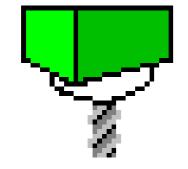
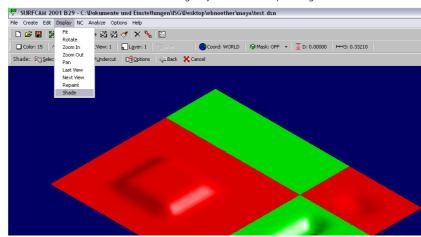
Surfcam CNC-Milling Software

File import, Milling Path creation, export to Precix 3-Axis CNC-Mill



SURFCAM 2001

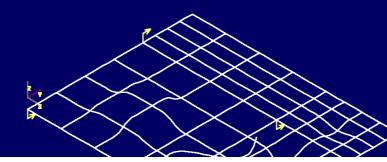
1. check direction of surfaces: Display - Shade - Undercut all surfaces shaded red face the wrong way (face normal pointing down)



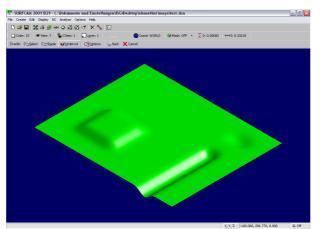
2. to change direction of surfaces: Edit - Surfaces Arrow: displays the surface vector Side: flips the direction of the surface Direction: toggles between U / V direction of surface

🚏 SURFCAM 2001 B29 - C:\Dokumente und Einstellungen\ISG\Desktop\ebnoether\maya\test.dsn Create Edit Display NC Analyze Options H D 🖻 📱 🎇 谷 🖗 🕪 💠 🎇 🚿 🛷 🗙 🔛

🖸 Color: 15 👁 View: 7 🏂 CView: 1 😱 Layer: 1 💐 Shade: OFF 🌘 Coord: WORLD 🛇 Mask: OFF 🔹 💆 D: 0.00000 🛏 S: 0.33210 Edit > Surfaces > Select: 🗑 gingle 🖾 Within 🖾 Intersect 🛞 Visible 🕺 MultSelOff 🛛 🤤 Back 💥 Cancel



3. re-check direction of surfaces

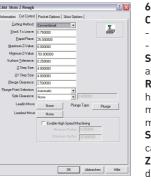


... now, SAVE THE FILE -Surfcam does not have an "UNDO"-Option !

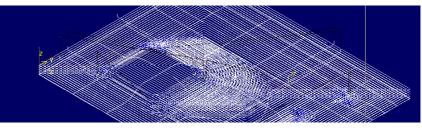
3. RoughCut A rough cut is used to rapidly remove most of the material which is not needed. 1. NC - 3-Axis - Z Rough 2. Select the surfaces to rough (Visible) 3. Define the size of the material (block of foam) -SURFCAM 2001 B29 - C:\Dokumente und Einstellungen\ISG\Desktop\ebnoether\mava\test.dsn File Create Edit Display NC Analyze Options He
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 Layer: 1 Bishade: OFF OCoord: WORLD @ Mask: OFF SURECAM Material Information ? 🗙 Material Type: Extents Box -Material Height: 100 0000 ОК Cancel Y: 0.00000000 Z: -50.00000000 Help XY Offset 12.00000000 Z Offset 3.00000000 4.choose milling bit 5. adjust spindle speed (rotations per minute of the milling bit, 10'000 is good for foam) **(**0) Conventional Climb

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7. watch the toolpath being generated

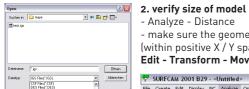


1. Import and analyze Data

1. File - Open, choose file type, then directory

CK Cancel Current New Delete Move Geom Swop Vis Swap Sel Rename Help

v s v s



- Analyze - Distance - make sure the geometry is properly located, (within positive X / Y space) if not, use: Edit - Transform - Move and the appropriate transformation



4. Viewport

SUDECA

Layer Name

To change the view onto your model, use the view port.

Note that "View" is the view YOU have onto the model while "CView" is MACHINE's view if want to do any job modification, make sure that "CView" is set to "1" (top view), so that the machine looks at the geometry in plan (from top down), just like the mill does in reality.



