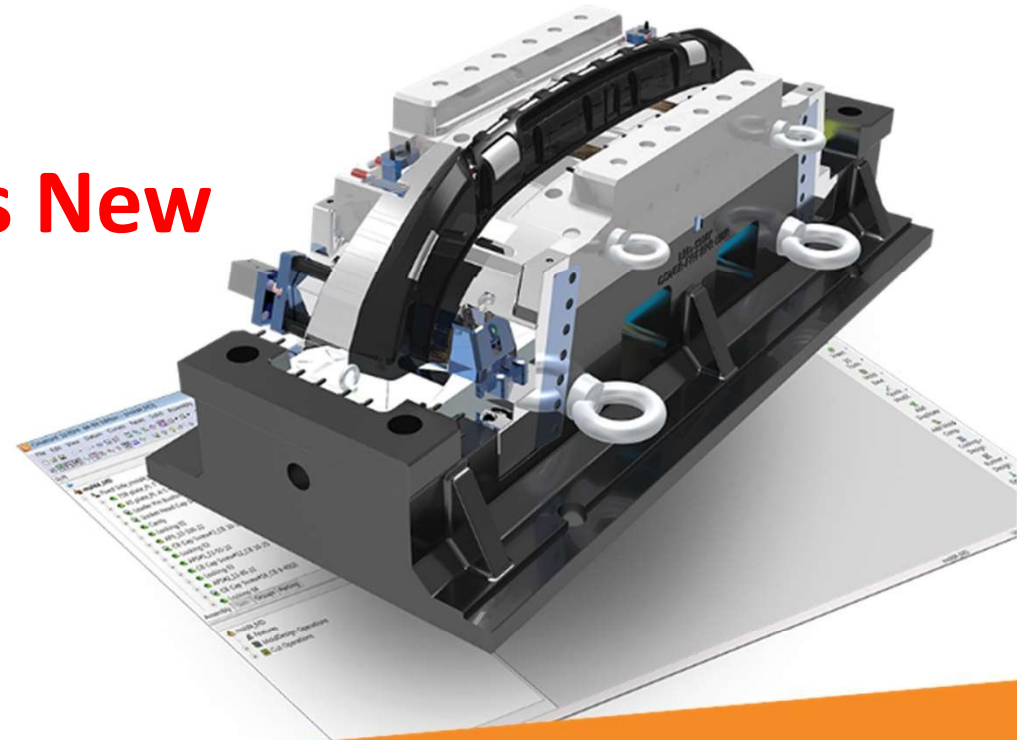




Ci Cimatron® 15 – What's New

Version Highlights

CAD Model



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บริษัท เซอีโร (ประเทศไทย) จำกัด
115/2 ถนนมอเตอร์เวย์ แขวงทับช้าง เขตสะพานสูง กรุงเทพฯ 10250
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What 's new



Cimatron 15

CAD Tools

Main Topic

- Modeling
- Mesh Tools
- Drafting

Modeling - Topics

- *Composite*
- *Silhouette*
- *Snap to Main View*
- *Offset Along Faces*
- *Rib*
- *Slot Size Analysis*
- *What's New*
- *Load Point Cloud*
- *Create Points on Skin*
- *Match Points on Point Cloud / STL*
- *Match Points on Skin*

- Composite 

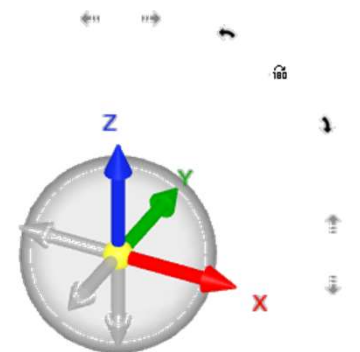
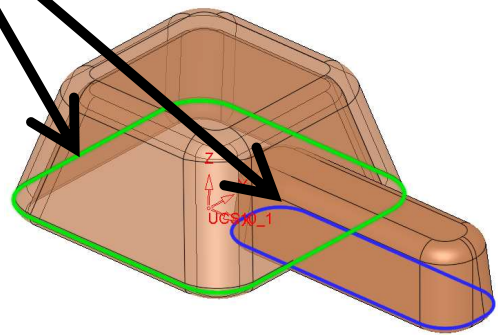
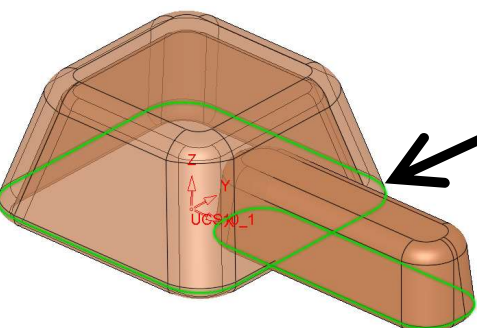
- Silhouette 

- Snap to Main View 

Snap to the closest main view
คำสั่งให้กลับไปแสดงมุมมอง **View** หลัก ขึ้นอยู่กับลักษณะการโชว์ **View** ณ เวลานั้นมีทิศทางไปทางด้านใด โดยอ้างอิงตาม **Plan XY, XZ, YZ**

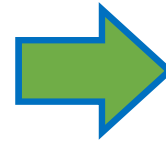
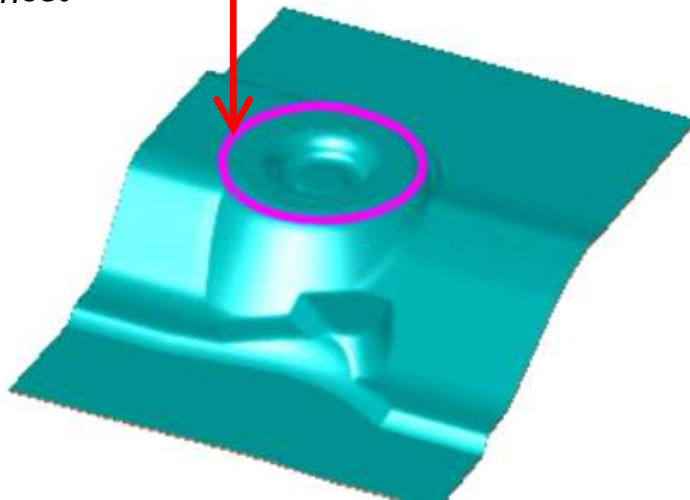
- Chain ▾
- Max. Gap = 0.0100
- Composite
- Without Simplify
- No Planar Approximation
- Flip Direction** ←

- Don't Create Composite
- Multi Wires
- ↓
- Create Composite Max. Gap = 0.1000
- Multi Wires
- ↓
- Single Wire

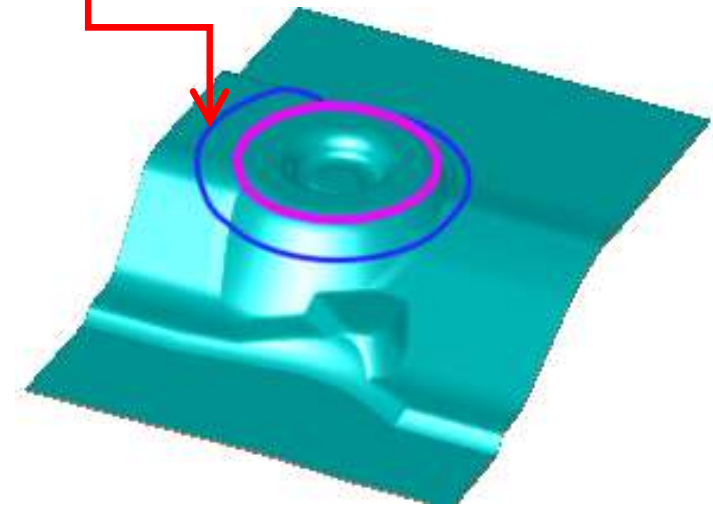


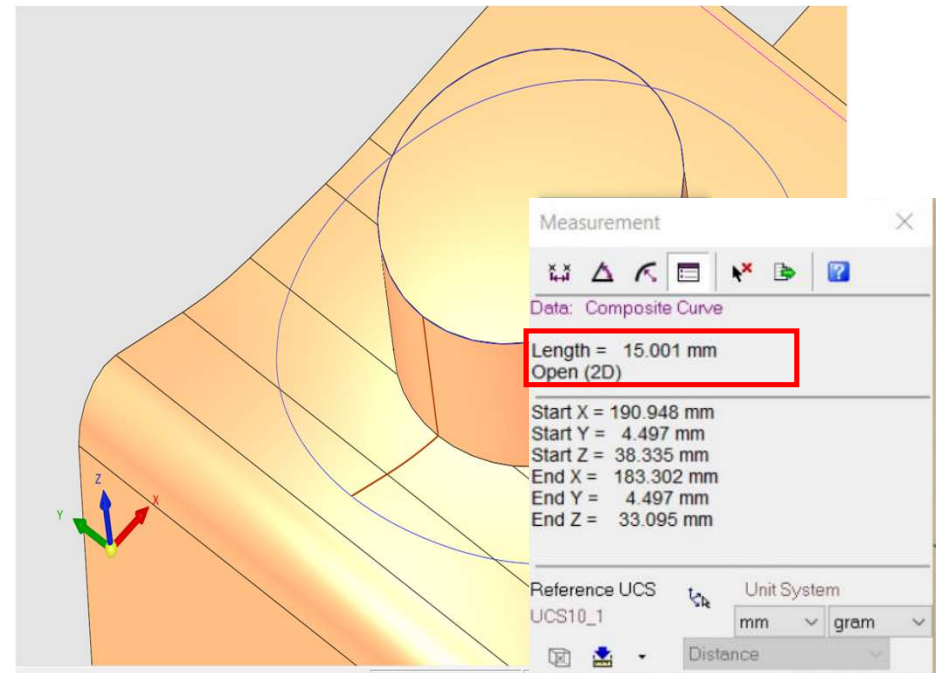
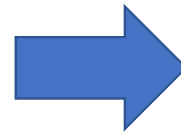
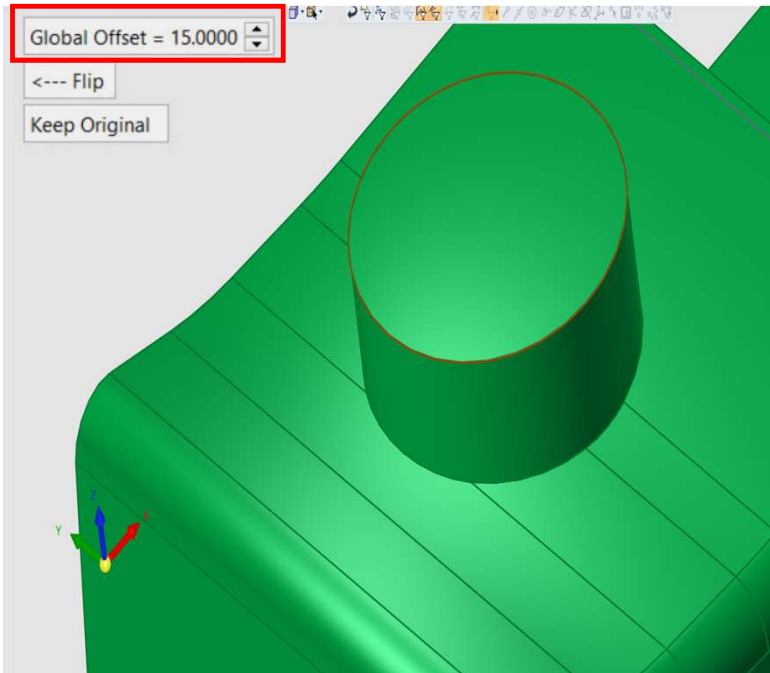
- *Offset Along Faces* 

Line offset



geometry offset along faces







Thickness = 1.0000

Straight

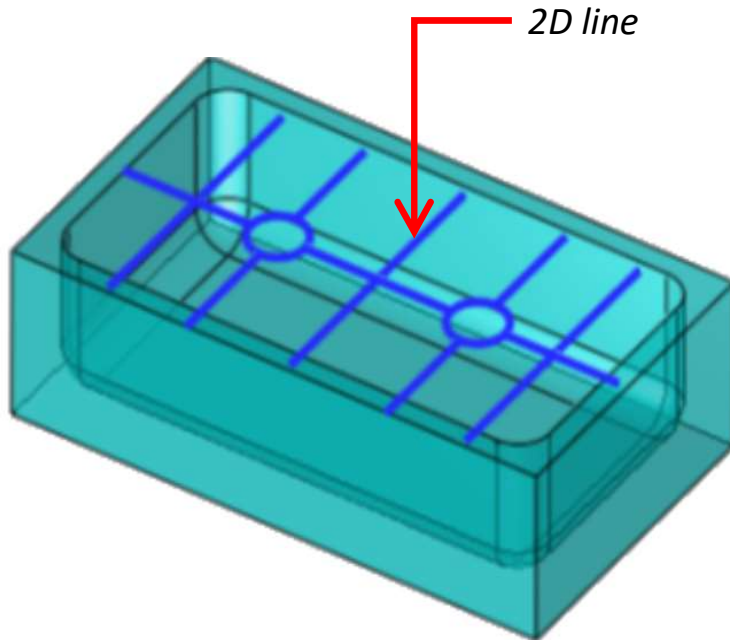
Flat Top



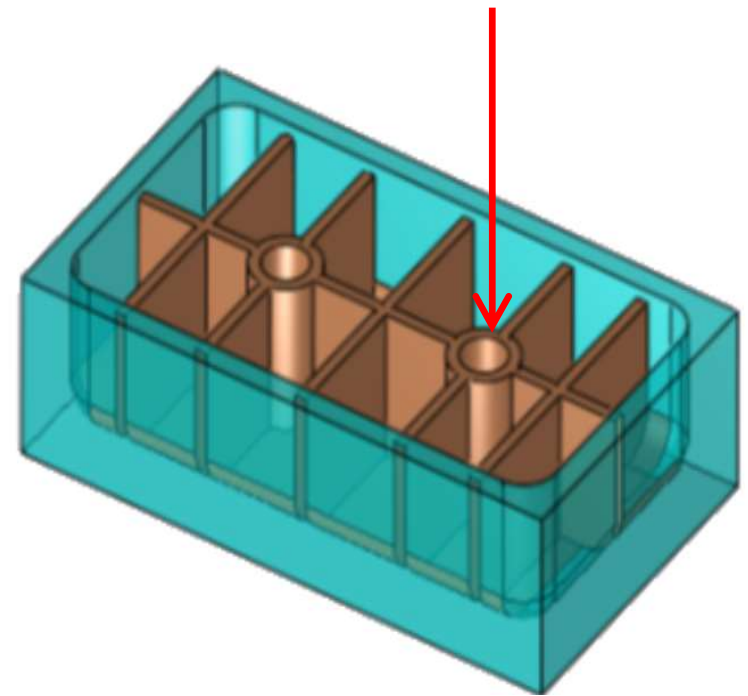
Thickness = 1.0000

Tapered Draft Angle = 1

Rounded Top



The rib will be created both sides of the selected reference geometry



Slot Size Analysis

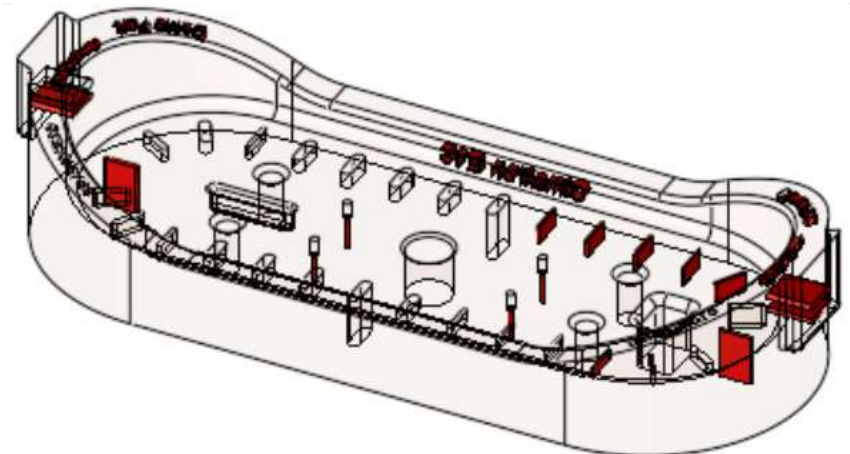
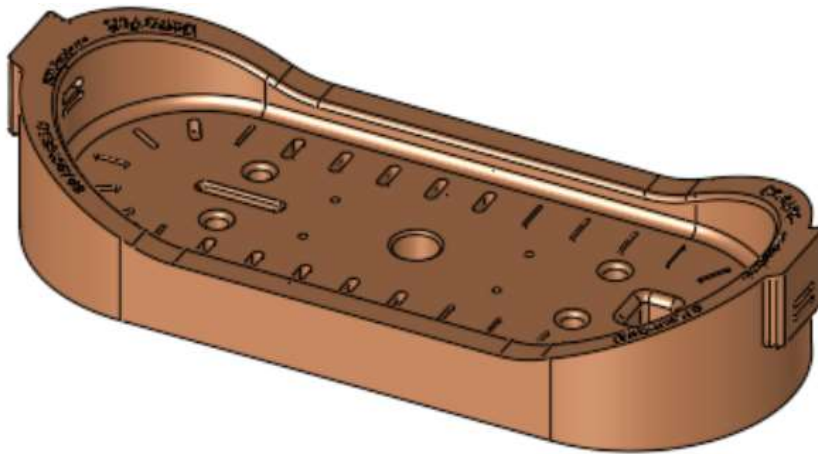


- Pockets Thickness Ratio (L/T) > 4 Thickness < 10.0000
- Ribs Thickness Ratio (L/T) > 5 Thickness < 10.0000

Analyze the slot sizes of a body. Find slots that are long relative to their thickness.

Color, **red** for pockets and **blue** for ribs.

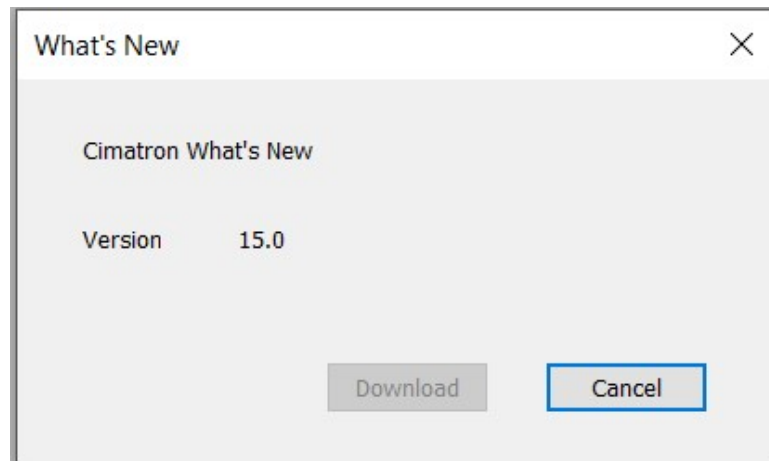
(Not include in NC Solution)



What's New



The What's New **PDF** file is available for downloading.



CAD Tools Option

Load Point Cloud

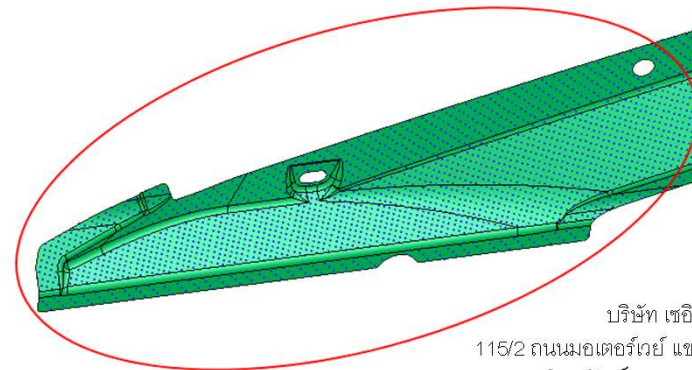
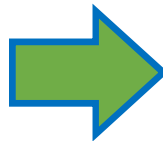
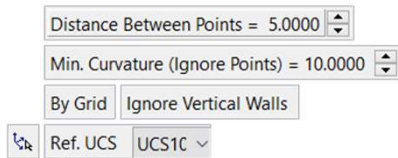


The following file types are supported: CSV, ISO and PCD (Point Cloud Data) files.

