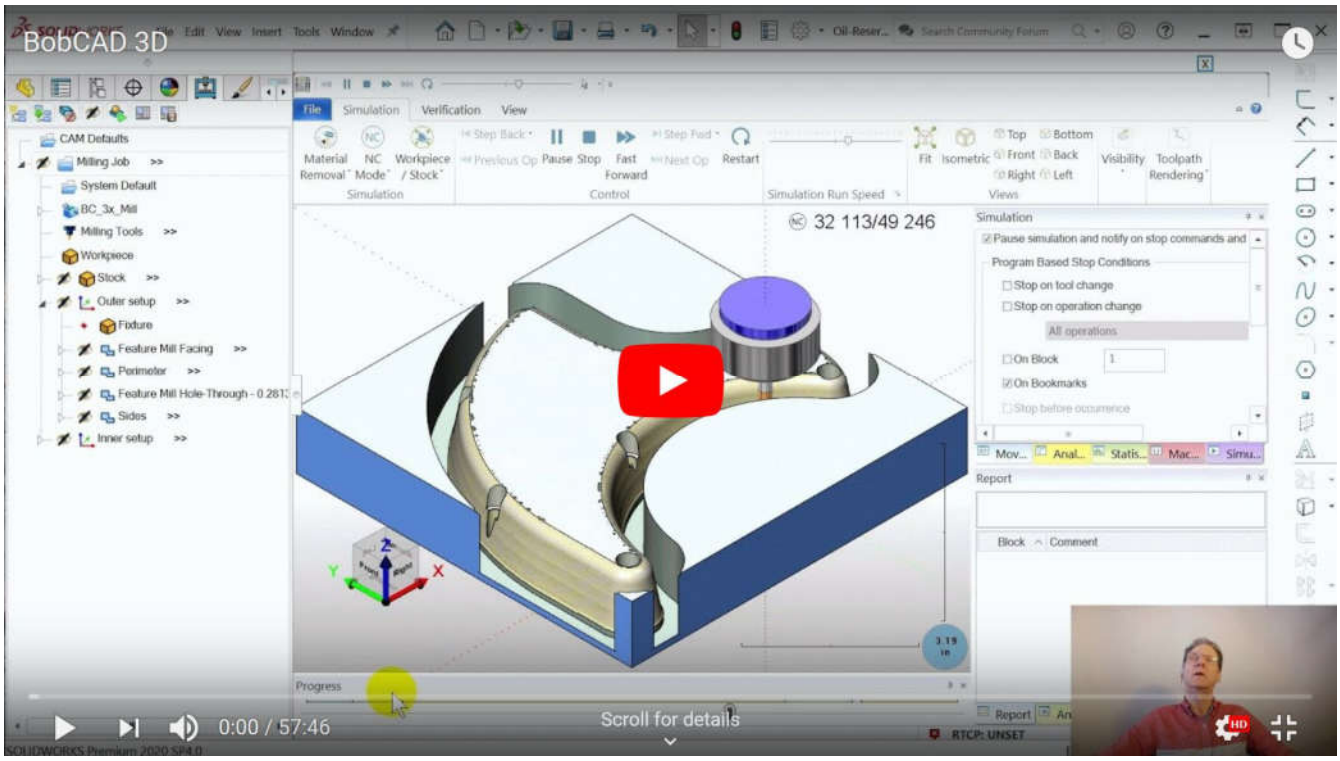
RAKO STUDIOS



# BobCAD-CAM 3D

**BobCAM got a trial part done with its basic 3D toolpaths. There are 3 levels of 3D, Premium being the highest cost.**



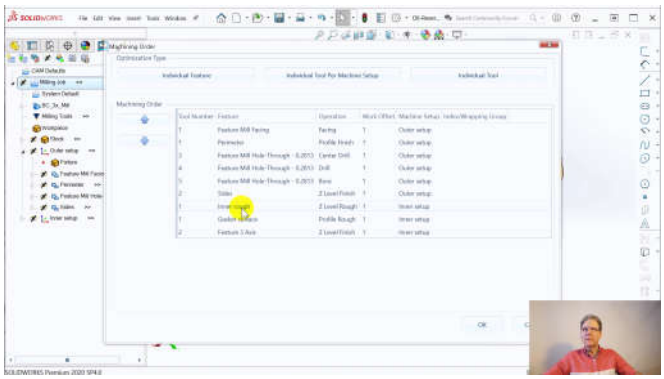

Start part file here.
Finished part file here.

I hacked up a test part from my motorcycle engine project to check out the 3D toolpaths in BobCAD for SolidWorks. I did a 3D Z-level finish operation on the outside of the oil reservoir. On the inside I did both a 3D Z-level rough and a Z-level finish.

I felt it would be interesting to design the whole part, so there were a few profiles and a facing operation as well. I also programmed the countersunk holes in the part. There is a "Countersink Drill" operation in BobCAD, but it had problem with the countersinks that were broken out by the side of the part.

