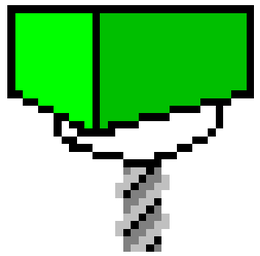
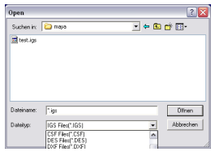


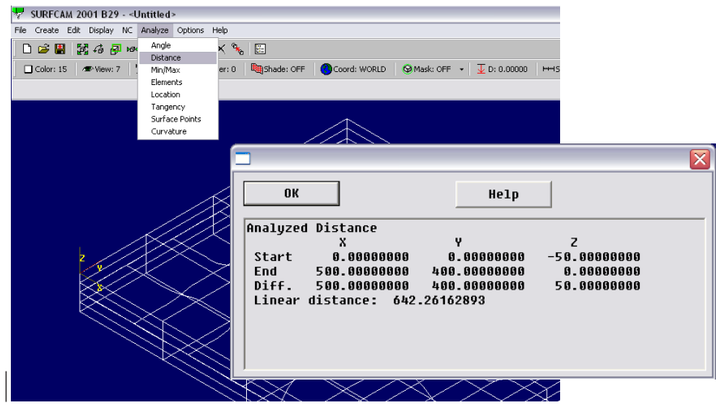
SURFCAM 2001

1. Import Data

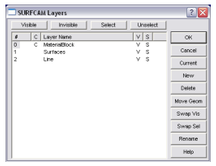
1. File - Open, choose file type, then directory



2. verify size of model
- Analyze - Distance
- make sure the geometry is properly located,
(within positive X / Y space) if not: Transform - Move

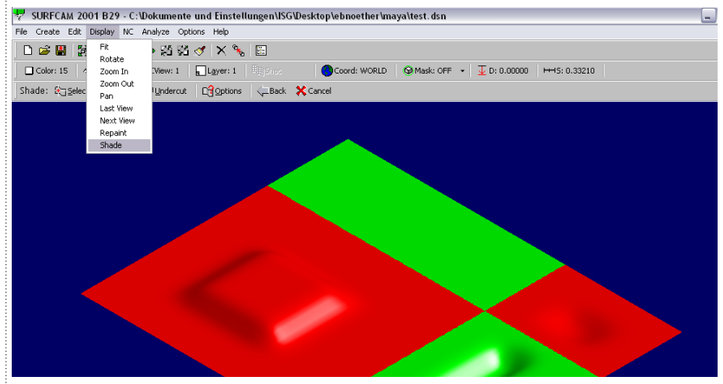


3. organise file onto layers

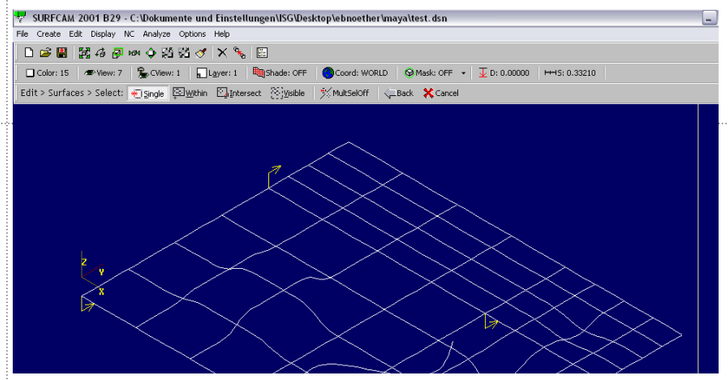


2. Verify Data

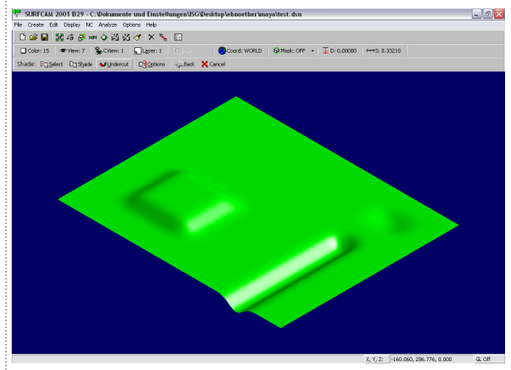
1. check direction of surfaces: Display - Shade - Undercut
all surfaces shaded red face the wrong way (face normal pointing down)