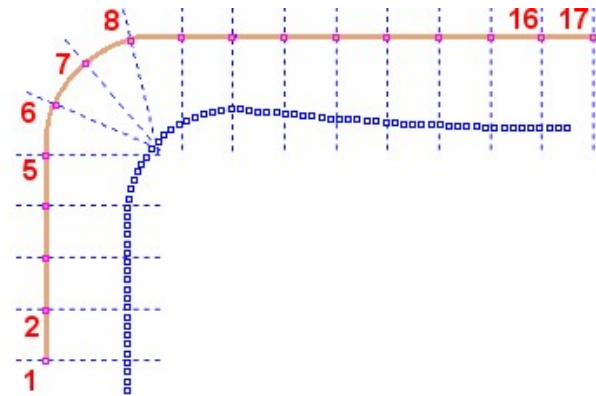
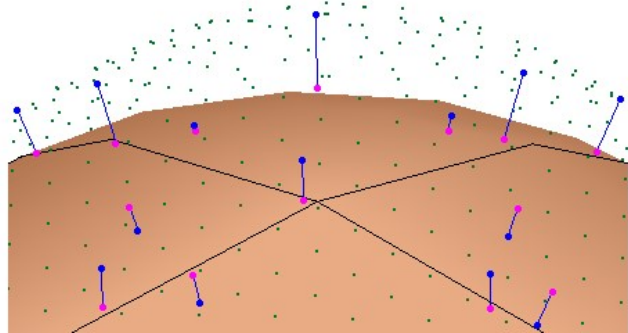
Create Points on Skin



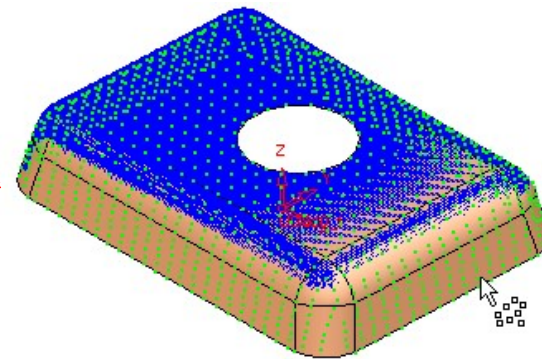
Create points with a constant difference the points, ignoring areas with a small curvature. The points are created as a point cloud. These points can then be used in the Spring back table of points.



Match Points on Point Cloud / STL



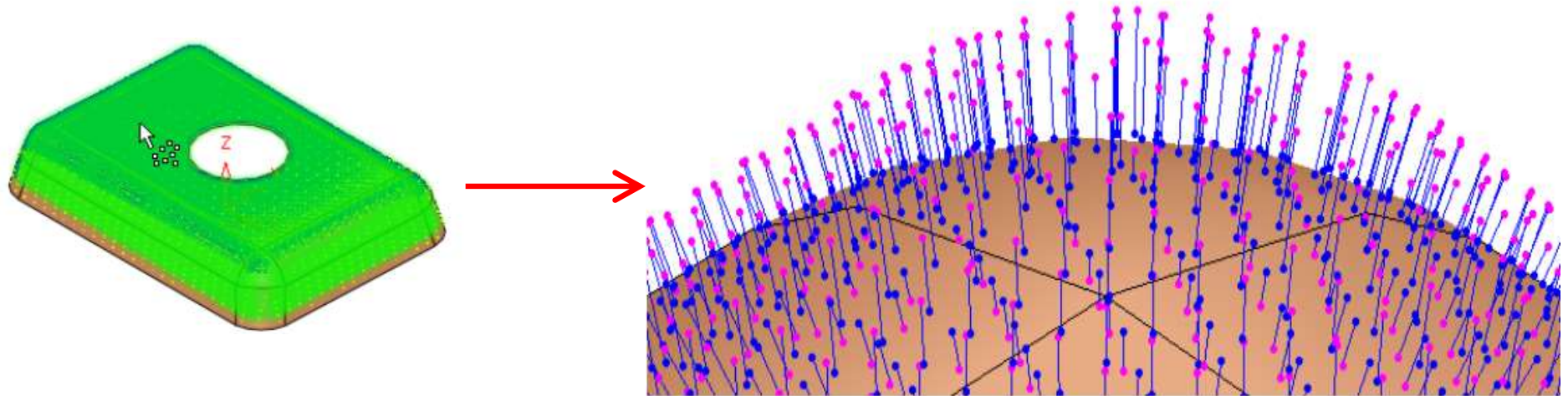
Create pairs of vectors between source points (a point cloud or regular points) and target points (another point cloud or STL).



Match Points on Skin



Create pairs of vectors between a source body (a Mesh, a point cloud or regular points) and their projection onto the skin of a target body.



Mesh Tools - Topics

- Smooth Mesh
- Composite on Mesh

Mesh Tool Support

- 3D Printer
- Scanner (Reverse Engineer)
- CAE (Moldex)

Smooth Mesh

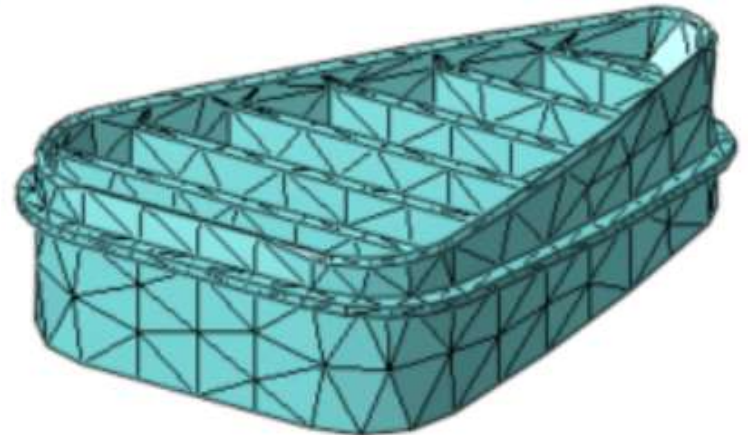


Smooth a mesh object or selected facets

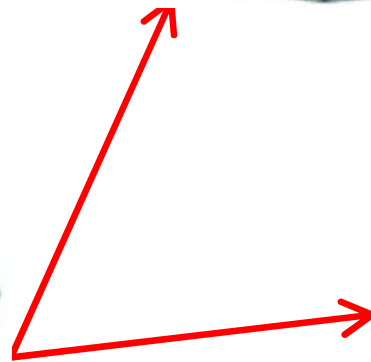
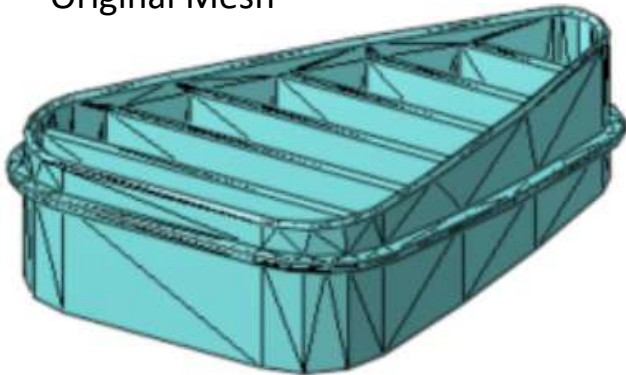
Smoothing Level



Reface Mesh / Keep Mesh



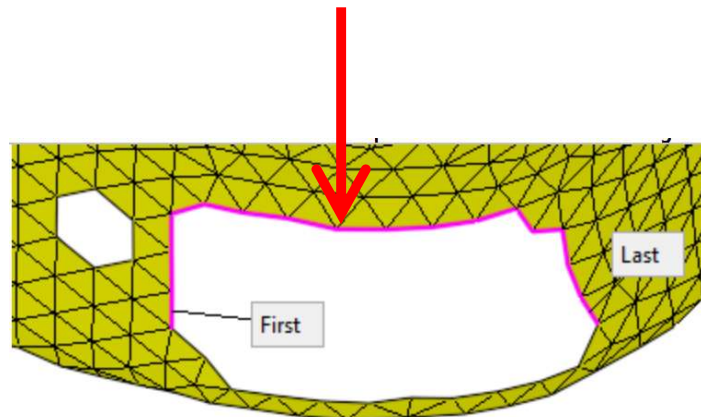
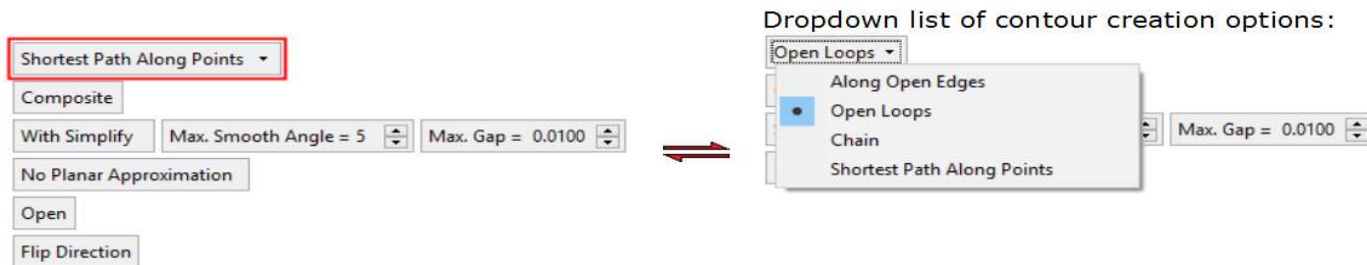
Original Mesh



Composite on Mesh



Create a composite curve contour from mesh facet edges.




Drafting

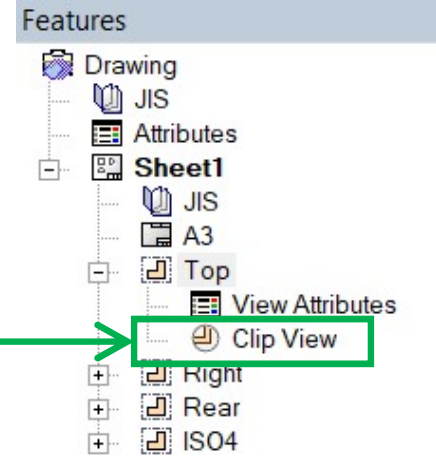
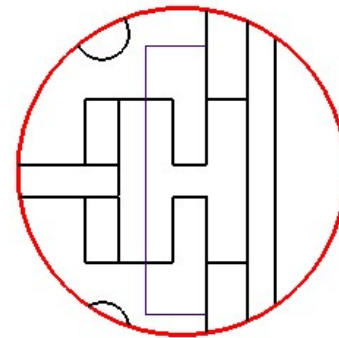
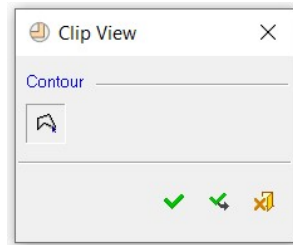
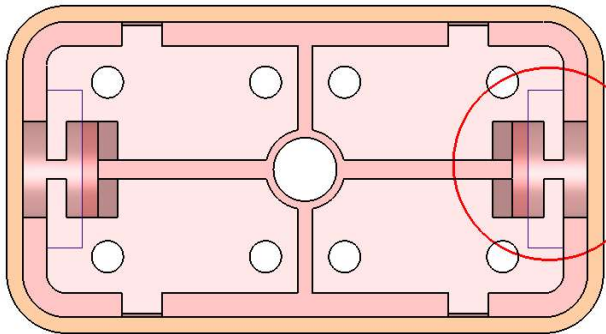
Main Topic

- *CLIP VIEW*

CLIP VIEW



Make Cycle by Contour 



 **Cimatron® 15 – What's New**

Parting
Mold Design
Electrode

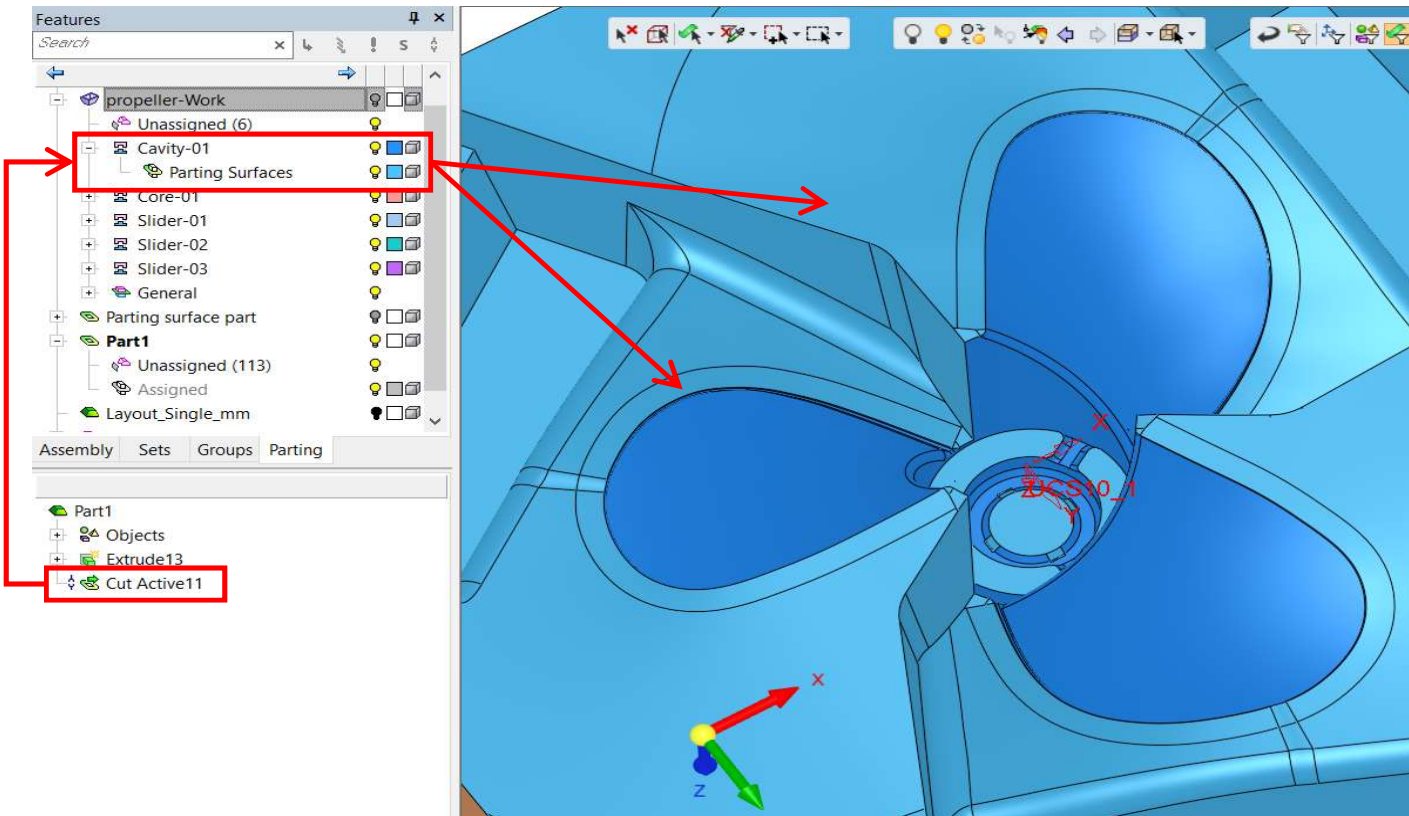


PARTING

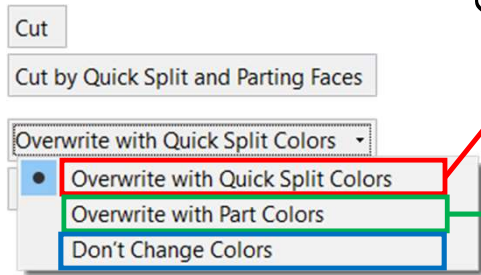
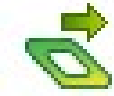
Main Topic

- *Cut Active*

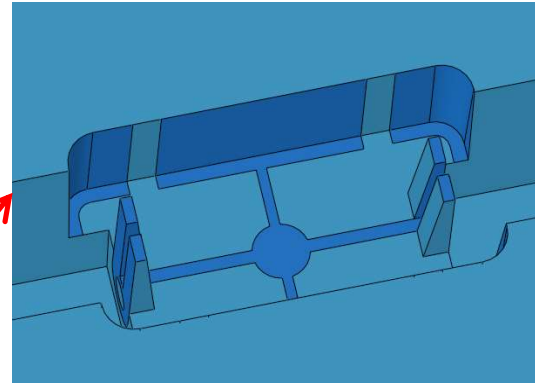
Cut Active



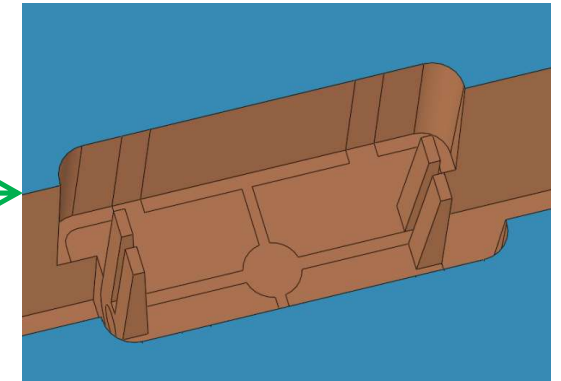
Cimatron 14



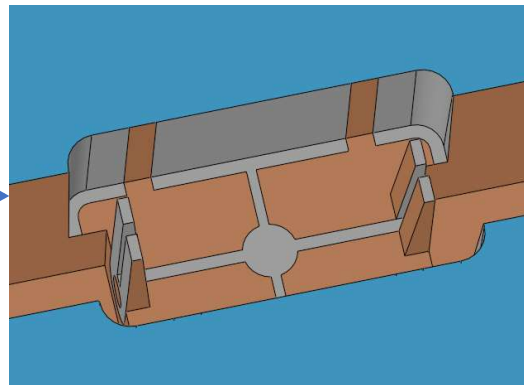
Overwrite with Quick Split Colors



Overwrite with Part Colors



Don't Change Colors



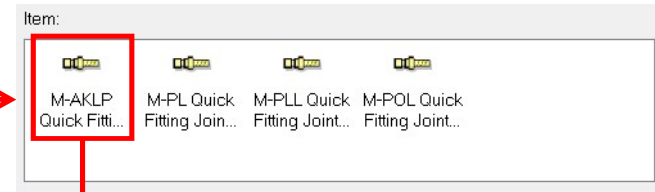
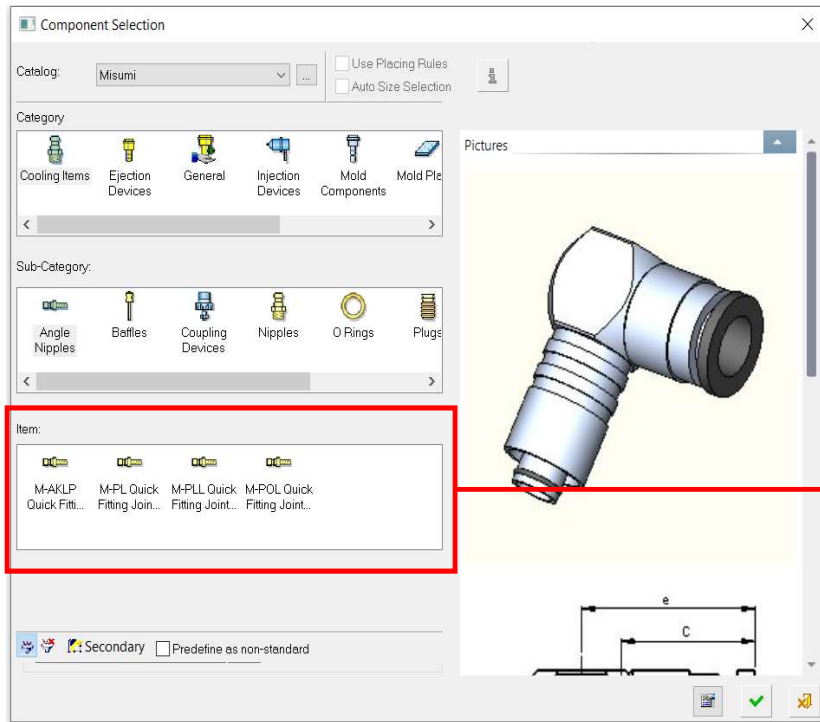
MOLD DESIGN

Main Topic

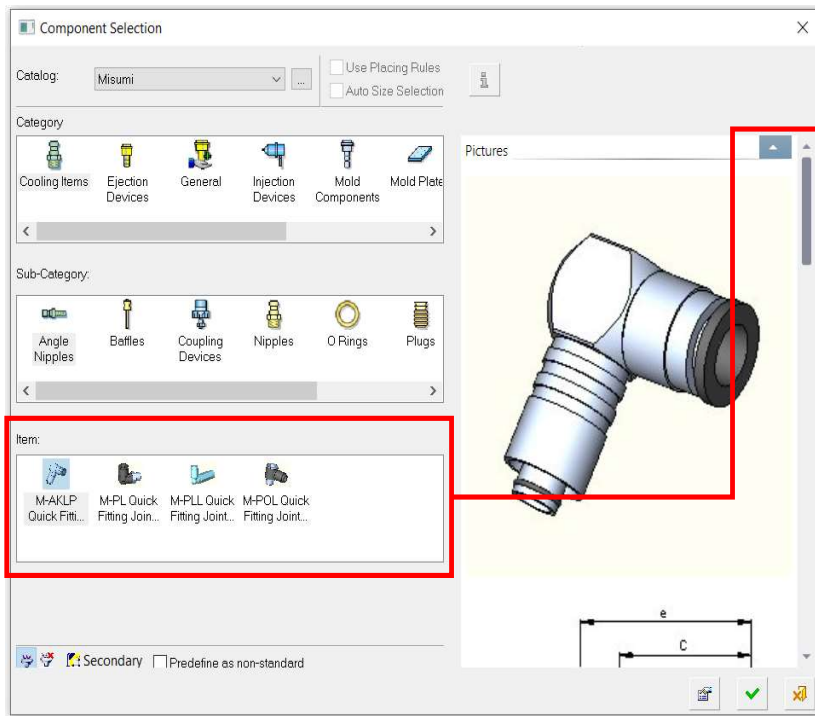
- *Catalog Item*
- *Ejector Pocket*
- *Cooling Labeling*
- *Cooling Distance Map*
- *Hole Safety Distance*
- *Conformal Cooling Design*

