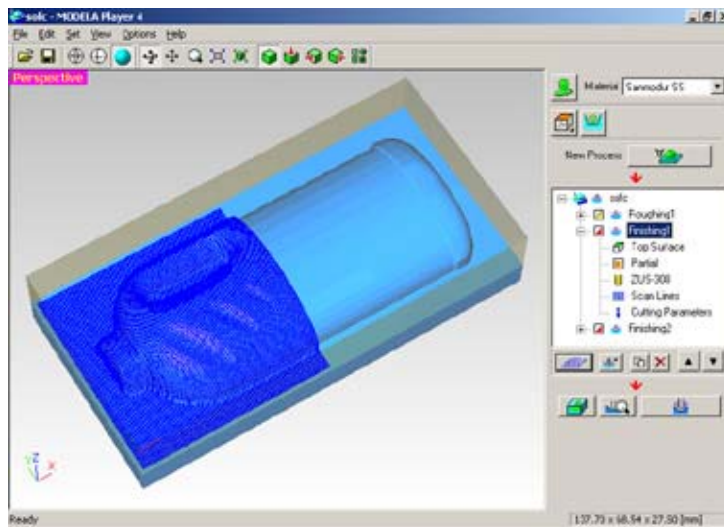
# Improved approach paths for taper tooling

- When perpendicular walls are higher than the blade length, the tool does not reach bottom. Adding slope to the walls enables approach by the tool.



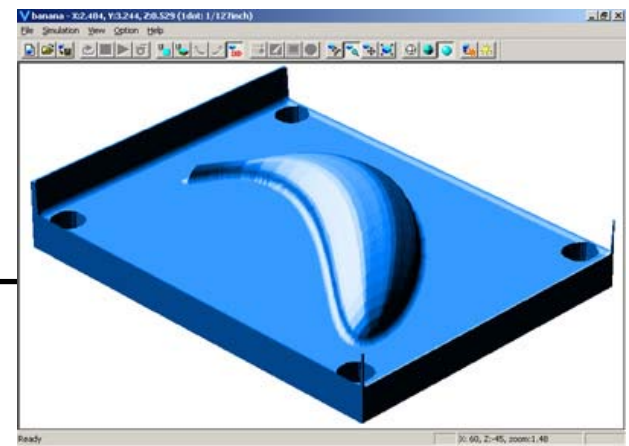
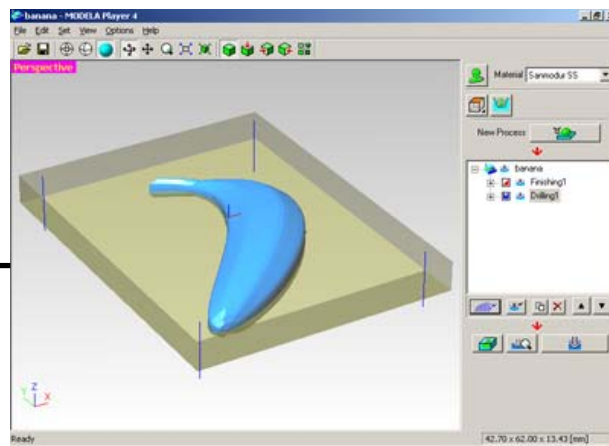
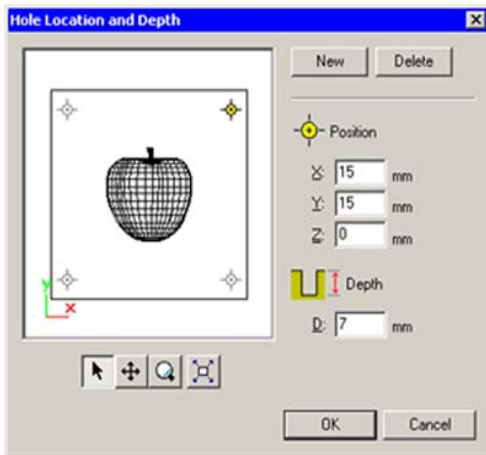
# Partial milling

- The ability to select partial regions of the object for fine detail saves time



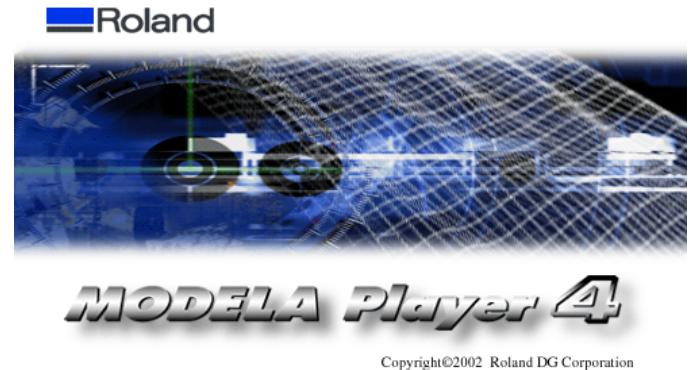
# Hole drilling

- Hole machining for drilling material and producing a two sided part.



# System requirements

- OS: Windows® 95/98/Me/NT4.0/2000/XP
- CPU: Pentium II or higher recommended
- Memory: 128MB or more recommended
- HDD: 10MB or more



\* Connecting MDX-650 to computer requires parallel port (Centronics) or RS-232C serial port in your computer.