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



3. re-check direction of surfaces

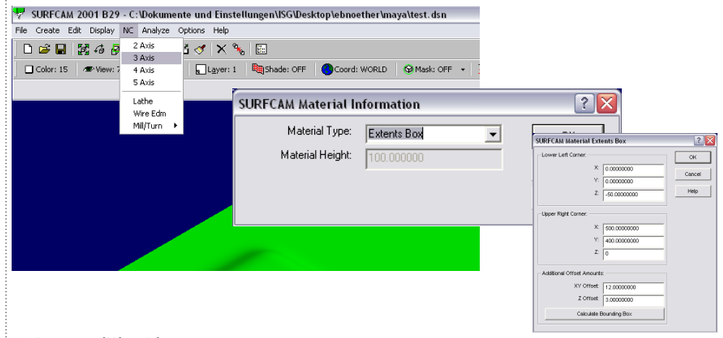


... now, SAVE THE FILE -
Surfcam does not have an “UNDO”-Option !

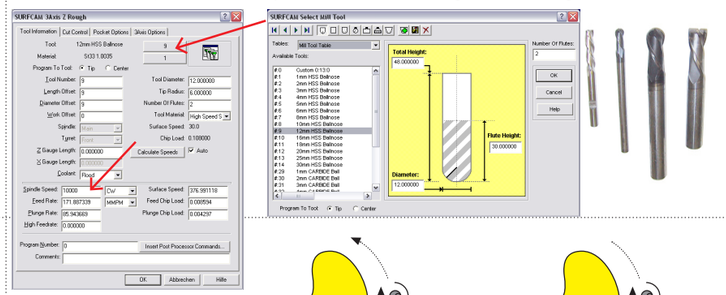
3. RoughCut

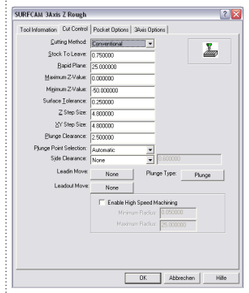
A rough cut is used to rapidly remove most of the material which is not needed.

1. NC - 3-Axis - Z Rough
2. Select the surfaces to rough (Visible)
3. Define the size of the material (block of foam)



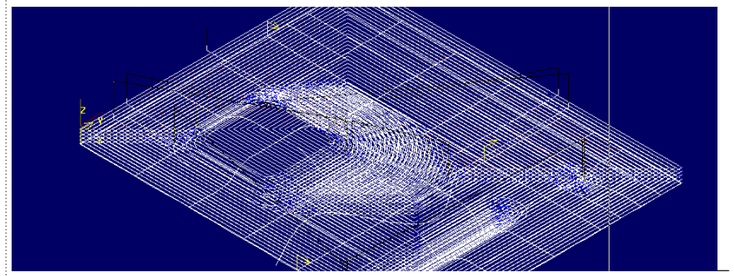
4.choose milling bit
5. adjust spindle speed (rotations per minute of the milling bit, 10'000 is good for foam)



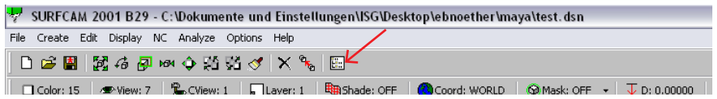


6. more parameters:
Cutting Method:
- Conventional: a contour is milled counter-clockwise
- Climb: a countour is milled clockwise
Stock to Leave:
amount of material which is not removed
Rapid Plane:
height the mill moves to when changing position:
make sure it is **higher** than the top surface of your 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