Catalog Item

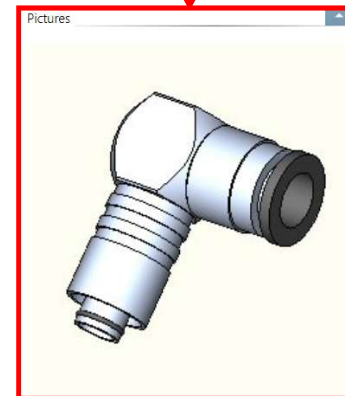
Cimatron
14



Catalog Item



Cimatron
15



Change Icon Picture

Ejector Pocket

CIMATRON 14

Use Active Part as Reference

Set the Constant Fit length ▾

L Fit = 15.0000

Diameter by D Clearance

▲ D Clearance = 0.5000

Min. L Clearance = 55.0000

Max. L Clearance = 55.0000

Picture

CIMATRON 15

Use Active Part as Reference

Set the Constant Fit length ▾

L Fit = 15.0000

Diameter by D Clearance

▲ D Clearance = 0.5000

Min. L Clearance = 55.0000

Max. L Clearance = 55.0000

Picture

Diameter from Catalog

D = 8.0000

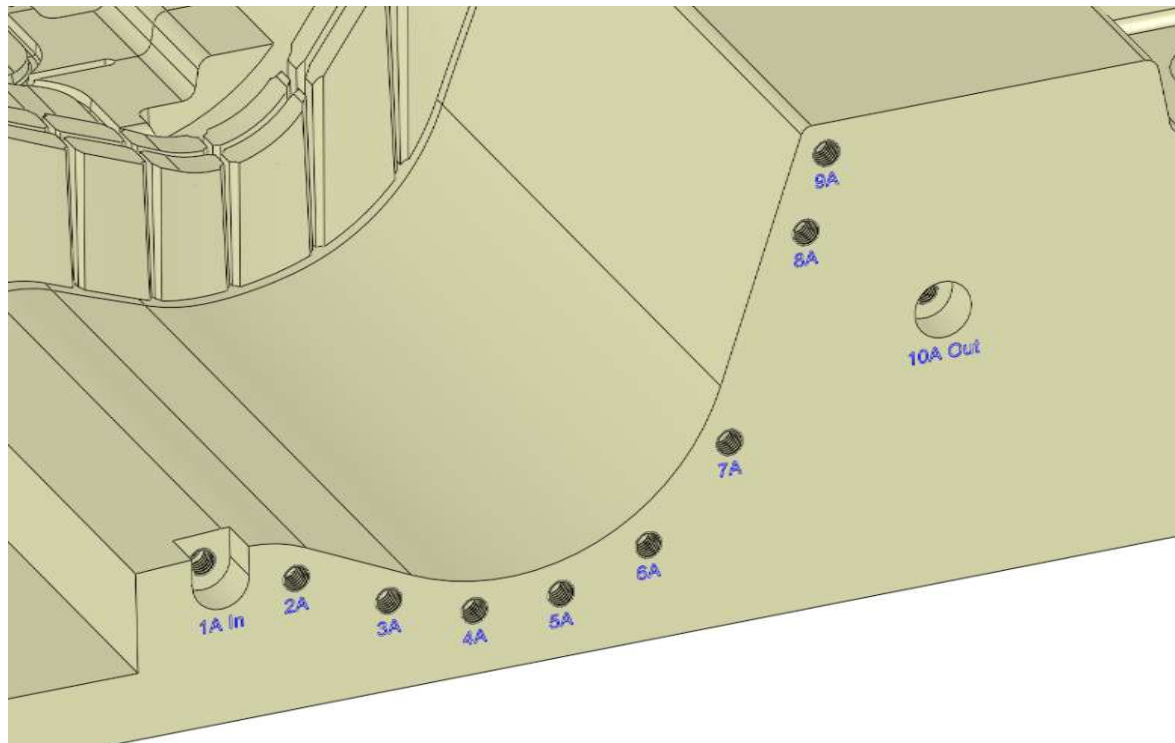
Min. L Clearance = 55.0000

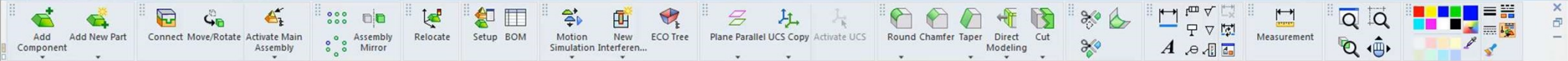
Max. L Clearance = 55.0000

Picture

Cooling Labeling

- Create labels for cooling holes in record speed





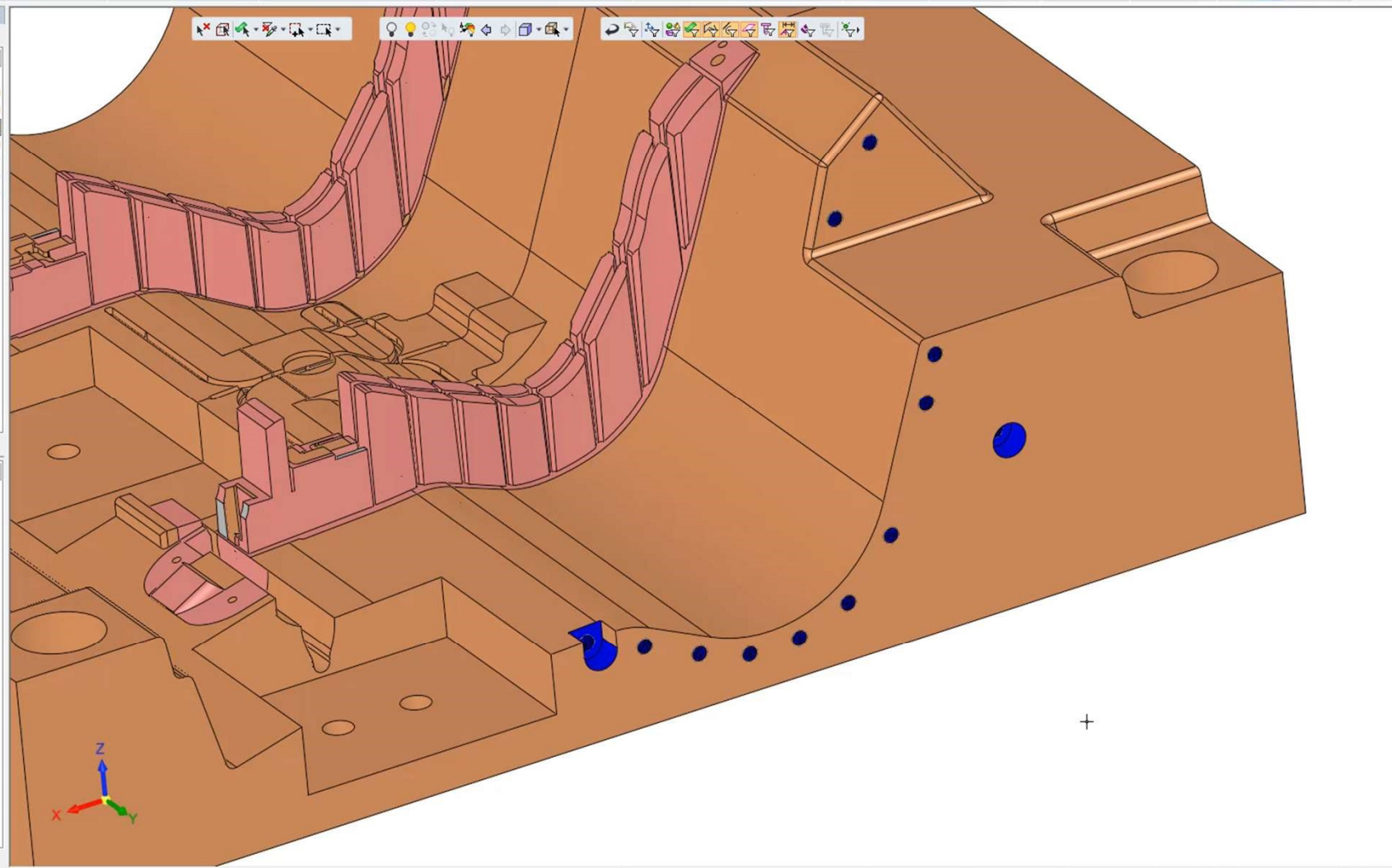
Features

- Pedal_MD
 - FixedSide_Hsc
 - MovableSide_Hsc**
 - Ejection_Hsc
 - Sliders
 - Parting_Pedal_MD
 - LayoutTypeB
 - RunnerPart_Pedal_MD

Assembly Sets Groups Parting ECO

MovableSide_Hsc

- Features
- Add Operations
- Cut Operations
- MoldDesign Operations
 - Cooling Objects159
 - Cooling Objects160
 - Cooling Cut171



Features Sets M-View

Hole Safety Distance



CIMATRON 14

Analyze All ▾

Cooling vs. Other Faces Min. Distance = 7.0000 ▾

Cooling vs. Cooling holes Min. Distance = 14.0000 ▾

Cooling vs. Regular Holes Min. Distance = 7.0000 ▾

Regular vs. Regular Holes Min. Distance = 0.5000 ▾

Regular Holes vs. Other Faces Min. Distance = 1.0000 ▾

Start Analysis



CIMATRON 15

Analyze All ▾

Cooling Vs. Active Faces Min. Distance = 7.0000 ▾

Cooling vs. Other Faces Min. Distance = 7.0000 ▾

Cooling vs. Cooling Holes Min. Distance = 14.0000 ▾

Cooling vs. Regular Holes Min. Distance = 7.0000 ▾

Regular vs. Regular Holes Min. Distance = 0.5000 ▾

Regular Vs. Active Faces Min. Distance = 1.0000 ▾

Regular Holes vs. Other Faces Min. Distance = 1.0000 ▾

Start Analysis

Hole Safety Distance



Analyze All ▾

Cooling Vs. Active Faces Min. Distance = 7.0000

Cooling vs. Other Faces Min. Distance = 7.0000

Cooling vs. Cooling Holes Min. Distance = 14.0000

Cooling vs. Regular Holes Min. Distance = 7.0000

Regular vs. Regular Holes Min. Distance = 0.5000

Regular Vs. Active Faces Min. Distance = 1.0000

Regular Holes vs. Other Faces Min. Distance = 1.0000

Start Analysis

10.23

COOLING HOLE

Hole Safety Distance		
		Comment
Cooling Vs. Active Faces	15.00	
Collision 1	10.23	
Sub-Collision 1	12.55	
Sub-Collision 2	12.55	
Sub-Collision 3	10.23	
Sub-Collision 4	10.23	
Sub-Collision 5	10.23	
Sub-Collision 6	12.55	
Sub-Collision 7	10.23	
Sub-Collision 8	10.23	
Collision 2	10.23	
Collision 3	10.73	
Collision 4	10.73	

21.87

REGULAR HOLE

Regular Vs. Active Faces	40.00	
Collision 1	21.36	
Sub-Collision 1	21.87	
Sub-Collision 2	21.87	
Sub-Collision 3	21.36	
Sub-Collision 4	29.40	

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อีเมล : info@saeilo.co.th เว็บไซต์ : www.saeilo.co.th

Hole Safety Distance



Analyze All ▾

Cooling Vs. Active Faces Min. Distance = 7.0000

Cooling vs. Other Faces Min. Distance = 7.0000

Cooling vs. Cooling Holes Min. Distance = 14.0000

Cooling vs. Regular Holes Min. Distance = 7.0000

Regular vs. Regular Holes Min. Distance = 0.5000

Regular Vs. Active Faces Min. Distance = 1.0000

Regular Holes vs. Other Faces Min. Distance = 1.0000

Start Analysis

Hole Safety Distance		
		Comment
Cooling Vs. Active Faces	15.00	
Collision 1	10.23	
Sub-Collision 1	12.55	
Sub-Collision 2	12.55	
Sub-Collision 3	10.23	
Sub-Collision 4	10.23	
Sub-Collision 5	10.23	
Sub-Collision 6	12.55	
Sub-Collision 7	10.23	
Sub-Collision 8	10.23	
Collision 2	10.23	
Collision 3	10.73	
Collision 4	10.73	

Regular Vs. Active Faces	40.00	
Collision 1	21.36	
Sub-Collision 1	21.87	
Sub-Collision 2	21.87	
Sub-Collision 3	21.36	
Sub-Collision 4	29.40	



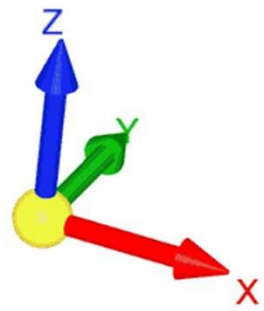
Features

Search

- TEST-CIM15_MD_MD
 - Fixed Side_TEST-CIM15_MD...
 - TSB plate_PL T S B 273...
 - AS-YZ plate_PL AS-YZ ...
 - Leader pin M-GPA_M...
 - Socket Head Cap Scre...
 - CAVITY INSERT A(4)
 - LRK Locating Rings_LR...
 - SBRR Sprue Bushings#...
 - CB Socket Head Cap S...
 - CB Socket Head Cap S...
 - CoolingPart_Fixed Side...
 - Nipples
 - AP Anular Pins AP 16...

Assembly Sets Groups Parting

- TEST-CIM15_MD_MD
 - Features
 - Cut Operations
 - MoldDesign Operations



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อีเมล : info@saeilo.co.th เว็บไซต์ : www.saeilo.co.th

Features

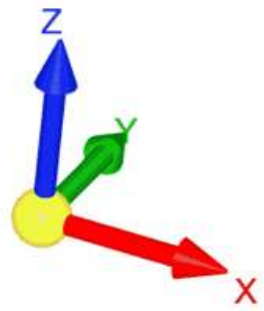
Search

- TEST-CIM15_MD_MD
 - Fixed Side_TEST-CIM15_MD...
 - TSB plate_PL T S B 273...
 - AS-YZ plate_PL AS-YZ ...
 - Leader pin M-GPA_M...
 - Socket Head Cap Scre...
 - CAVITY INSERT A(4)
 - LRK Locating Rings_LR...
 - SBBR Sprue Bushings#...
 - CB Socket Head Cap S...
 - CB Socket Head Cap S...
 - CoolingPart_Fixed Side...
 - Nipples
 - AP Angular Pins AP 16...

Assembly Sets Groups Parting

- TEST-CIM15_MD_MD
 - Features
 - Cut Operations
 - MoldDesign Operations

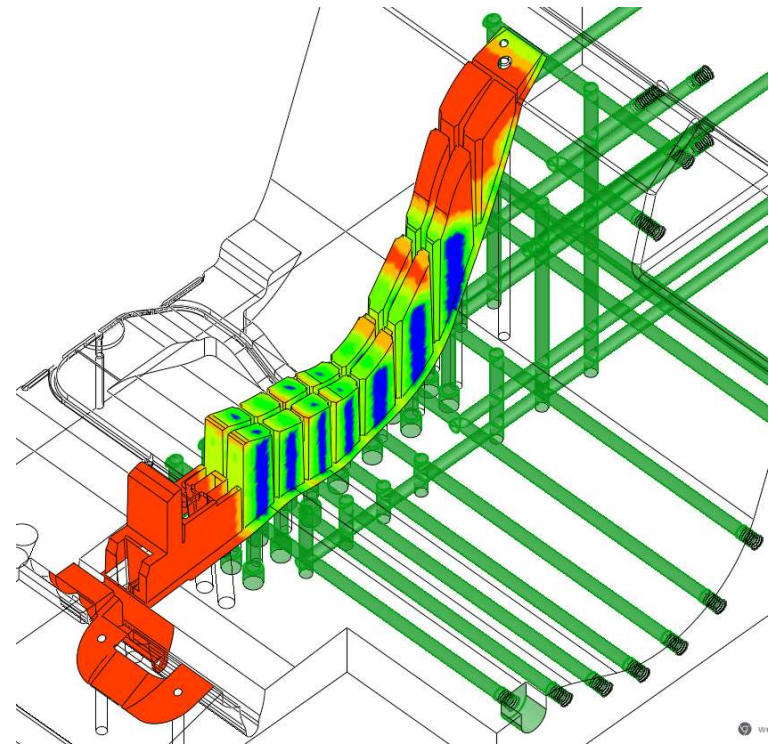
Navigation and tool icons



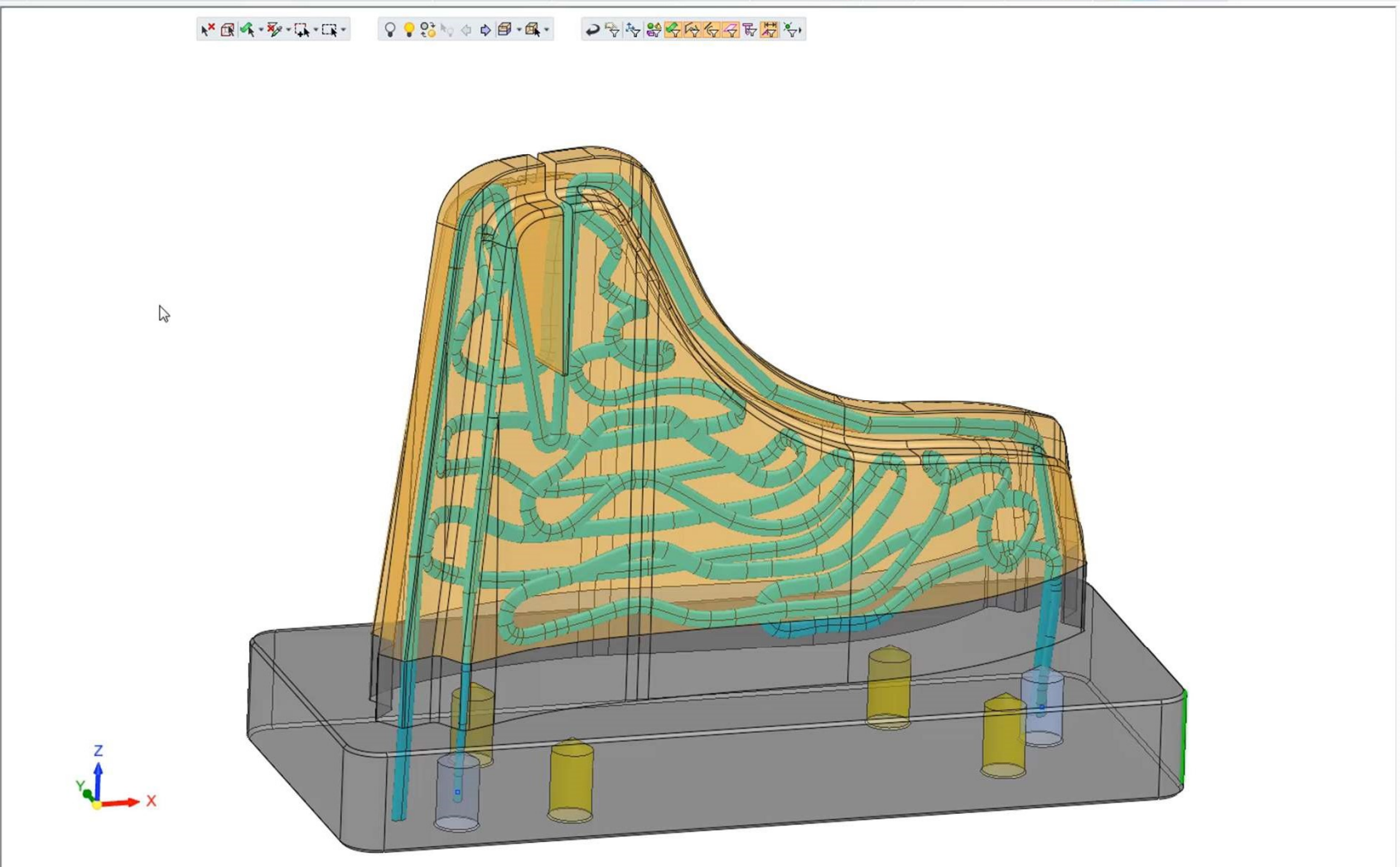
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Cooling Distance Map

- Mini Mold Cooling Analysis
- Distances between active faces and cooling channels
- Get a quick reading on your cooling efficiency



- Features
- BoundedFace59
 - BoundedFace61
 - Stitch62
 - Round66
 - Composite Face67
 - Round68
 - Round69
 - Copy Mirror63
 - Plane-Parallel70
 - Plane-Parallel71
 - Sketcher72
 - Sketcher73
 - Direct - Offset96
 - Copy Linear111
 - Remove & Extend112
 - Remove & Extend113
 - Direct - Offset114
 - IntCurve116
 - Sweep118
 - Offset Curve117
 - Cut119
 - Round120
 - Round121
 - Move Linear128
 - Merge122
 - Round123
 - Bend74
 - Bend75
 - Extrude81
 - Extrude84
 - Sketcher83
 - Round85
 - Merge86
 - Chamfer88
 - Sketcher90
 - Hole91
 - Hole92
 - Extrude138
 - Sketcher137
 - Taper139
 - Cut140
 - Single Point158
 - Conformal Cooling160
 - Auto Conformal Circuit161
 - Conformal Cooling162



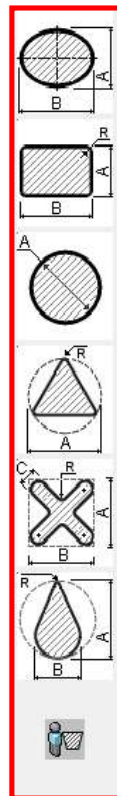
Mold Design Tools

Option

Conformal Cooling Design



Create complex conformal cooling channels.