This is to be expected, I have not had any "automatic" feature recognition work in any of the CAM programs. Instead, I just selected the holes, and then did a center-drill, drill, and bore operation on them. I wanted to select a counterbore tool, but BobCAD only lets you do that in the counterbore operations. That tool is not available in a simple drill operation.

This is a far cry from programs like VisualMill, that lets you sketch any tool cross section and it will use that shape in the simulations and toolpath calculations. I seem to have trouble navigating BobCAD's tool selection dialog boxes, but I managed to muddle though it this time. I used a 3/8" end mill, a 1/4" ball mill, and the drill tools.



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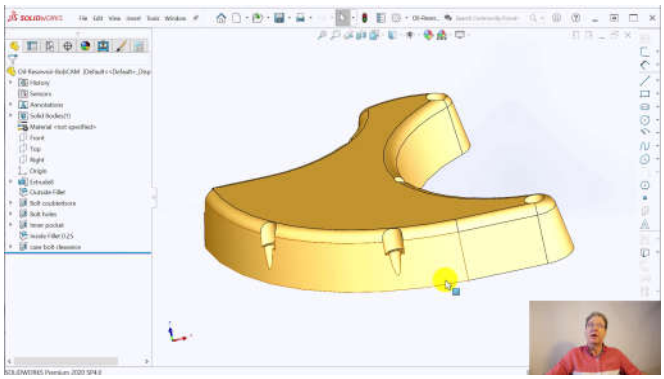
This job needed to use the Machining Order dialog in the Milling Job edit menu. This allows you to order the operations to give the right sequence. You might want to group the same tool together, or in this case, I wanted to be sure the drills happened before the sides were machined. Then the counterbore breakouts happen when the ball mill shapes the sides, instead of the counterbore mill having an interrupted cut.



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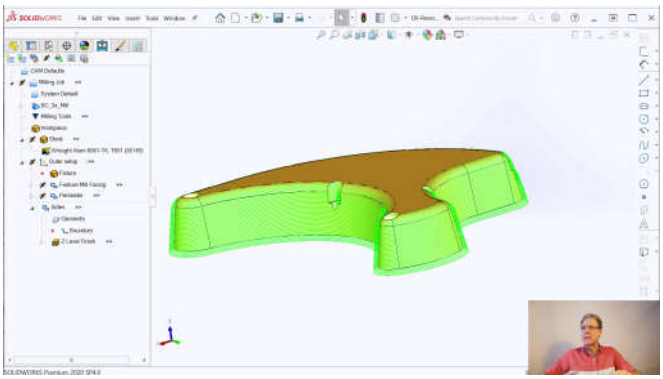
I adapted the test part from an oil reservoir part I made for a motorcycle engine redesign. It had straight sides, so to try out the 3D toolpaths, I changed the draft angle to 10 degrees. This made the counterbored holes break out the side. As expected, it tripped up the hole recognition. There is a "Mill Counterbore Hole" operation, but it failed to recognize most of the holes. I ended up using a simple drill operation, defined with center-drill, drill, and a bore. The counterbore tools were unavailable in the simple drill operations.



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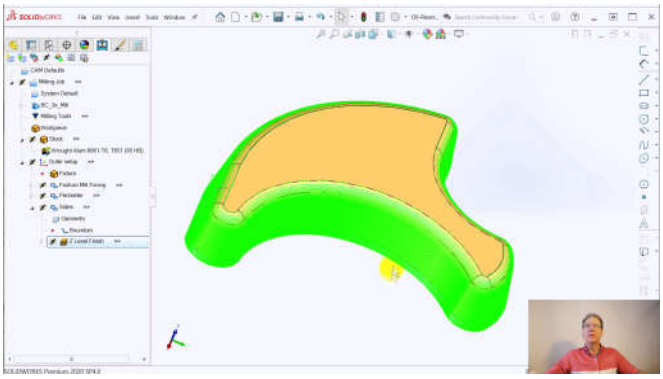
The part demonstrated a great thing about a CAM program that runs inside SolidWorks. The initial side machining did the counterbores.



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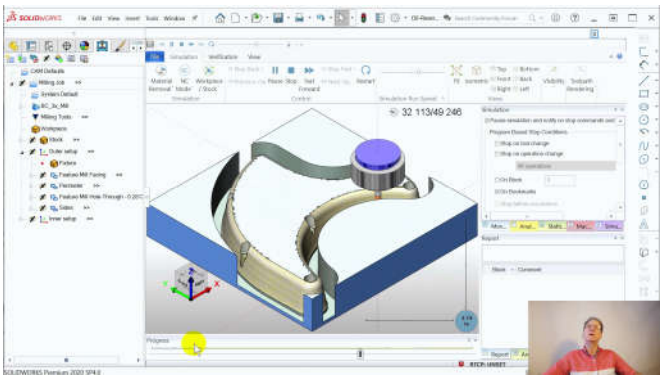
By going into the SolidWorks part tree, you can use the rollback bar to go to before the counterbores were created. Then re-compute the toolpaths and they pave right over the hole.



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The finished part simulated well, but you never really know until you run the G-code in your mill. One comfort was this part did not require any of the "Premium" advanced toolpaths.