6. more parameters:

Cutting Method:

- Conventional: a contour is milled counter-clockwise - Climb: a countour is milled clockwise

- Stock to Leave:
- amount of material which is not removed

Rapid Plane:

height the mill moves to when changing position:

- make sure it is higher than the top surface of your
- material / block of foam !
- Surface Tolerance:

can be set to 0.25, makes generation of toolpaths faster Z / XY Step Size:

- distance of the milling paths to one another,
- use Z-Step Size = Bit-Radius for wood,
- use Z-Step Size = Bit-Diameter for foam.
- Example: 12mm Bit, Z-Step Size in foam: 12mm

3. RoughCut (cont'd)

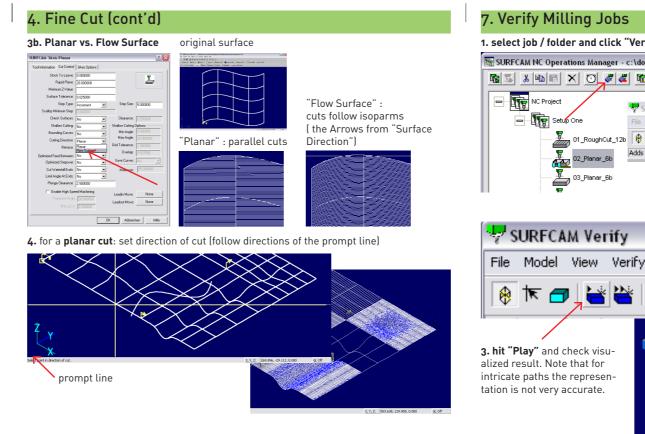
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🔲 Color: 15 👁 View: 7 🕆 CView: 1 💭 Layer: 1 🛤 Shade: OFF 🔗 Coord: WORLD 🚳 Mask: OFF 🔹 🐺 D: 0.00000 8. in the Operations Manager, rename the toolpath indicating

- the order in which it is milled (01 ... 99) - what type of cut it is (RoughCut)
- which tool / milling bit is being used (12b = Ballnose Cutter, 12mm diameter)
- 🔚 SURFCAM NC Operations Manager C:\Dokumente und Einstellungen\ISG\Desktop\ebnoether\ma... 👔 165 x 16 2 × 0 2 2 16 7 4 4 7 D 2 9 NC Project 3 Axis • PRECIX Setup One 01_RoughCut_12b <None> ArcFltr NurbFltr PRECIX POST C Small Icons 🛛 🕥 Large Icons Post Done Help

9. SAVE !



Bounding Curves: No Min Angle:

4. Fine Cut (Planar)

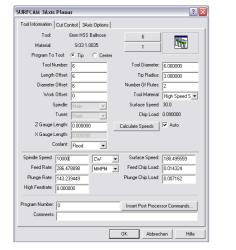
1. NC - 3-Axis - Planar, choose surfaces to cut

😵 SURFCAM 2001 B29 - c:\dokumente und einstellungen\isg\desktop\ebnoether\maya\test.dsn
File Create Edit Display NC Analyze Options Help
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🗖 Color: 15 👁 View: 7 🐁 CView: 1 🔒 Layer: 1 🖷 Shade: OFF OCoord: WORLD @ Mask: OFF 🔹 🗴 D: 0.00000
NC > 3 Axis: 😰 Cut 🗶 Broject 💤 Z Rough 🧬 Plunge Rough 🗸 Z Einish 🖉 🚍 Planar 🛛 - Contour 30 🛛 Drill 🕕 Pilot Hole 🗧

2. set tool and spindle speed

3. set "Stock To Leave", "Step Size" and "Rapid Plane"

- make sure the rapid plane is well above the material block !
- remember the "Rapid Plane" Setting, you'll need it later (when setting up the mill).





examples of textures with different "Step Size" settings

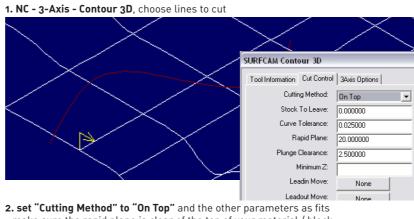
5. Special - Bounding Curves

To only machine part of your (larger) surface: draw a closed Polyline/Spline above your geometry which acts as a boundry. In the dialog box, set "Bounding Curves" to "Yes", you will then be prompted to select the curve. 6. SAVE !

6. Cut 1. NC - 3-Axis - Cut

"Cut" is very similar to "Planar-Flow Surface", it also follows the isoparm direction, but: - with "Cut" you can only select one surface at the time - it cuts steep geometry more accurately (more controls).

7. Contour 3D (Line cutting)



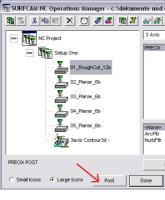
- make sure the rapid plane is clear of the top of your material / block. 3. SAVE !

8. Export and send .gc-File to Precix

Setup One

🛞 🔭 🕣 🛛

1. in the Operations Manager, choo 2. save the resulting file as "01_my



3. find precix (the mill's computer) on the network : IT NEEDS TO BE TURNED ON ! 4. upload the .gc file to the students folder on precix (the mill's computer)

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Bounding Box/Cylinder
Based On: C Toolpath @ Geometry
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01_RoughCut_12b

02_Planar_6b

03_Planar_6b

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