Create Spine Dynamically

Next Point Parameters

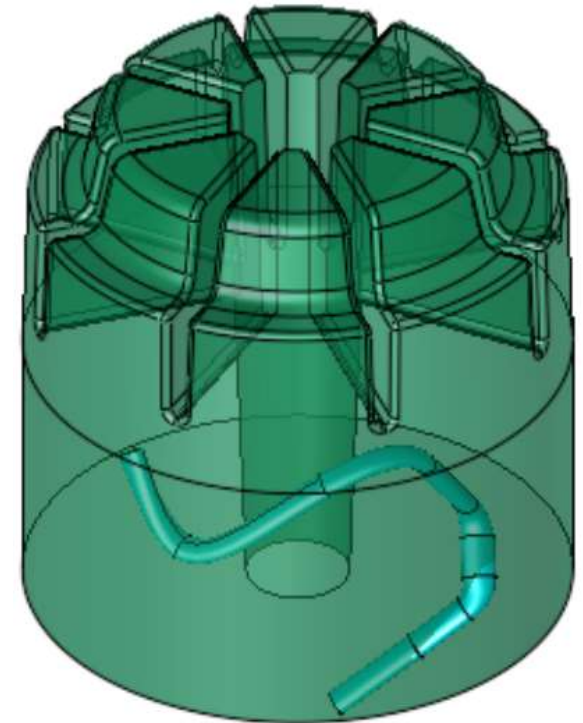
Spine as Touch Point
 Spine as Center

A 5.0
 B 3.0
 C
 R
 Area 11.781

Angle 90.

Spline
 Line with Corner Radius
 Corner Radius 5.0

Mesh Offset Off
 Twist Section - Off
 Visual Analysis Off



Feature Guide

Conformal Cooling Design

Required:

Optional:

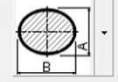
Features

Name

- Cut56
- Sweep57
- BoundedFace59
- BoundedFace61
- Stitch62
- Round66
- CompositeFace67
- Round68
- Round69
- CopyMirror63
- Plane-Parallel70
- Plane-Parallel71
- Sketcher72
- Sketcher73
- Direct - Offset96
- Copy Linear111
- Remove & Extend112
- Remove & Extend113
- Direct - Offset114
- IntCurve116
- Sweep118
- Offset Curve117
- Cut119
- Round120
- Round121
- Move Linear128
- Merge122
- Round123
- Bend74
- Bend75
- Extrude81
- Extrude84
- Sketcher83

Features Sets M-View

Current Point(s) Parameters



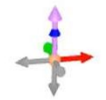
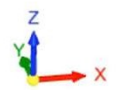
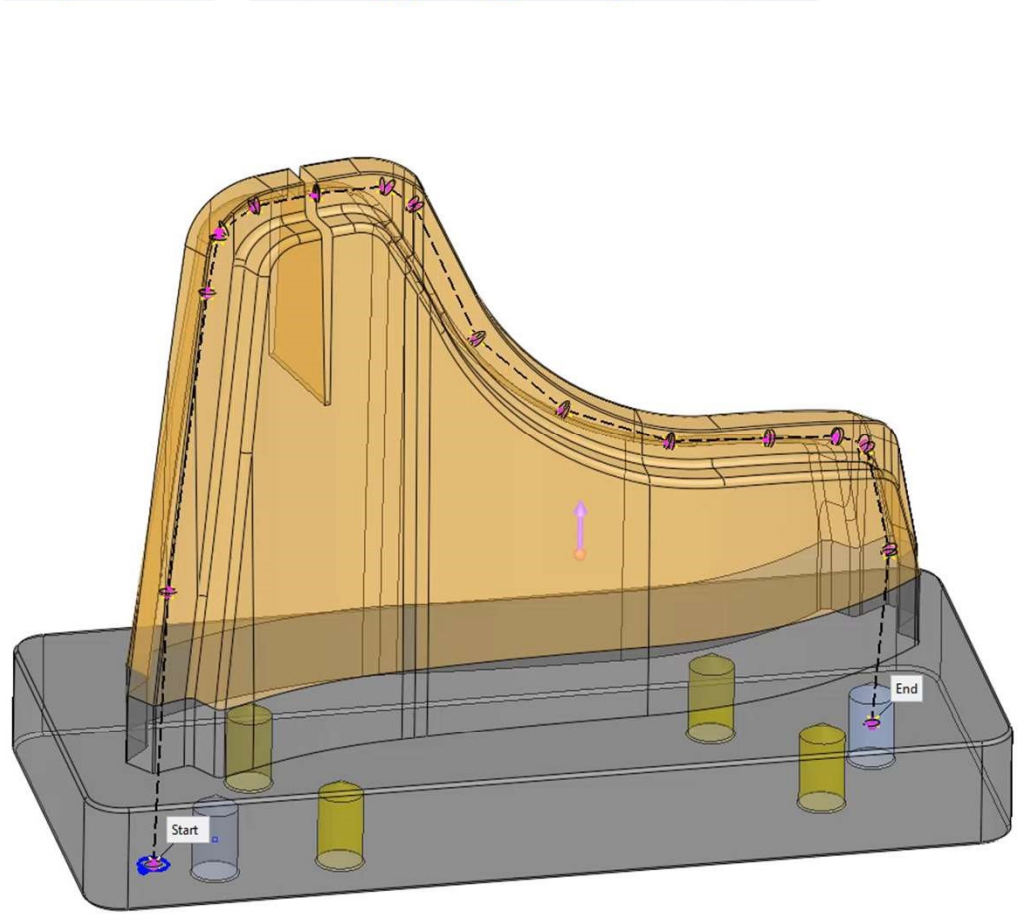
A 5.0
 B 3.4
 C
 R
 Area 13.352

Angle 0.0

Spline
 Line with Corner Radius
 Corner Radius 3.0

Mesh Offset Off

Near-Vertical Spine Sections: Twist Section Pitch = 25



ELECTRODE

Main Topic

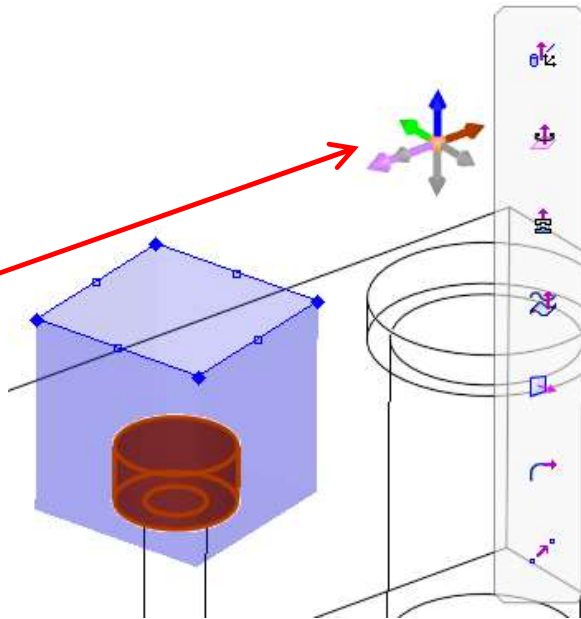
- *Extract Electrode*
- *Blank (Electrode)*

Extract Electrode



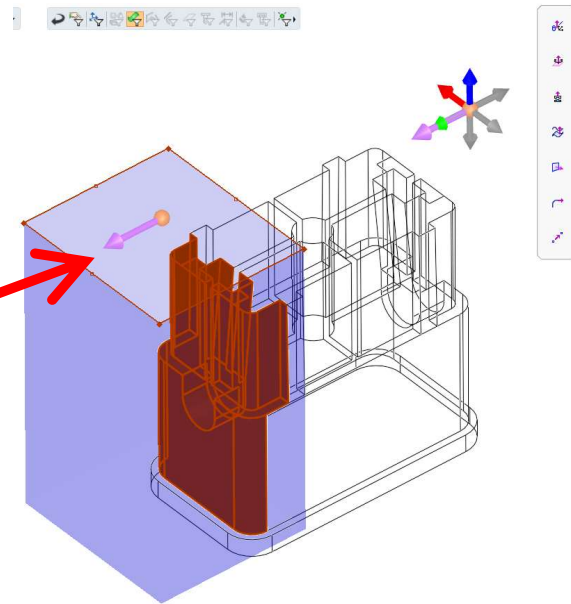
CIMATRON 14

- Rectangular
- Clearance = 20.0000
- Length = 20.0000
- Width = 10.0000
- Angle = 0
- Reference Line**
- X Position = 6.2362
- Y Position = 79.8445
- Trim
- Blank Offset= 0.0000
- Activate Electrode

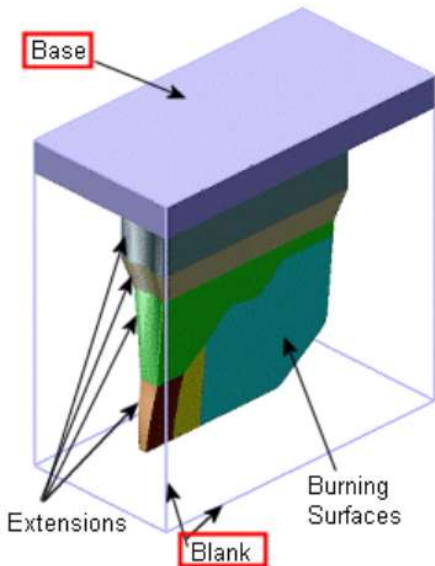


CIMATRON 15

- Rectangular
- Clearance = 20.0000
- Length = 15.0000
- Width = 76.0000
- Angle = -90
- By Direction**
- Trim
- Blank Offset= 0.0000
- Activate Electrode
- Suggest Direction



Blank (Electrode)



Rectangular
Blank Wire Frame

Free Blank Size 20.000
Blank X = 45.0000 10.000
Blank Y = 10.0000 1.000
0.100

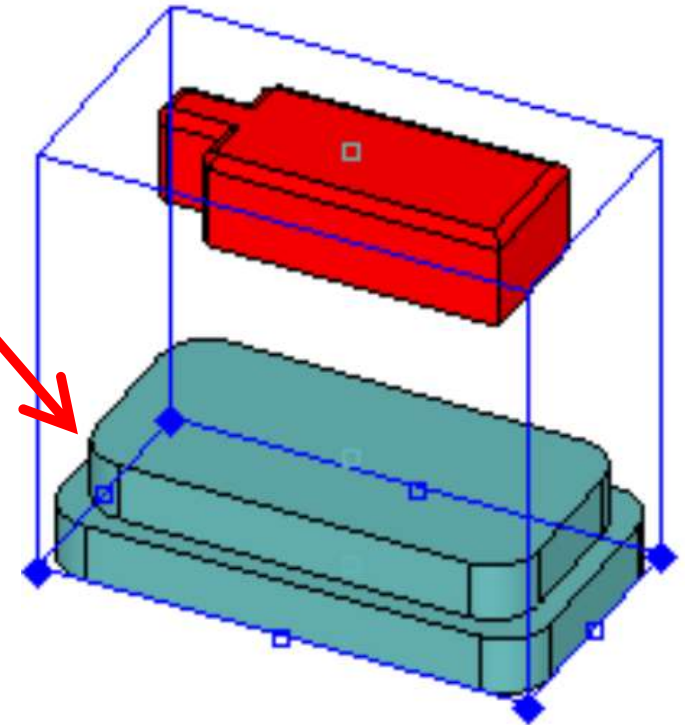
X Position = -50.0000
Y Position = 0.0000
Z Position = 49.2030

Angle = 0 By Direction

Base ▾
Don't Offset Base

Round Base
Round Size = 4.0000

Blank Height = 79.3030
Base Height = 30.0000
Clearance = 20.0000
Allowance = 0.1000



Thank you



Cimatron 15 NC version highlights

12 November 2019

Mr.Jakaphun Intarasing

CAD\CAM Engineering





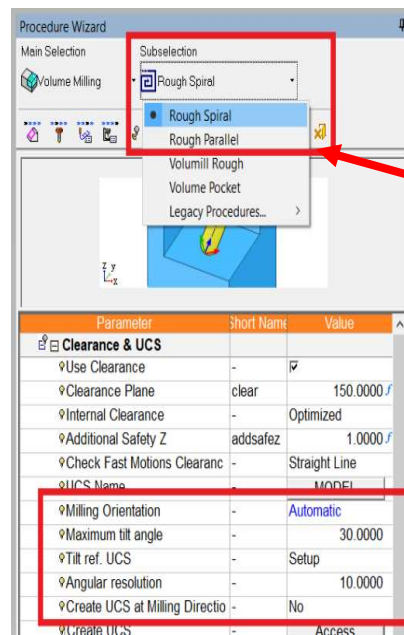
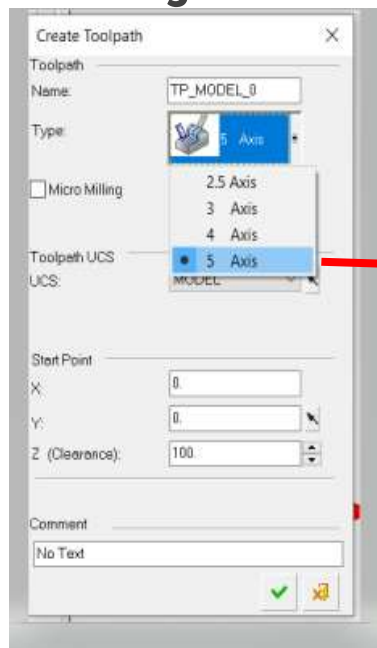
NC Version Highlights

- Enhanced Rough 3 Axis For 5Axis License
 - Rough Spiral
 - Rough Parallel
- Enhanced Surface Milling 3 Axis For 5Axis License
- - Cutter Tilt Control
 - Finish – 3D Cutter Compensation, 4 Limit Angles For 3Axis
- Plate Machining Automation and Enhancements 2.5 Axis
- Enhanced 5 axis
 - Automated Multi-axis Roughing
 - Advanced Finish with Geodesic Technology
 - Guided Multi-axis Cleanup
 - Automated 5 axis Deburring
- Measurement & Mill-Turn

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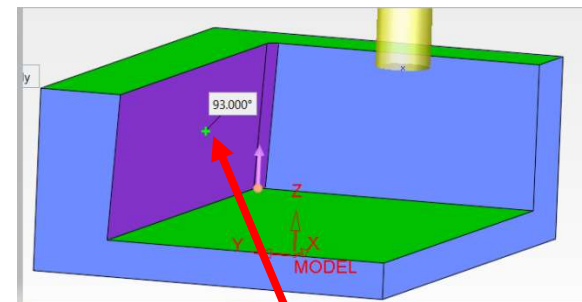
Enhanced Rough 3 Axis For 5Axis License

Milling Orientation เป็น Option ที่เพิ่มเข้ามาใน Mode ของงาน Rough ซึ่งจะช่วยให้งาน Rough ทำได้มากกว่า 3 Axis ขึ้นไป



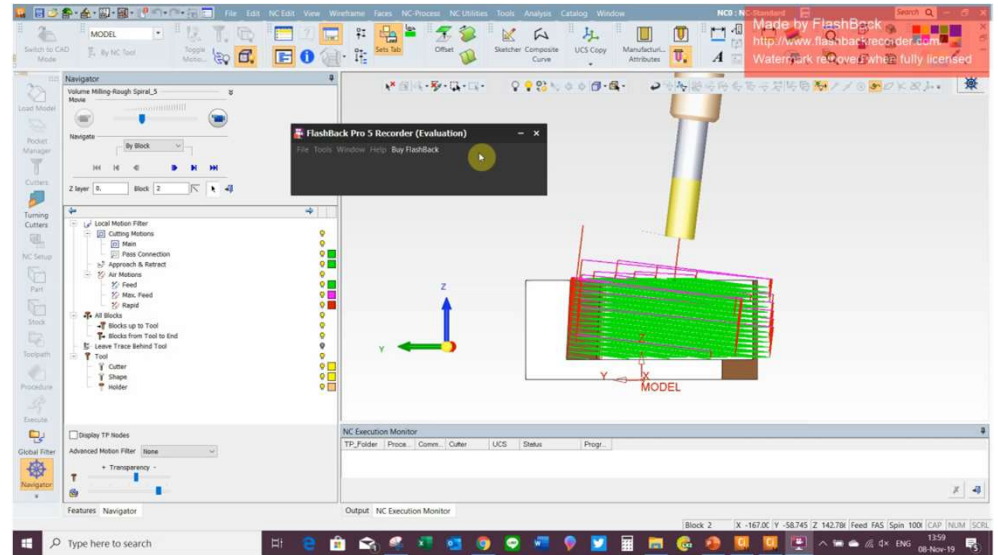
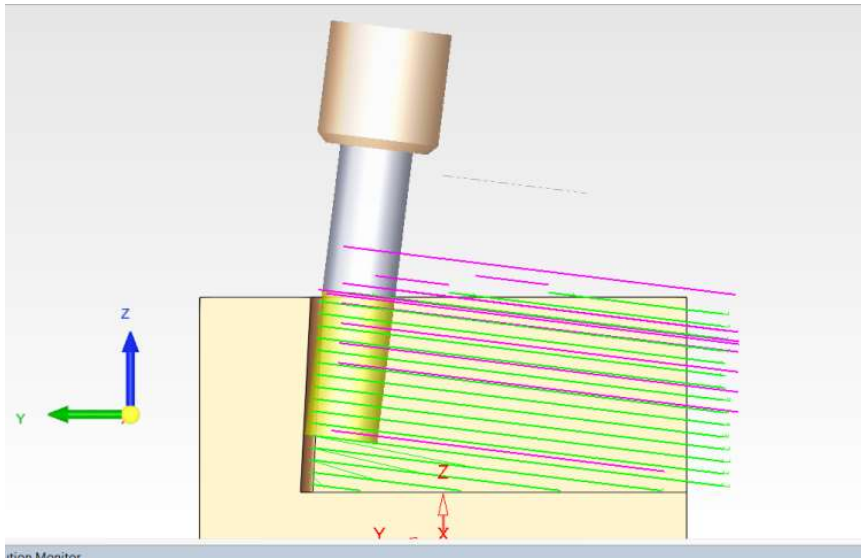
จัดอยู่ใน Mode ของ Rough Spiral กับ Rough Parallel

สามารถกำหนดมุมได้ตามความเหมาะสมของงาน



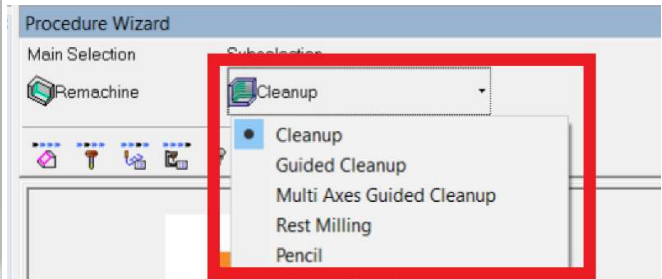
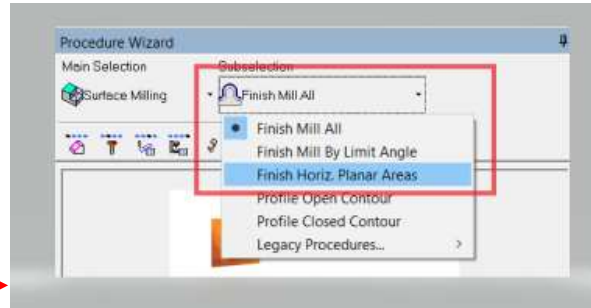
กำหนดมุมหักเข้าไปได้ด้านใน

Enhanced Rough 3 Axis



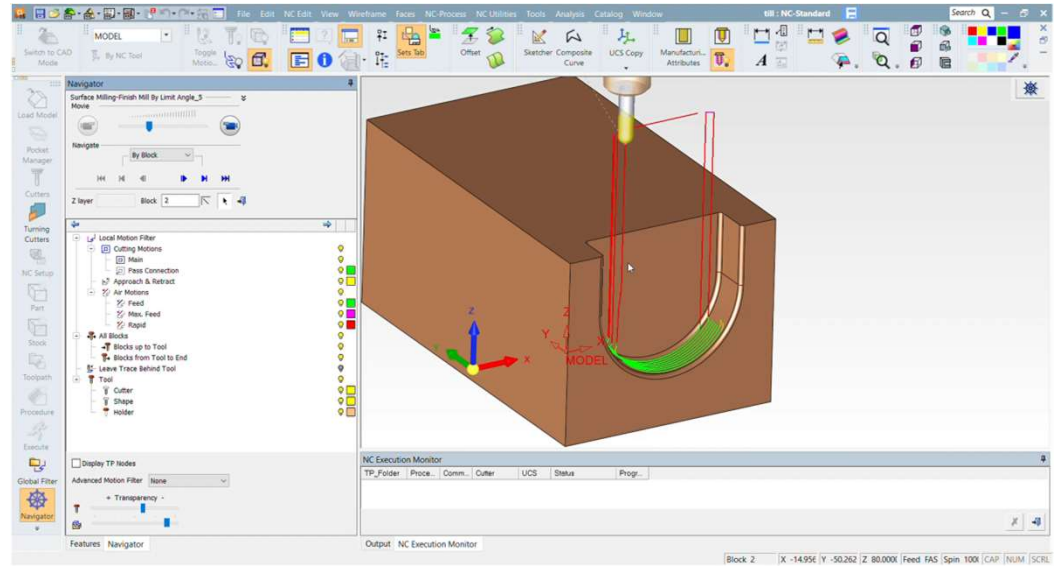
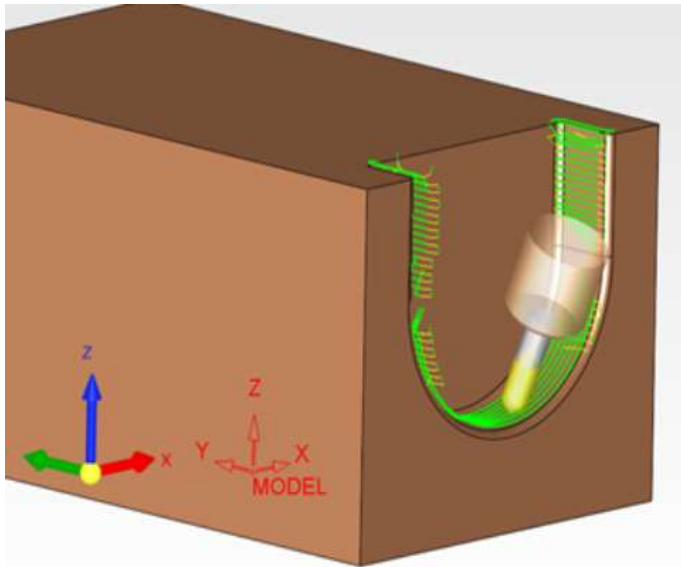
Cutter Tilt Control