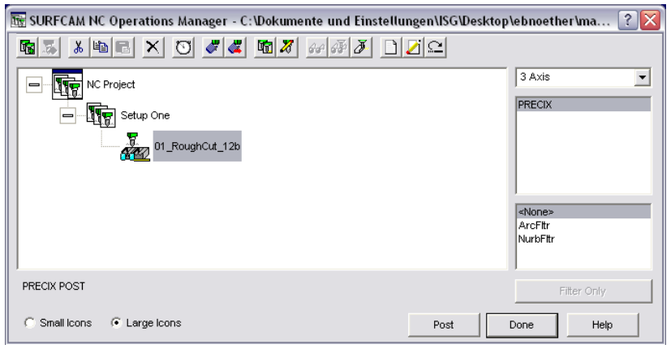
7. watch the toolpath being generated



3. RoughCut (cont'd)



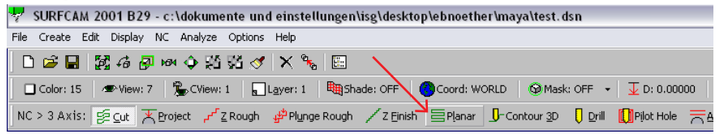
8. in the Operations Manager, **rename** the toolpath indicating
- the order in which it is milled (01 ... 99)
- what type of cut it is (RoughCut)
- which tool / milling bit is being used (12b = Ballnose Cutter, 12mm diameter)



9. SAVE !

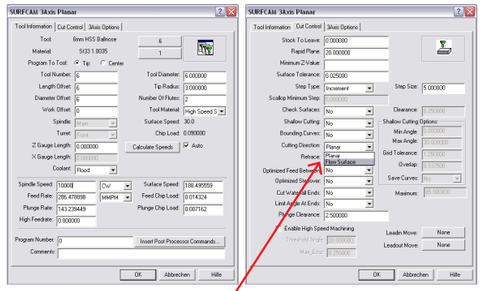
4. Fine Cut (Planar)

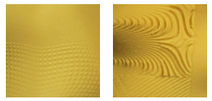
1. NC - 3-Axis - Planar, choose surfaces to cut



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 !

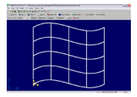




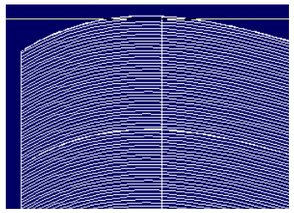
examples of textures with different "Step Size" settings

3b. Planar vs. Flow Surface

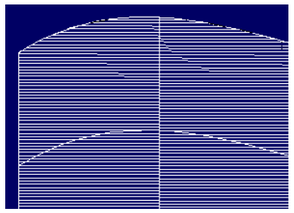
original surface



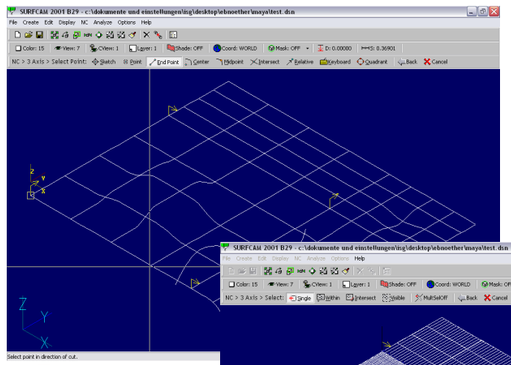
"Flow Surface" : cut following isoparms



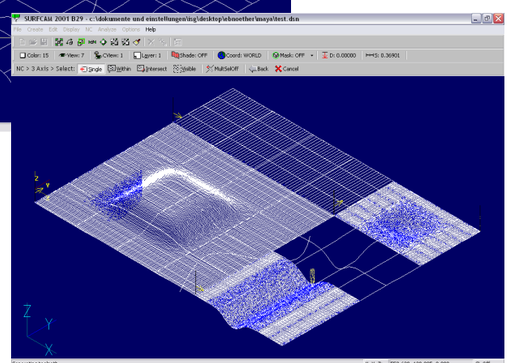
"Planar" : parallel cuts



4. for a **planar cut**: set direction of cut (follow directions of the prompt line)