เป็น Option ที่เพิ่มเข้ามาในE15 ซึ่งใช้สำหรับงานมากกว่า3 Axis ขึ้นไป สำหรับUser ที่มี Option 5 Axis อยู่แล้วนั้น User สามารถเลือกเป็นType 5Axis ได้เลย ซึ่งจะอยู่ใน Mode Surface Milling และ Remachine



<input checked="" type="checkbox"/> Cutter Tilt Control	-	<input checked="" type="checkbox"/>
✦ Maximum Angle	-	25.0000
✦ Preferred Angle	-	12.5000
✦ Gouge Check	-	<input checked="" type="checkbox"/>
✦ Calculate Tilting	-	Only where Nece
✦ Tilting Priority	-	Stable Tilt Angle

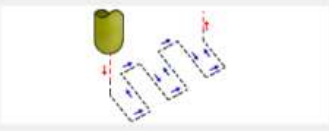
Cutter Tilt Control



Finish For 3Axis by Limit Angle, 4 Limit Angles

E14

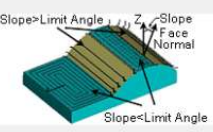
Main Selection: Surface Milling
Subselection: Finish Mill By Limit Angle



Parameter	rt Ni	Value
Horizontal Cutting Mode	-	Climb
Horizontal Cutting Direction	-	Outside In
Variable Horiz. Step	-	<input type="checkbox"/>
Horizontal Step	cls	1.0000 ✓
Vertical Areas	-	<input checked="" type="checkbox"/>
Vertical Machining Method	-	Layers
Vertical Cutting Mode	-	Climb
Vertical Step	cld	1.0000 ✓
Toolpath Smoothness	-	Standard
General Machining Order	-	Vertical First
Slope Limit Angle	dra	33.0000 ✓

E15

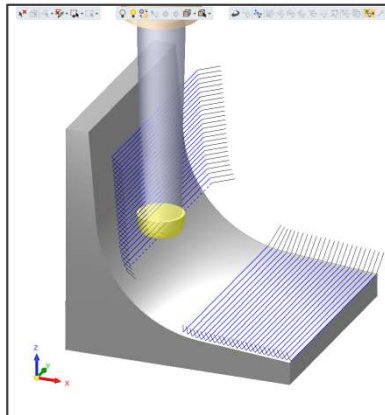
Main Selection: Surface Milling
Subselection: Finish Mill By Limit Angle



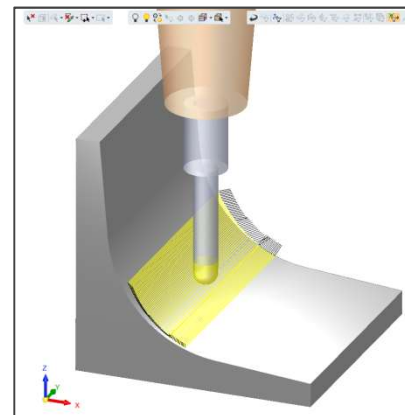
Parameter	Short Name	Value
Vertical Step	-	See Cutters
Sharp edge passes connectio	-	None
Mill Waterfalls in Vertical Regi	-	<input type="checkbox"/>
Hit Horizontal Planes	-	<input checked="" type="checkbox"/>
Mill to Min. Z	-	<input type="checkbox"/>
Mill Breaches	-	<input checked="" type="checkbox"/>
Vert. Cutters Overlap	-	Z Overlap
Machining By	-	Region
Toolpath Smoothness	-	Standard
General Machining Order	-	Horizontal First
Flip Start Side	-	Flip
Advanced Limit Angle	-	<input checked="" type="checkbox"/>
Min. Horizontal Angle	-	0.0000 ✓
Max. Horizontal Angle	-	89.0000 ✓
Min. Vertical Angle	-	89.0000 ✓
Max. Vertical Angle	-	90.0000 ✓

Finish by Limit Angle, 4 Limit Angles

- More user control
- Enables utilizing larger step-over wherever possible
- Scallop vs step-over smart convertor



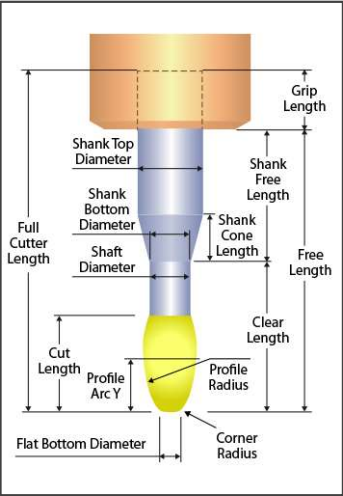
Advanced Limit Angle	<input checked="" type="checkbox"/>
Min. Horizontal Angle	1.0000 f
Max. Horizontal Angle	22.0000 f
Min. Vertical Angle	68.0000 f
Max. Vertical Angle	89.0000 f



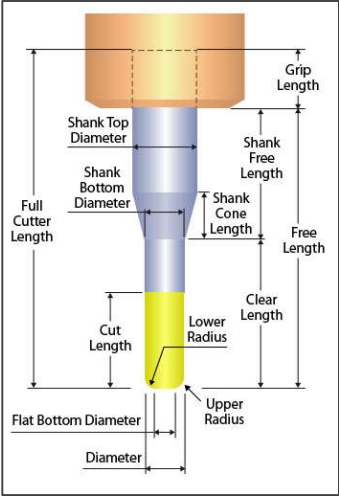
Advanced Limit Angle	<input checked="" type="checkbox"/>
Min. Horizontal Angle	18.0000 f
Max. Horizontal Angle	33.0000 f
Min. Vertical Angle	33.0000 f
Max. Vertical Angle	72.0000 f

Special Cutters : Circle Segment

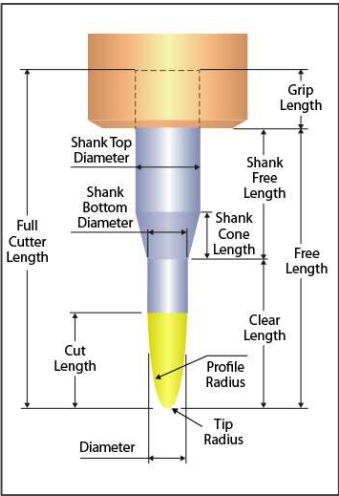
All circle segments cutters types are now supported for finish



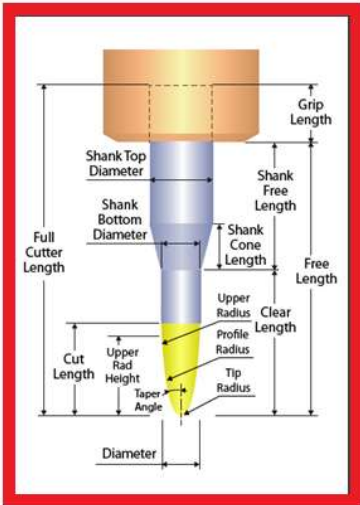
Barrel



Lens



Oval



3 Radii

Circle Segment Cutters

The screenshot shows the 'Cutters and Holders' software interface. At the top, there is a table listing various cutters. Below the table, the 'Cutter Name' is 'MOLDINO-3RAD-GP1LB20R202'. The 'Technology' is 'Circle Segment' and the 'Type' is '3 Radii'. The 'Diameter' is 20.0, 'Tip Radius' is 20.0, and 'Upper Radius Height' is 10.0. The 'Shank' section shows 'Bottom Diameter' as 17.8 and 'Top Diameter' as 20.0. The 'Shank Free Length' is 28.0. A 3D model of the cutter is shown in the center, with a yellow tip and a blue shank. A red arrow points from the 3D model to a text box on the right.

S.	C.	Cutter Name	M.	L.	Technology	Tip Type	Taper	Shank1	Shank2	Diameter	Holder	Extension	Taper Angle	Tip Angle	Corner Radius	Cut Length	Taper Length	Clc
1		MOLDINO-3RAD-GP1LB20R202	1		Circle Segment	3 Radii		+	+	20.000			45.000			10.000		10.0
4		MOLDINO-3RAD-GP1LB20R206	4		Circle Segment	3 Radii		+	+	20.000	+	+	0.000			10.000		10.0
2		MOLDINO-3RAD-GP1T206	2		Circle Segment	3 Radii		+	+	20.000	+	+	34.500			14.000		14.0
1		EMUGE_LENSE_10_20-1	1		Circle Segment	Lens				10.000					1.000	10.000		55.0
1		EMUGE_OVAL_10_85-2	1		Circle Segment	Oval				10.000	+					26.000		55.0

Cutter Name: MOLDINO-3RAD-GP1LB20R202
Comment: molino ZHW200-LB20-R6 020, R20,R2,R20

Technology: Circle Segment
Type: 3 Radii
Tip: Ball
Diameter: 20.0
Tip Radius: 20.0
Profile Radius: 1.9
Upper Radius: 20.0
Upper Radius Height: 10.0
Cut Length: 10.0
Clear Length: 10.0

Shank: Shank
Bottom Diameter: 17.8
Top Diameter: 17.8
Cone Length: 0.0
Shank Free Length: 28.0

Assembly: Holder Exten.

Mills Best at Slope Angle Ranges : 0.0° - 22.0° and 68.0° - 90.0°

Mills Best at Slope Angle Ranges : 0.0° - 22.0° and 68.0° - 90.0°

Toolpath Smoothness

E14

Parameter	rt Ni	Value
Horiz. Step	cls	1.0000 f
Vertical Areas	-	<input checked="" type="checkbox"/>
Vert. Machining Method	-	Layers
Vert. Cutting Mode	-	Climb
Vertical Step	cld	1.0000 f
Toolpath Smoothness	-	Fine Surface Quality
Preferred Points Distance	pre	0.8000
General Machining Order	-	Vertical First

E15

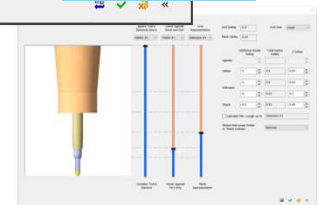
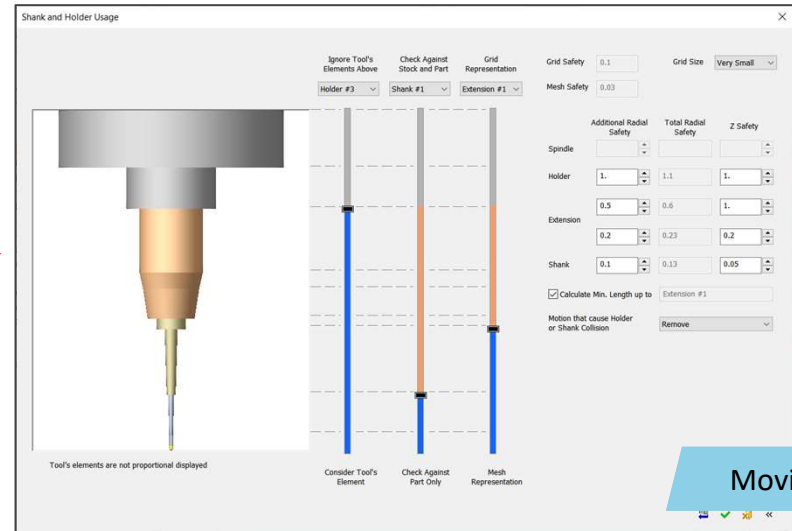
Parameter	Short Name	Value
Clearance & UCS	-	-
Entry & End Points	-	Optimized
Boundary Settings	-	-
Tolerance & Surf. Offset	-	Basic
Electrode Machining	-	No
Tool Trajectory	-	Basic
Horizontal Areas	-	<input type="checkbox"/>
Vertical Areas	-	<input checked="" type="checkbox"/>
Vert. Machining Method	-	Layers
Vert. Cutting Mode	-	Mixed
Vertical Step	clds	1.0000 f
Toolpath Smoothness	-	Fine Surface Q
Preferred Points Distance	prepodl	0.8000

Shank & Holder Control

E14

E15

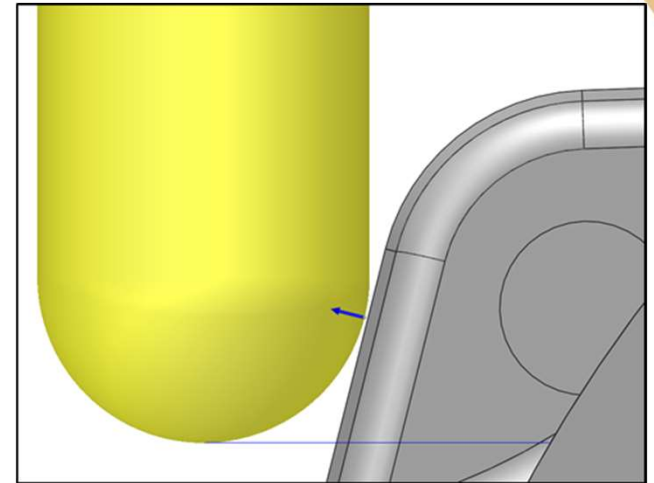
Shank & Holder		Advanced	
Ignore Holder	-	<input type="checkbox"/>	
Accurate Checking up to	-	Cutter	
Z-Safety for Holder	hol		1.0000 f
Use Minimum Radial Safety	-	<input checked="" type="checkbox"/>	
Calculate Un-Machined Areas	-	<input type="checkbox"/>	
Calculate Minimum Free Length	-	<input type="checkbox"/>	



Finish Functions

3D Cutter Compensation

- Used For cases where high accuracy is required
- Allowing machining of same program
- By adjusting on the controller
- the 3D compensation value
- without the need to recalculate the toolpath again
- 3 axis G-Code output
- the normal vector between the tool
- and the 3D surface, at touch point

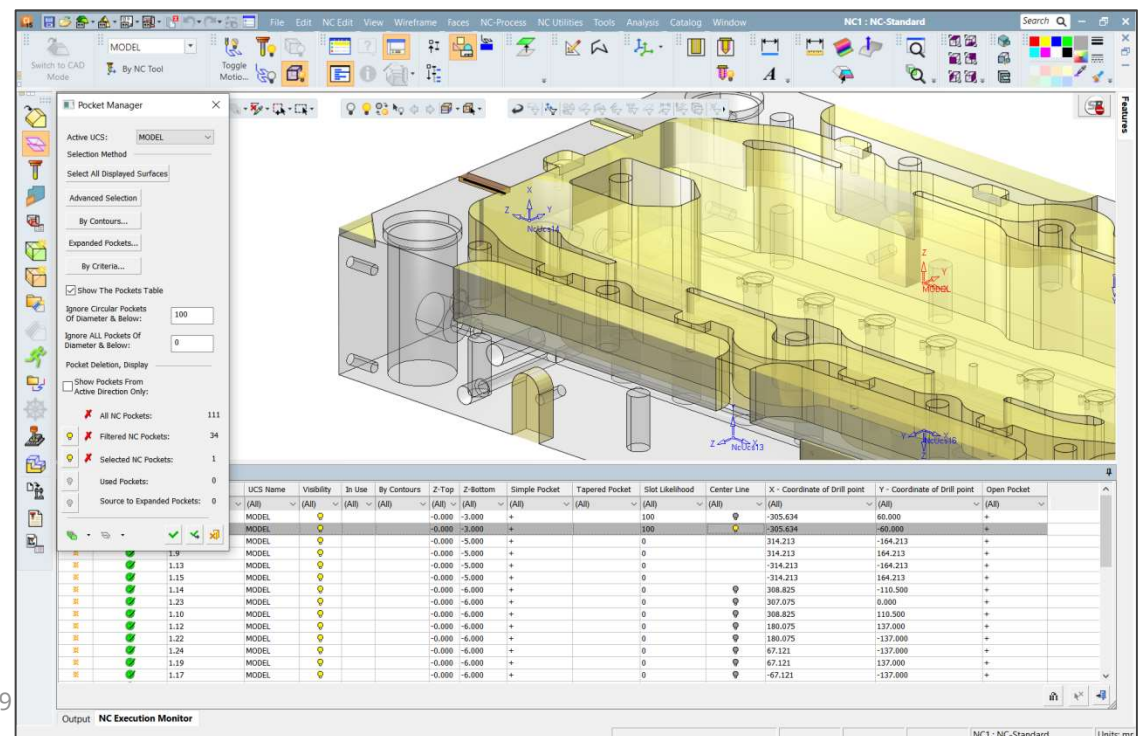


```
28 PLANE SPATIAL SPA0 SPB0 SPC0 TURN SEQ- TABLE ROT
29 L X26.406Y46.463 R0 FMAX
30 L Z125. R0 FMAX
31 M08
32 L Z68.999 R0 FMAX
33 L Z67.999 F200
34 LN X27.521Y47.142 Z67.999 NX-.625637527 NY+.067479901 NZ+.777189905 TX0.0 TY0.0 TZ+1. F200
35 LN X28.422Y48.086 Z67.999 NX-.625637527 NY+.067479901 NZ+.777189905 TX0.0 TY0.0 TZ+1.
36 LN X29.048Y49.232 Z67.999 NX-.625637527 NY+.067479901 NZ+.777189905 TX0.0 TY0.0 TZ+1.
37 LN X29.356Y50.5 Z67.999 NX-.625637527 NY+.067479901 NZ+.777189905 TX0.0 TY0.0 TZ+1.
38 LN X29.732Y53.983 Z67.999 NX-.625745405 NY+.067491538 NZ+.77710204 TX0.0 TY0.0 TZ+1. F500
```

Plate Machining: Basic Seat & Pro Seat

Pocket manager was improved and enhanced

- Automatic Detection from main directions
- Detection of
 - Slots
 - Corners

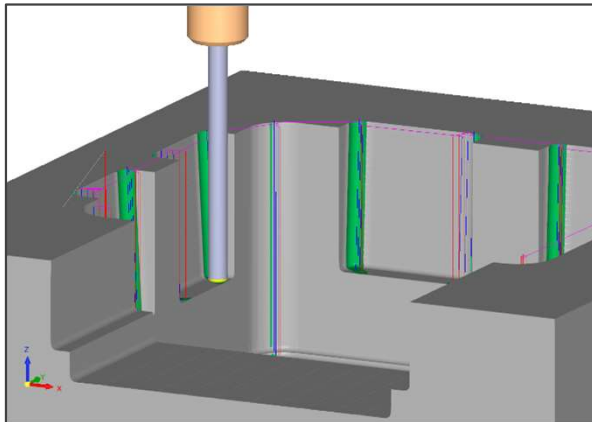


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Plate Machining: Corner Plunging

New Procedure for Corner Plunging

- Pocket Manager Detects Corners (vertical or slanted at an angle)
- Plunging Motions are parallel to the cylinder
- Gouge & Collision Free



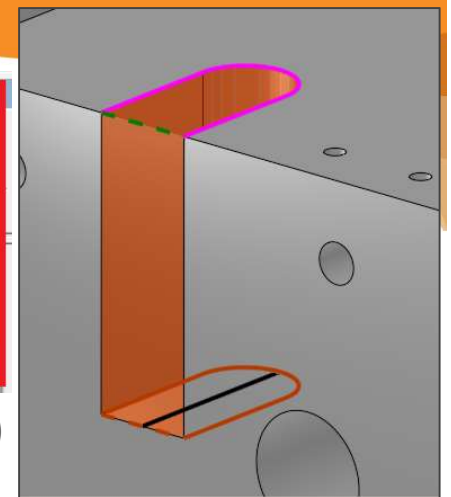
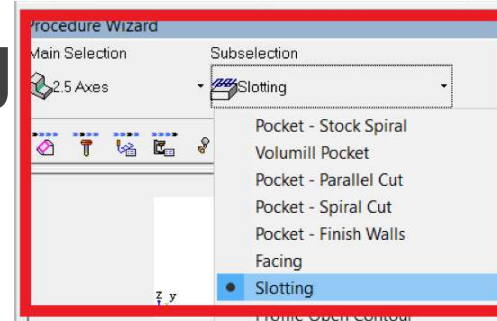
Pocket Number	UCS Name	Visibility	In Use	By Contours	Z-Top	Z-Bottom	Simple Pocket	Tap
(All)	(All)	(All)	(All)	(All)	(All)	(All)	(All)	(All)
1.9	MODEL	+			0.000	-120.000		+
1.10	MODEL	+			0.000	-120.000		+
1.11	MODEL	+			0.000	-120.000		+
1.12	MODEL	+			0.000	-120.000		+

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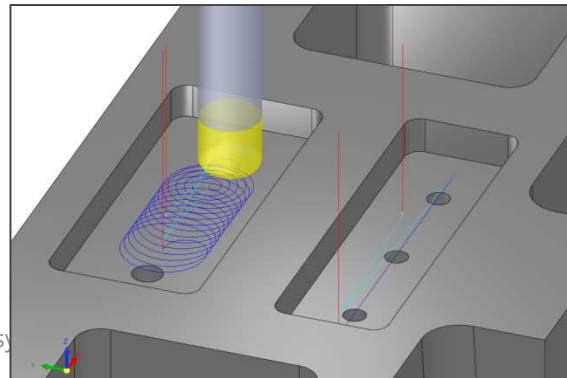
Plate Machining: Slotting

New Procedure for Slot Roughing

- Pocket Manager Detect slots
- slot “likelihood” from 0% (not a slot) to 100% (perfect slot)
- Center Line
- Machining on center lines or user’s contours
- Slotting, Ramping, Trochoidal

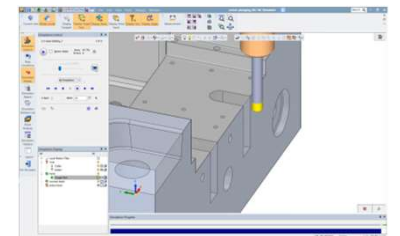


Open Pocket	Slot Likelihood	Center Line	X - Co
(All)	(All)	(All)	(All)
+	0	☹	-143.5
+	0	☹	-85.00
+	100	☺	-58.00
	0	☹	-0.500
+	0	☹	10.000
	37	☹	10.000



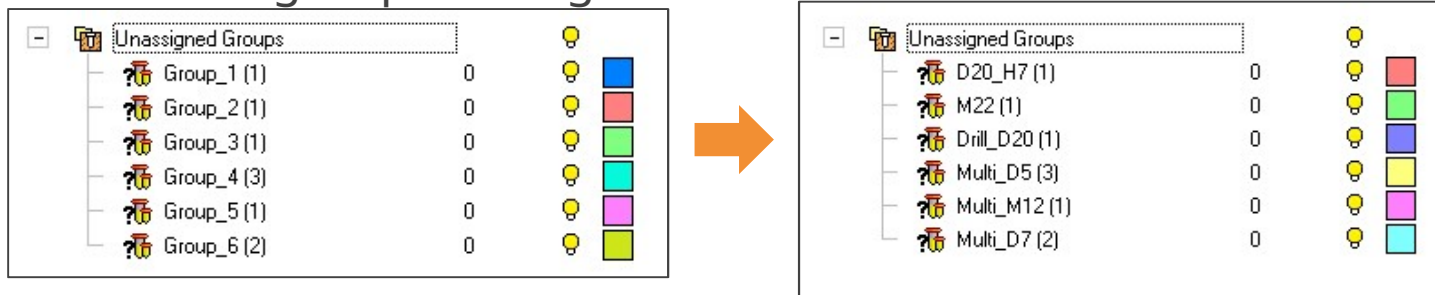
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Movie



Automated Drill Enhancements

- Automated group naming



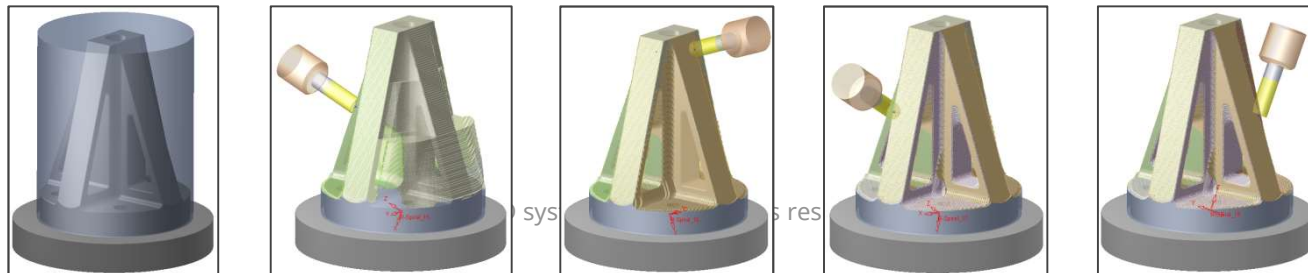
- Sequence numbering

#			Cutter	Drill Type	Comment	Top Ref	Top Delta	Bot. Ref	Bot. Delta	Condition
1	<input type="checkbox"/>	<input type="checkbox"/>	CENTER DRILL	Spot Drill		DP	0.000000	DP	-2.000000	A_TOP
2	<input type="checkbox"/>	<input type="checkbox"/>	DRILL8	Spot Drill		DP	0.000000	B	-5.000000	
3	<input type="checkbox"/>	<input type="checkbox"/>	FLAT14-H	Spot Drill		DP	0.000000	A	0.000000	
4	<input type="checkbox"/>	<input type="checkbox"/>	TAP16X1.5	Spot Drill		ST	0.000000	ST	0.000000	
			New cutter							

- Keep manually assigned groups, on geometrical change

Enhanced 5 axis: Automated Multi-axis Rough

- Analyze & suggest best direction for rough
 - for maximum material removal
 - Considers Part, Stock, Tool & Holder
- Work Modes
 - Interactive – analyze direction, review, suggest UCS, execute
 - Automatic – optimize direction during execution, support templates

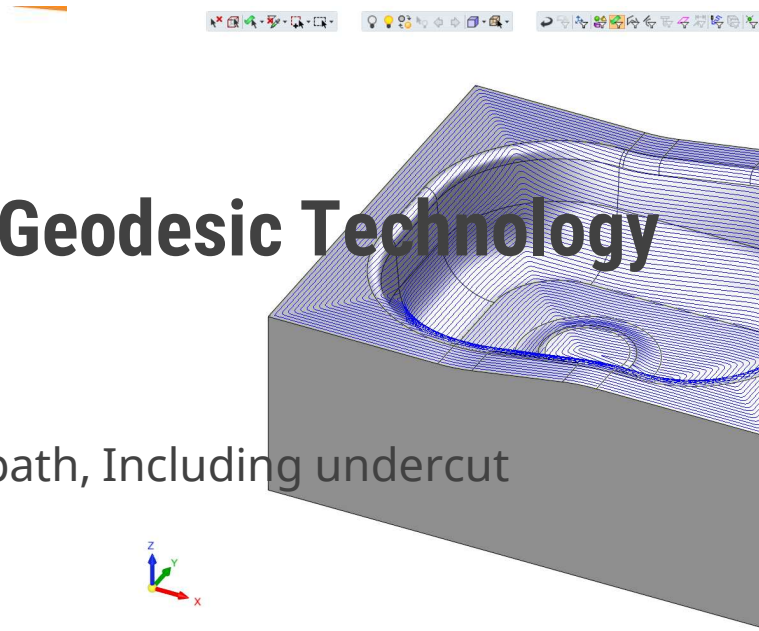


Enhanced 5 axis: Advanced Finish with Geodesic Technology

New Procedure

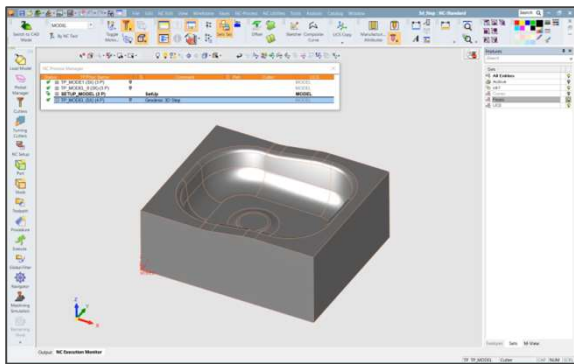
- Toolpath
 - 3 axis, 4 axis, 5 axis toolpath, Including undercut
- Many application
 - True 3D step, Morph
 - Single/ multiple Guide curves
- Work modes
 - Contact mode, Supports all types of cutters
 - Center mode, Supports ball/ lollipop cutters
 - allows collision-free pattern generation even in "sharp inner corners"

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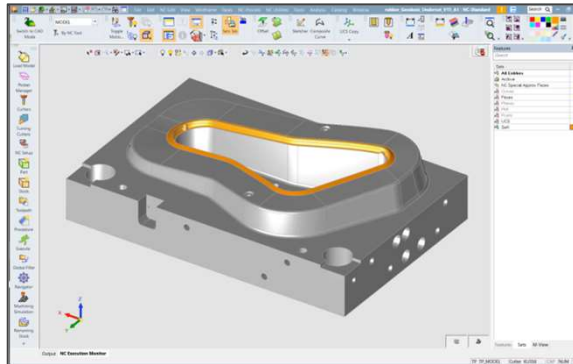
Enhanced 5 axis: Advanced Finish with Geodesic Technology

examples



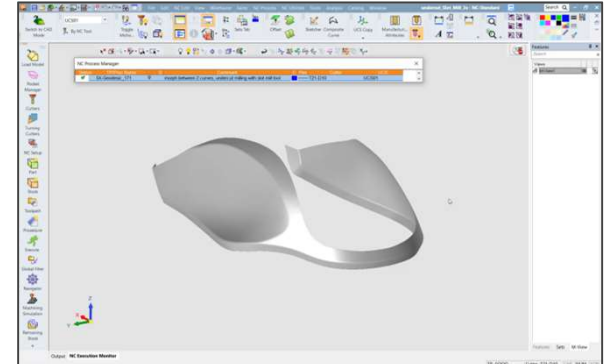
3D Step

Movie



5 axis Undercut

Movie

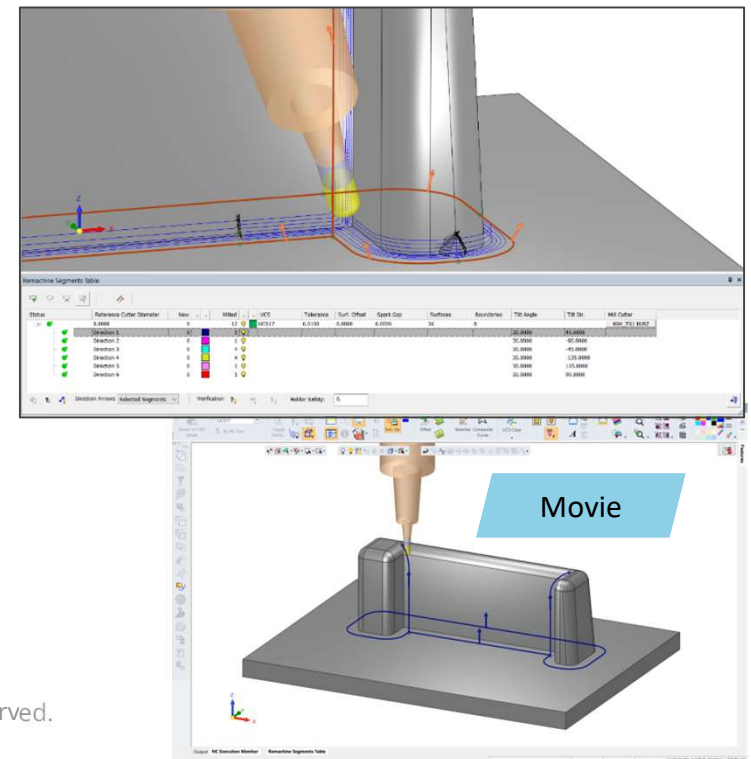


3 axis with T-slot cutter, undercut

Movie

Enhanced 5 axis: automated Multi-axis Guided Cleanup

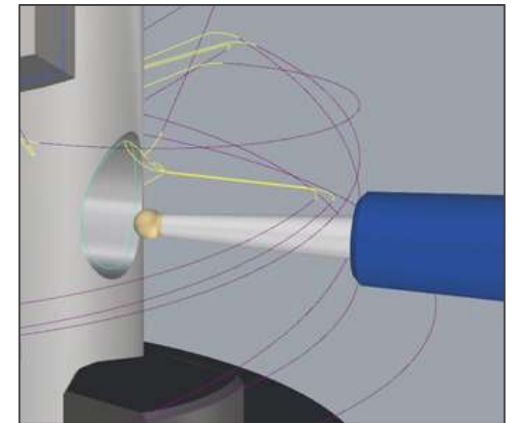
- Analyze and suggest best cleanup direction
 - Considers Part, Tool & Holder
 - Option to split segments with overlap
 - Option to Snap to existing directions/ UCS's
 - Create UCS for suggested directions



Enhanced 5 axis: Automated 5 axis Deburring

New Procedure

- toolpath
 - 3 axis, 4 axis or 5 axis toolpath
 - Automatic detection of sharp edges
 - Runs on the outer sharp edges of a part
 - automatic collision avoidance
 - automatic linking, lead in/ lead out
 - For Ball, Lollipop Cutters

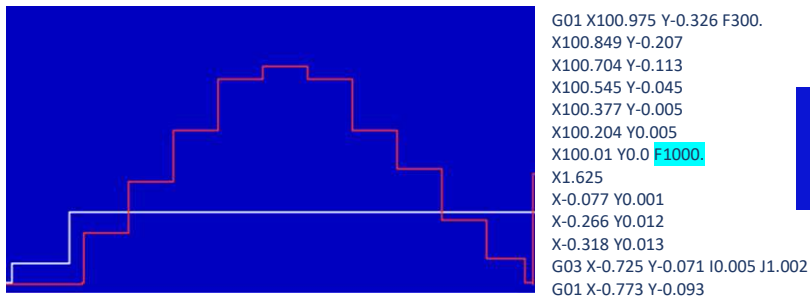
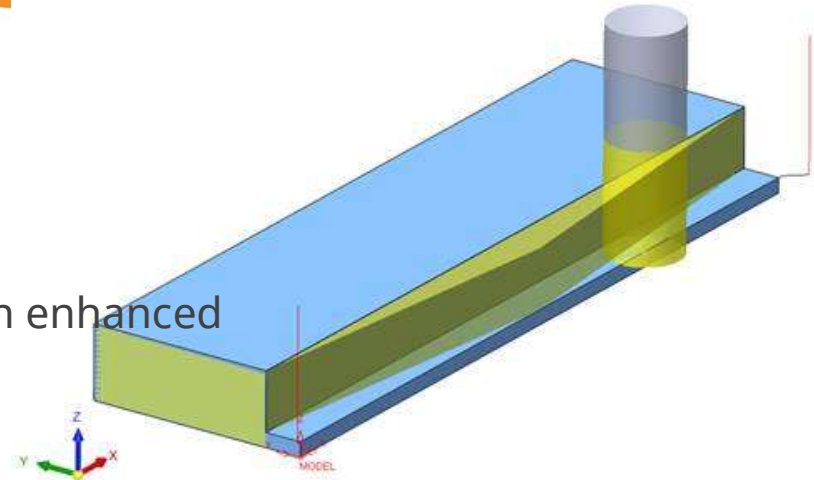


Movie



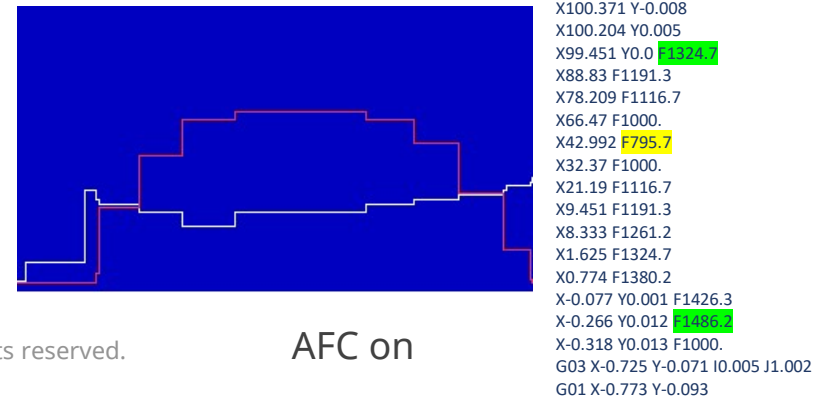
Reduce Machining Time: Enhanced AFC

- Rough AFC (Automatic Feed Control) has been enhanced
 - Including all next Rough's as ReRough
- With better stock recognition
 - Reducing Drastic Load Changes
 - Longer Tool Life
 - Faster Machining



AFC off

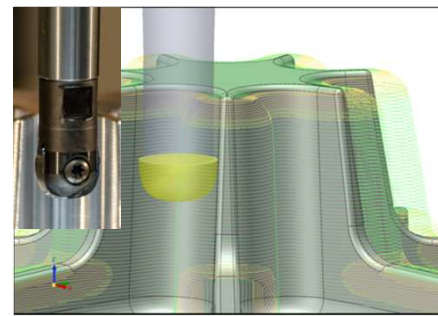
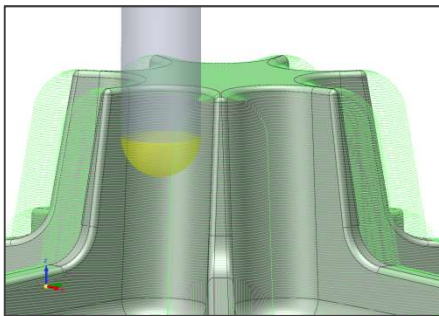
Load
Feed



AFC on

3 Radii Cutter Use Case 1: 3-axis, Small Mold Part

Agitator mold core, Dia. 200 mm x 100 mm



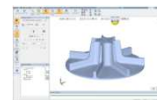
Cutter: Ball D20 (r10)

3-Radii Cutter: D20 GP1LB (r20 r6 r20)

Step over: 0.63 mm

Machining time: 01:41:33 Hr.

Notes:



Movie



三菱日立ツール株式会社
Mitsubishi Hitachi Tool Engineering, Ltd.

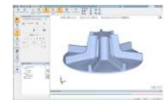
Gallea

0.89 & 0.49 mm

01:42:31 Hr.

no time saving

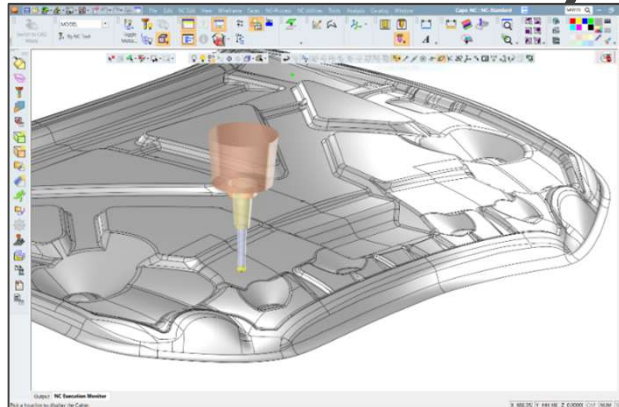
Standard process, Cleanup previous cutter Ball D20



Movie

3 Radii Cutter Use Case 2: 3-axis, Large Mold Part

Car Hood
Transfer Die Shoe
2000 mm x1500 mm



Cutter: Ball D20 (r10)

Step over: 0.63 mm

Machining time: 22:00:00 Hr.

Notes:

3-Radii Cutter: D20 GP1LB (r20 r2 r20)

 **三菱日立ツール株式会社**
Mitsubishi Hitachi Tool Engineering, Ltd.

[Gallea](http://Gallea.com)

0.89 & 0.28 mm

17:30:00 Hr. (4:30 Hours saved)

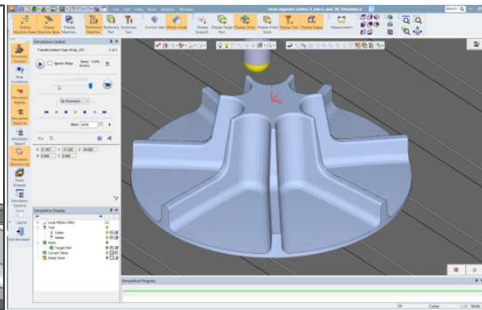
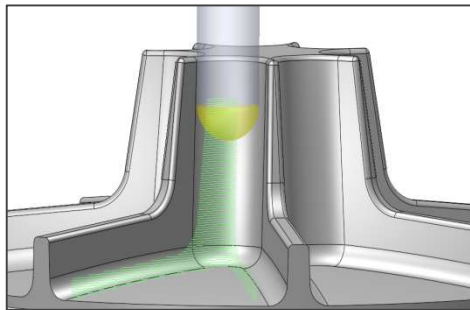
Faster machining

Apply 3 axis TPT template

longer calculation time

3 Radii Cutter Use Case 3: 5-axis, Small Mold Part

agitator mold core, D200 x 100 mm



Cutter: Ball D20 (r10)

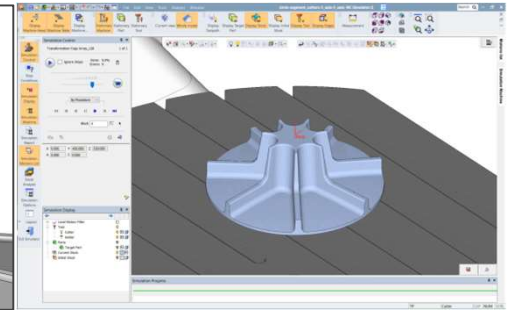
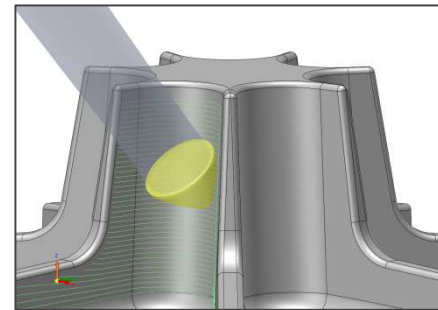
Movie

One segment

Step over: 0.63 mm

Machining time: 30:02 Min.