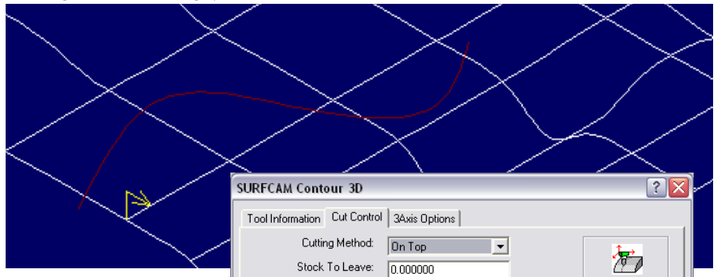
prompt line



5. SAVE !

5. Contour 3D (Line cutting)

1. NC - 3-Axis - Contour 3D, choose lines to cut

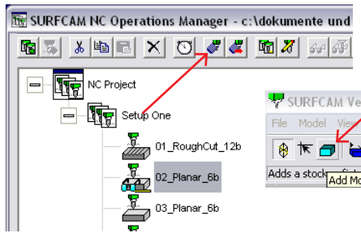


2. set "Cutting Method" to "On Top" and the other parameters as fits
- make sure the rapid plane is clear of the top of your material / block.

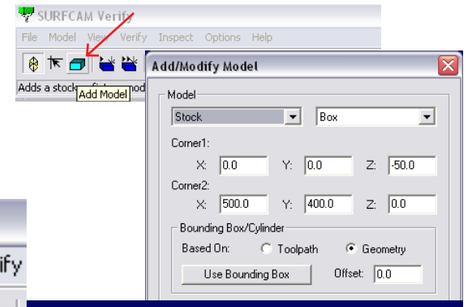
3. SAVE !

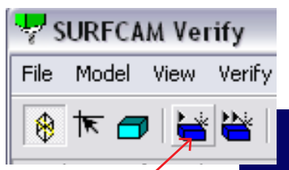
6. Verify Milling Jobs

1. select job / folder and click "Verify"

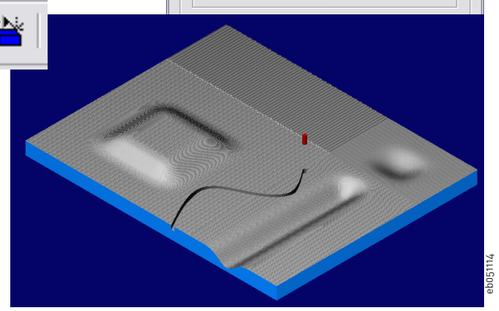


2. add model (your block of material)



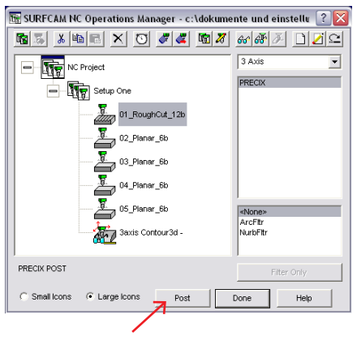


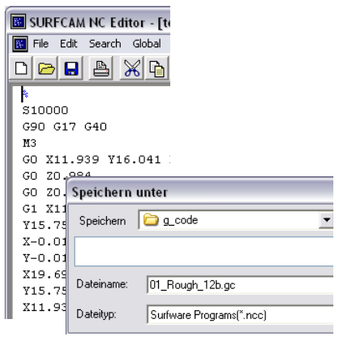
3. hit "Play" and check visualized result. Note that for intricate paths the representation is not very accurate.



7. Export File

1. in the **Operations Manager**, choose a job or folder and press "Post"
2. save the resulting file **as** "01_myjob_12b.gc" - **important: file ending .gc (G-Code)**





3. upload the .gc file to the students folder on **precix** (the mill's computer)