Notes:



3-Radii Cutter: D20 GP1T (r2 r50 r1.63) "tapper"

Movie

 **三菱日立ツール株式会社**
Mitsubishi Hitachi Tool Engineering, Ltd.

[Gallea](#)

1.4 mm

23:58 Min.

Faster machining

Local operation, 5X Application Geodesic

Support Multi & More Coolant Types

- More Type
 - can be defined
 - with additional user's Control
- Multi Coolants
 - can be used simultaneously

User Defined Coolant

	Coolant Name:	Pressure:
<input type="checkbox"/>	Flood	
<input type="checkbox"/>	Mist	
<input type="checkbox"/>	Through	
<input checked="" type="checkbox"/>	Air	
<input checked="" type="checkbox"/>	High Pressure	60
<input type="checkbox"/>	low pressure	

✓ ⚠

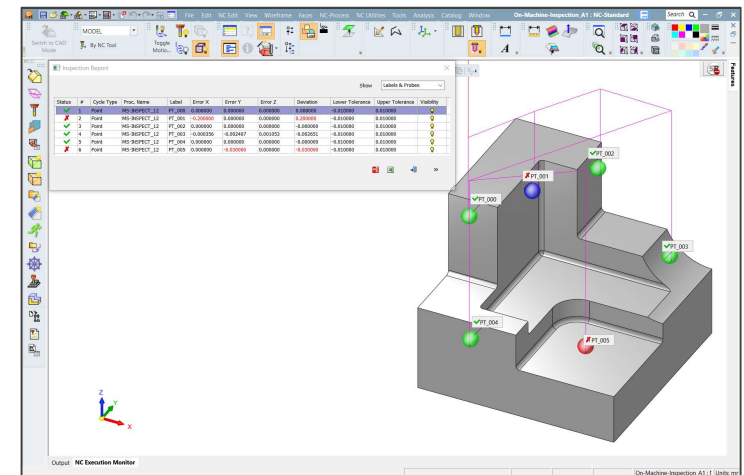


THANK YOU!

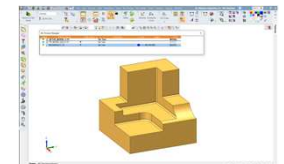
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Reduce Machining Time: On Machine Inspection (OMI) – Read Back

- Read back the measurement file
 - from the controller
 - Into the OMI procedure
- Results displayed
 - As a Table & in the Graphic Area with SP's
 - Compare planned vs actual measure
 - In tolerance Excessive gouging



Movie



Utility Procedure

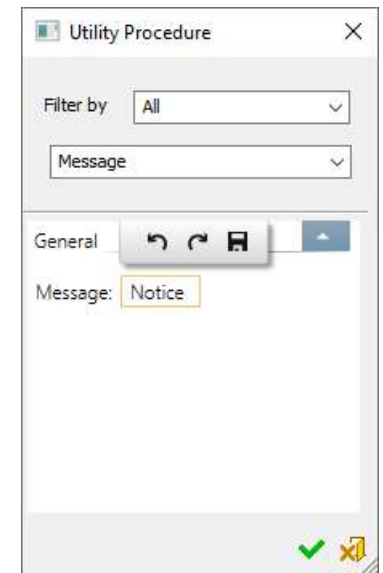
new Procedure

- sending text to Post-Processor & Report
 - Message, G-Code (with/ out Seq. no.)
 - Machine dependent Codes, mostly for Turning
- Appears in the process manager



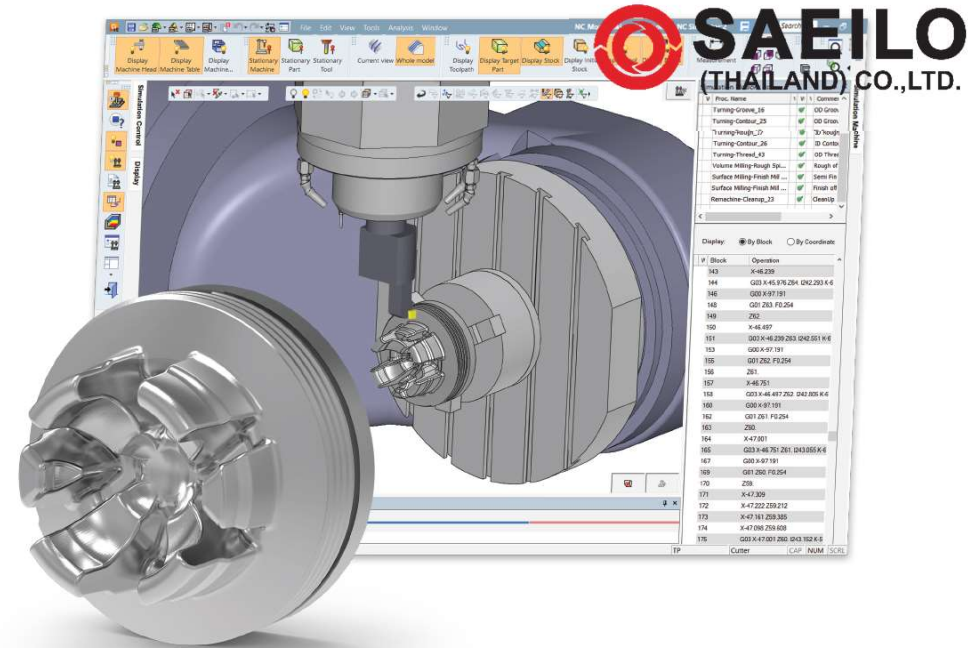
NC Process Manager

Status	TP/Proc Name	Comment	C	Pen	Cutte	Machine
✓	NC_Setup (2 P)	Setup				UCS17
✓	ROUGH (3X) (1 P)	Rough				UCS17
✓	CLEANUP (5X) (1 P)	Cleanup				UCS17
✓	TP_UCS17 (3X) (1 P)	Message				UCS17
✓	U-Message_24	Message				UCS17





Cimatron 15 Turning Application



Turning Capabilities - Support More Machines

- ✓ Support Mill/Turn and Turning machines
- ✓ Faster machining and better surface quality
- ✓ Combine turning with advanced 5-Axis milling
- ✓ GPP2 for all posting



Turn Mill Restriction

- One turning spindle and one tool changer
 - not supports for multi spindle nor Swiss type
 - No machine simulation for Turrets

Use the power of GibbsCAM



Cimatron Environment

Machine, Setup, Stock, Geometry



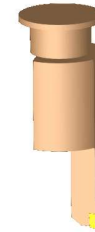
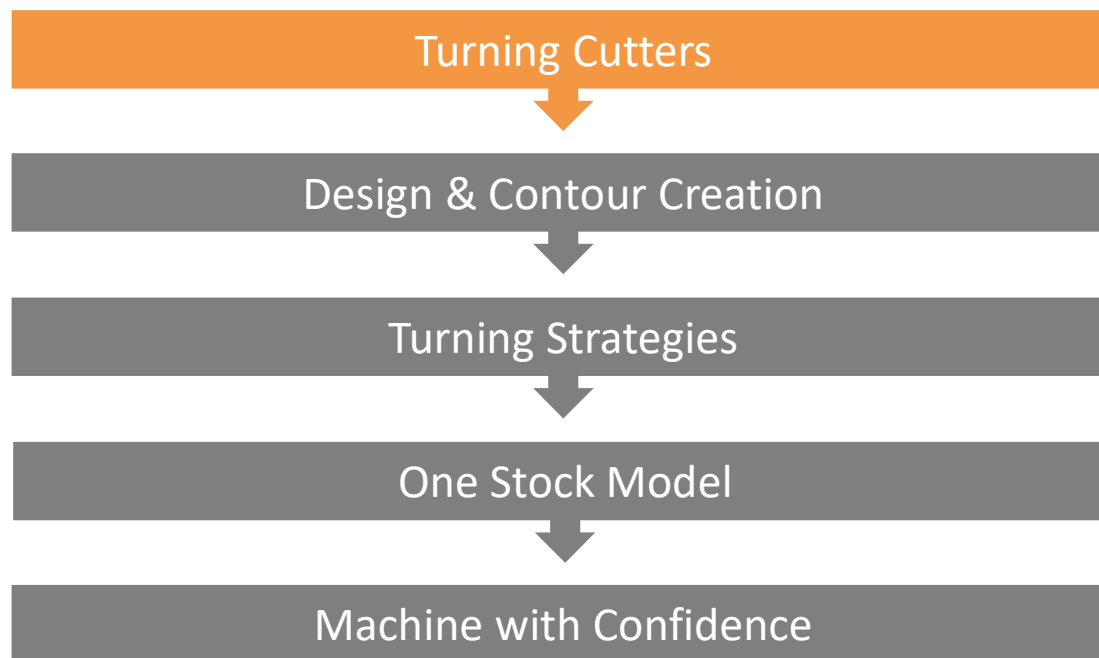
GibbsCAM

- Tool definition dialogs
- Procedure parameters dialogs
- Toolpath calculation (*background*)

Display, Navigation, Stock update, Post, Report & Simulation

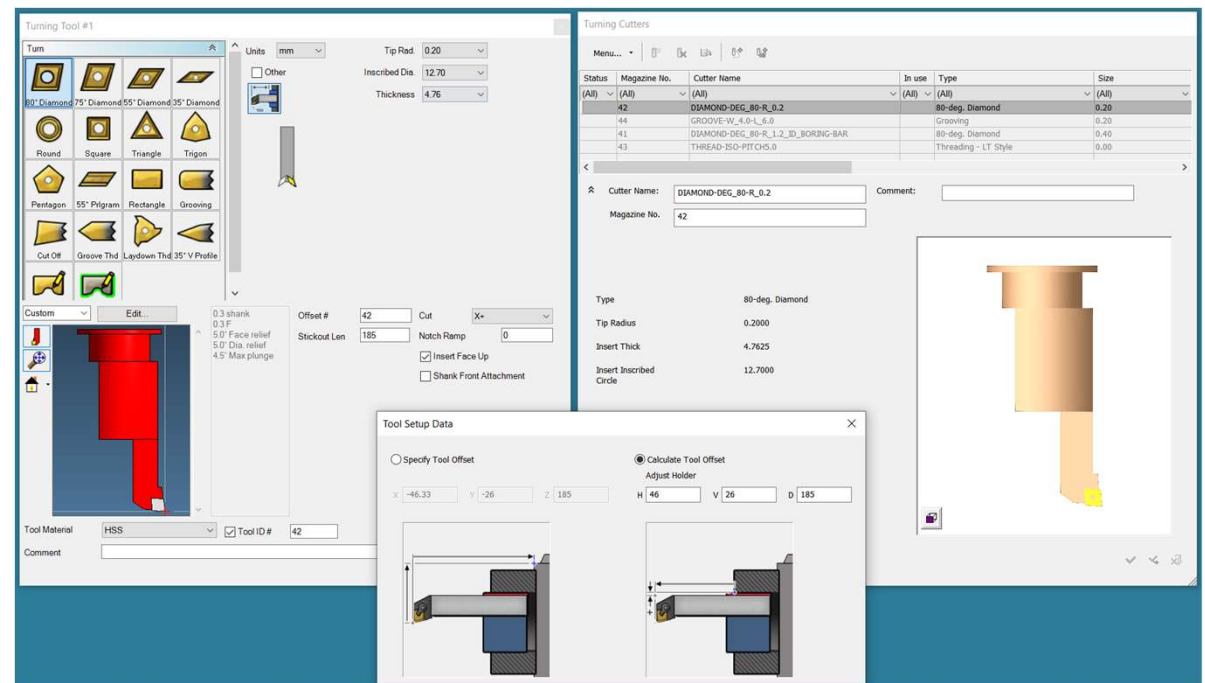
Benefit from both:
Cimatron Environment
Geometry, Simulation, Post
GibbsCAM Engine
Robust Mature Turning

Workflow in Cimatron

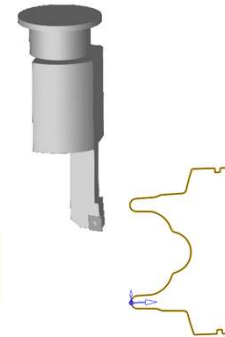
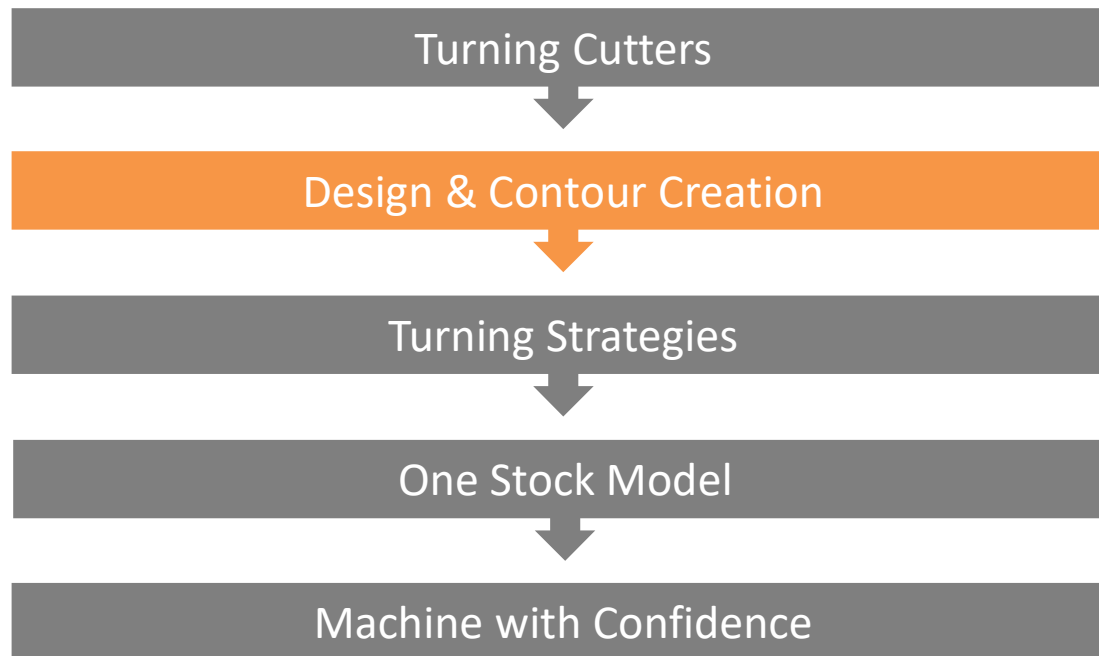


Easy Creation of Turning Cutters

- Key dimensions
- Predefined tool shapes
- User-defined form tools and holders

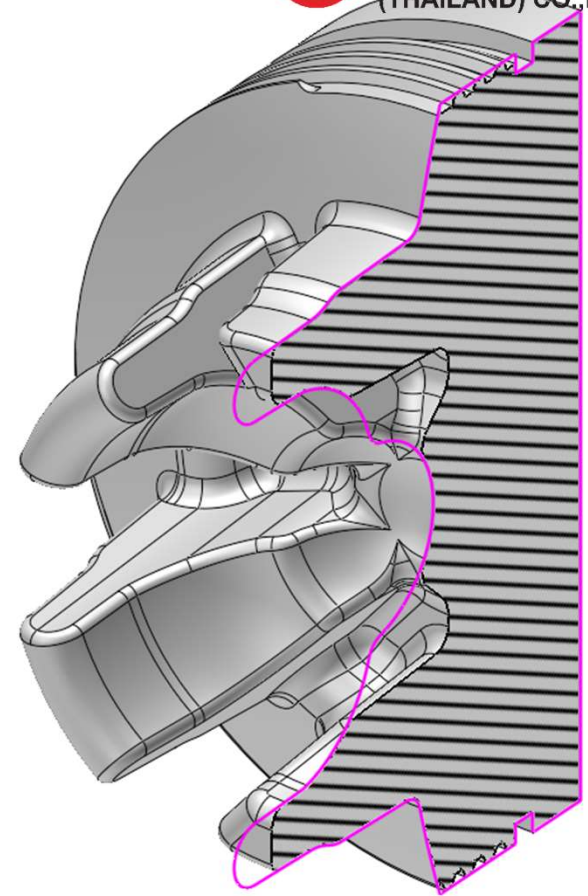


Workflow in Cimatron

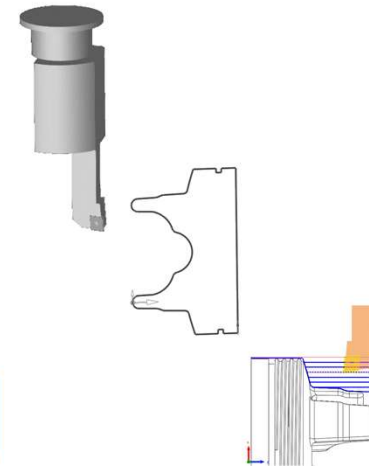
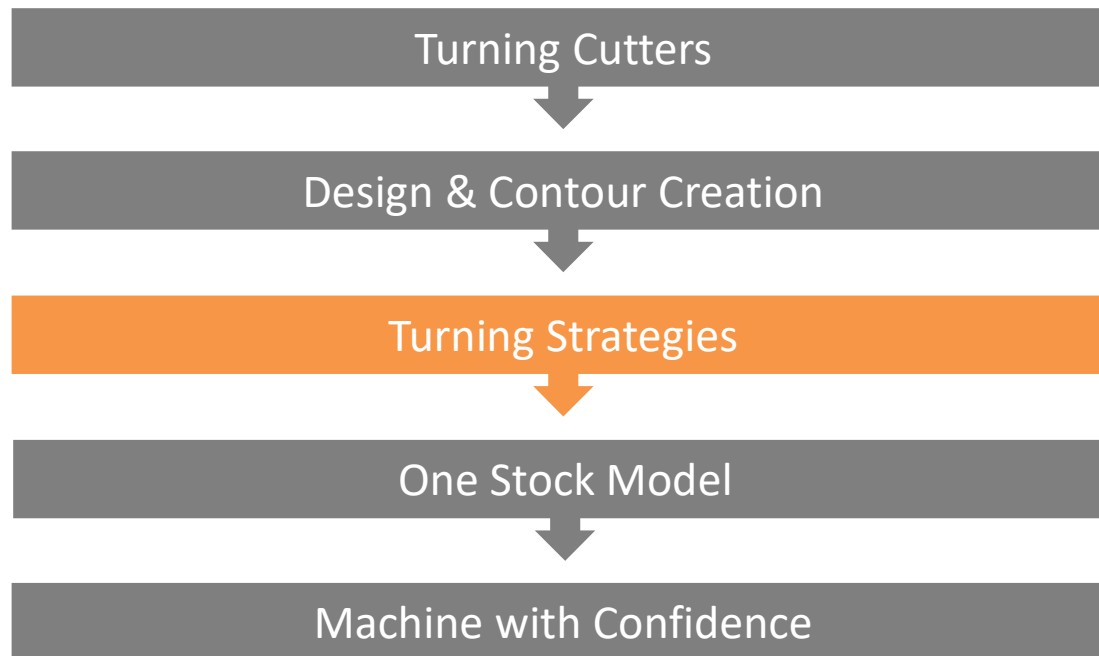


Powerful Design Capabilities

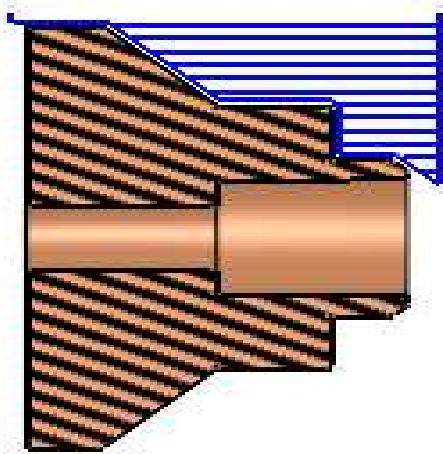
- Spun silhouette of the turning body
- Cimatron CAD – for all other contour creation options



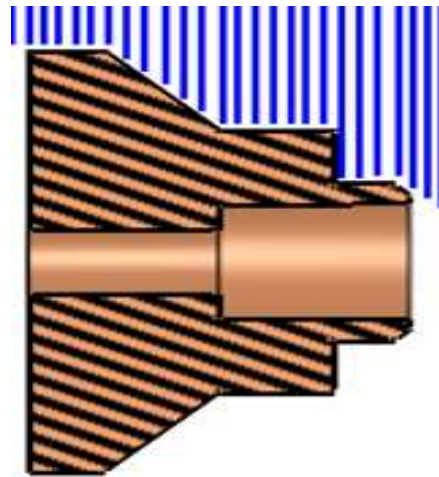
Workflow in Cimatron



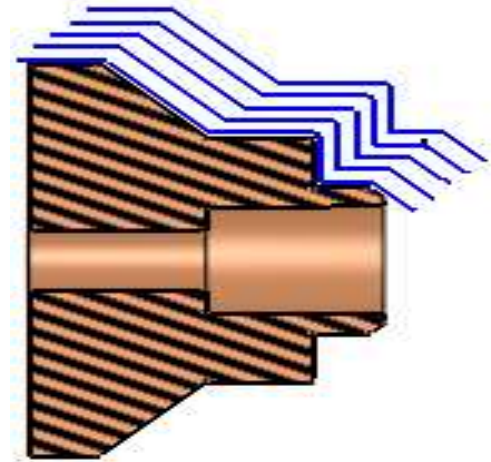
Rough



Turn



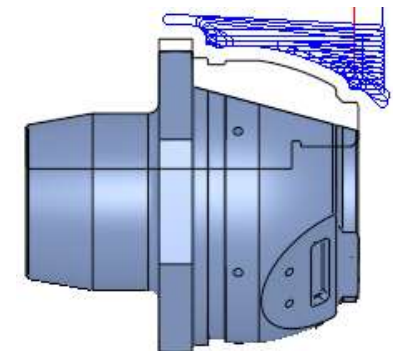
Plunge



Pattern shift

Turning Strategies

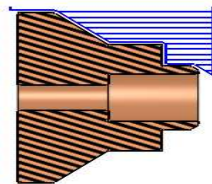
- **VoluTurn** for high-speed roughing โดยใช้ insert กลม
- **Contour** สำหรับการfinishing



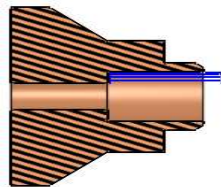
Drilling, Grooving and Threading



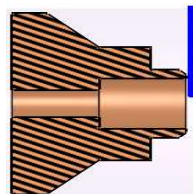
Turning Direction



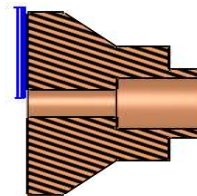
Outside Diameter



Inside Diameter

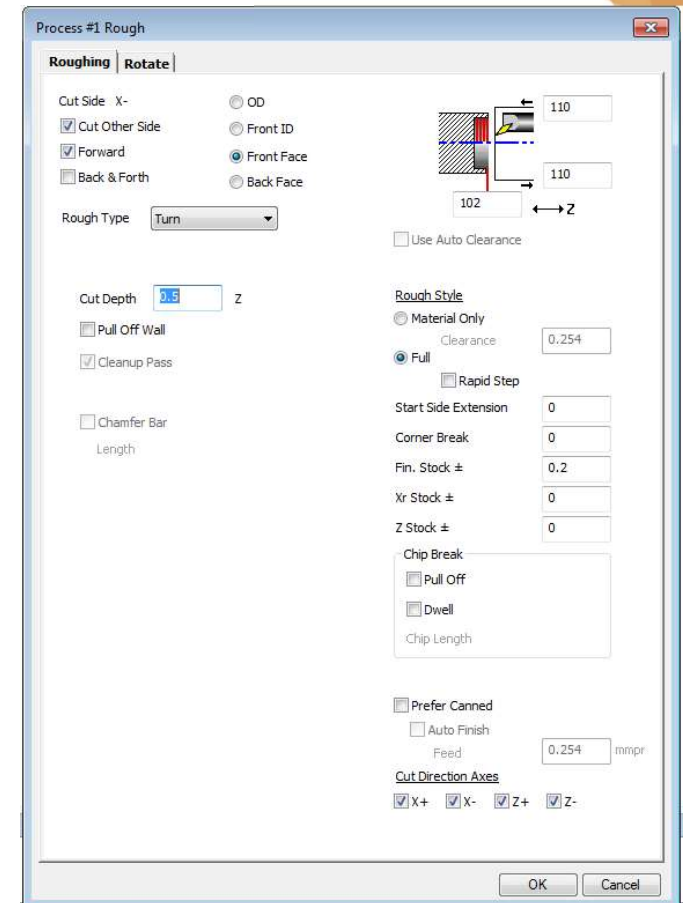


Front Facing

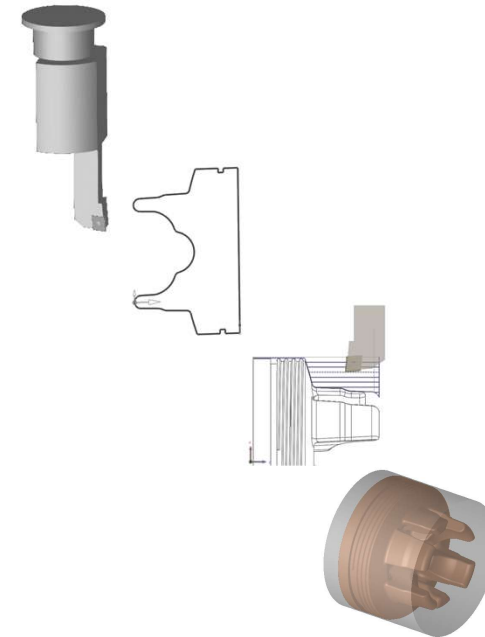
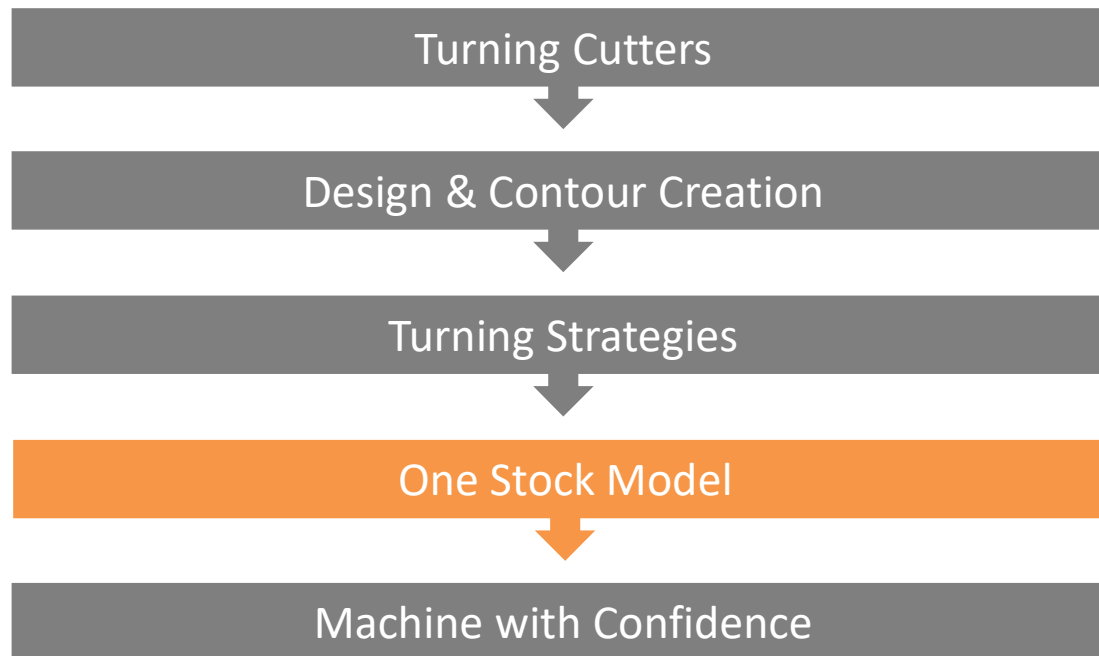


Back Facing

- Full control over technology: cutting direction, tool orientation, entry and exit, and more...

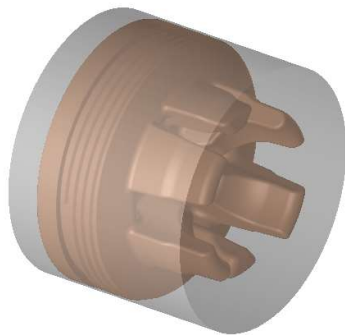


Workflow in Cimatron

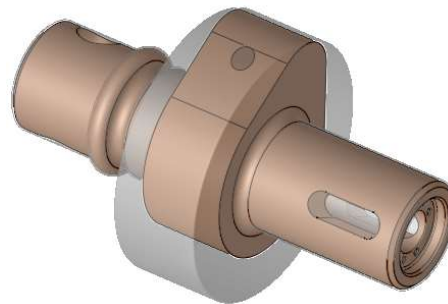


One Stock Model

- The stock model is fully updated throughout the entire process, both for turning and milling procedures
- Revolved stock:

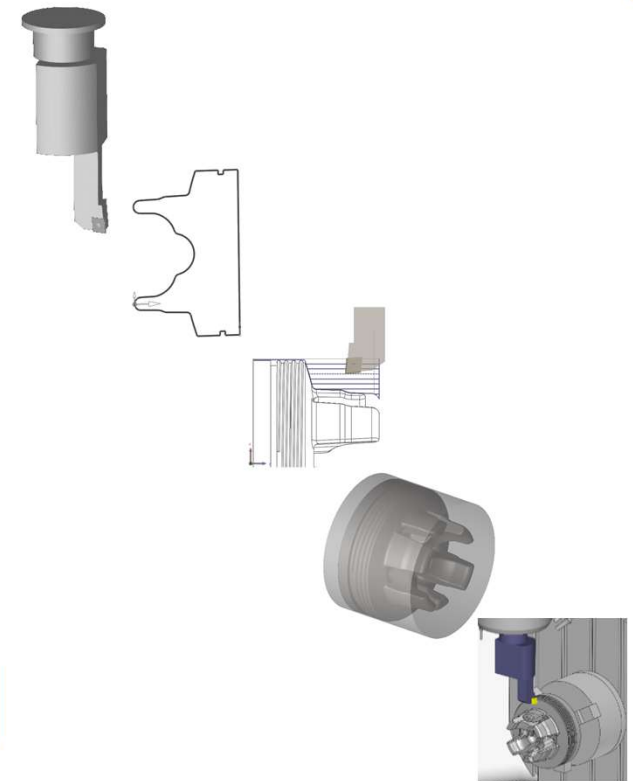
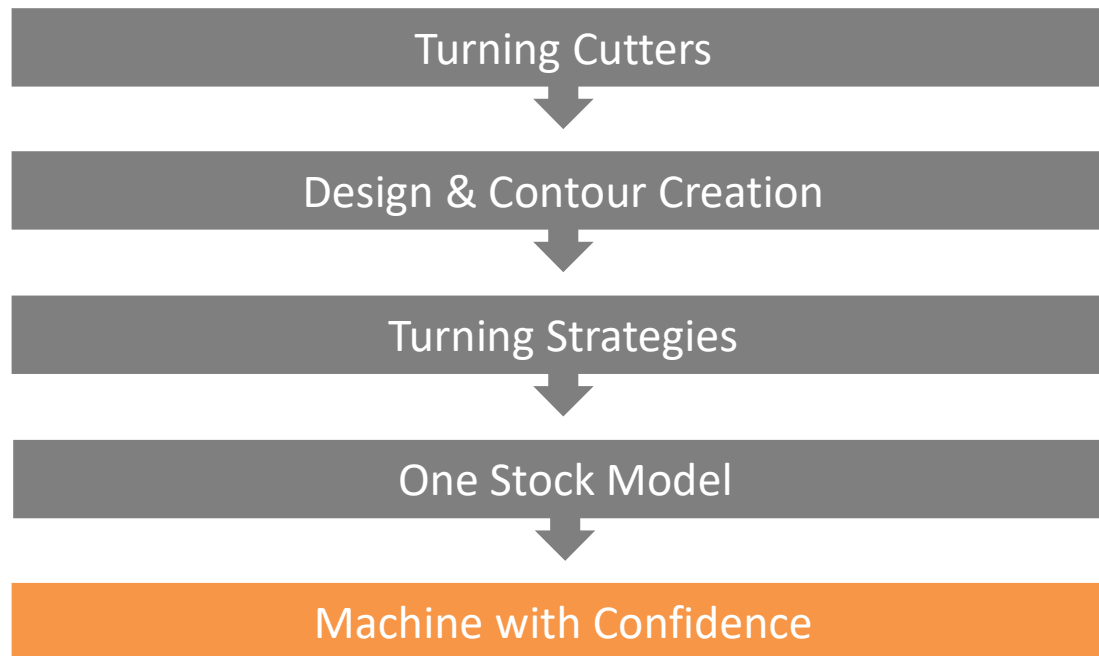


Bounded cylinder



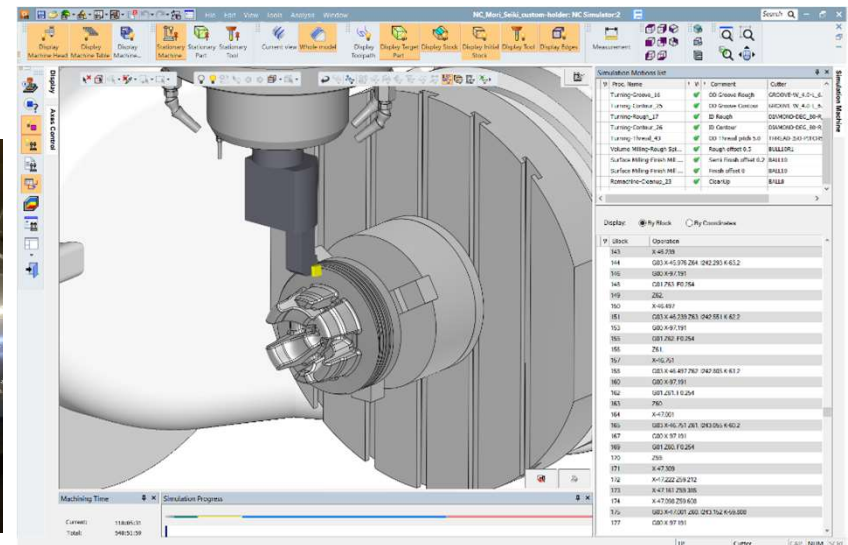
Revolved by spun silhouette

Workflow in Cimatron




Machine with Confidence

- Machine simulation for the entire process
 - milling, drilling and turning.
- Display and Navigate
- Post and Report

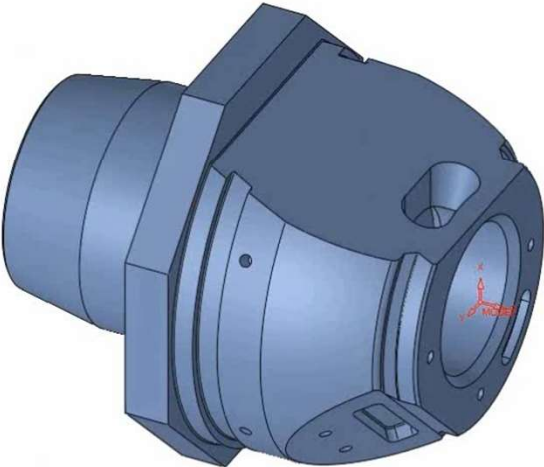


Webinar Tutorial 1 : NC-Standard



NC Process Manager

Status	TP/Proc Name	Comment	C	Pen	Cutter	UCS
✓	SETUP_MODEL (2 P)	No Text				MODEL
✓	Target Part_6	No Text				MODEL
✓	Stock - Revolve_7	No Text				MODEL
✓	TP_MODEL (18 P)	No Text				MODEL
✓	Turning-Rough_10	Rough Face	EXT-DIA80-ID12.7-R08			MODEL
✓	Turning-Rough_11	Rough OD	EXT-DIA80-ID12.7-R08			MODEL
✓	Turning-L-Drill_15	Center drill	U-DRILL-26			MODEL
✓	Turning-Rough_16	Rough ID	INT-TRIG-ID6.35-R04			MODEL
✓	Turning-Contour_17	Finish ID	INT-TRIG-ID6.35-R04			MODEL
✓	Turning-Contour_18	Finish OD	EXT-DIA35-R0.2			MODEL
✓	2X-Profile_26	No Text	12FLAT			90Deg step
✓	R-Spiral_27	No Text	12FLAT			45Deg step
✓	2X-Pocket_28	No Text	BNS-R0.5			45Deg step
✓	2X-Pocket_32	No Text	BNS-R0.5			MODEL
✓	Turning-Rough_19	Rough OD groove	EXT-GROOVE-W4-R0.32			MODEL
✓	Turning-Contour_20	Finish OD groove	EXT-GROOVE-W4-R0.32			MODEL
✓	R-Spiral_29	No Text	12FLAT			75Deg step
✓	5X-Pro_30	No Text	BALL12			MODEL
✓	5X-Swarf By Contours_31	No Text	FLAT8			75Deg step
✓	Turning-Groove_25	Internal groove	INT-GROOVE-W2.5-R0.2			MODEL
✓	Drill-Auto-5X_33	No Text	Multi Cutters			MODEL
✓	Turning-Thread_22	Internal thread	INT-THREAD			MODEL



Output

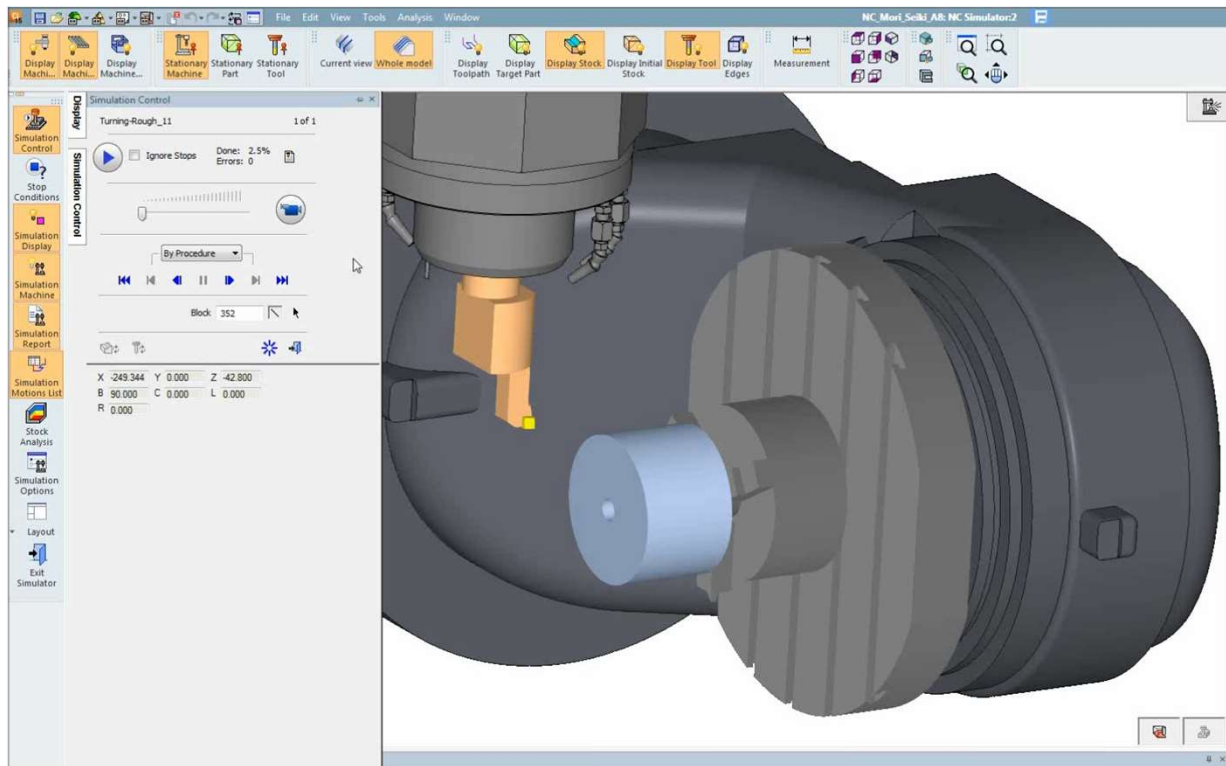
```

* Stock of Turning-Thread_22: Start Stock: 04/09/19: 09:22:55; ILTLV-1651-W7D; Unknown_Host_Power_Number; ILTLV-1651-W7D;
* Stock of Turning-Thread_22: End Stock: 04/09/19: 09:22:55; ILTLV-1651-W7D; Unknown_Host_Power_Number; ILTLV-1651-W7D; Total 00:00:00; Succeeded
* Stock of Turning-Thread_22: Start Calculation at : 04/09/19: 09:22:58; ILTLV-1651-W7D; Unknown_Host_Power_Number; ILTLV-1651-W7D;
* Stock of Turning-Thread_22: Testing_Info: 04/09/19: 09:23:00; ILTLV-1651-W7D; Unknown_Host_Power_Number; ILTLV-1651-W7D; *** Tolerance Used for calculating Stock is 0.002929
* Stock of Turning-Thread_22: End Execution: 04/09/19: 09:23:00; ILTLV-1651-W7D; Unknown_Host_Power_Number; ILTLV-1651-W7D; Total 00:00:04; Succeeded
* No_Proc_Name_Message_04/09/19: 09:23:02; ILTLV-1651-W7D; Unknown_Host_Power_Number; ILTLV-1651-W7D; All procedures have been executed; no additional procedures are submitted for execution.
* File C:\ProgramData\3D Systems\Cimatron\15.0\Data\Workarea\TEMP_SIM_POST\WebinarTutorial_1_TP_MODEL.GPP2< is loaded
* Execution Completed!
* 2300 Stock triangular facets loaded from Procedure
  
```

Info

NC Execution Monitor

TP_Folder	Proced...	Comment	Cutter	UCS	Status	Progress





THANK YOU!