

## Excel 440 Lubricant Machining Tests on Titanium

Tests run by O'Connell Machine in Albany, OR, USA

### Metal-

### **Titanium**

### Operation-

3 step lathe work. Rough bored the ID, 3/4 chamfer & rough out the face.

### Original method-

Heavy oil was applied to the work piece and the coated carbide insert for each step in the machining. Lots of smoke was being created in the shop which we did not like. By using this method, we made 40 parts per point on the insert.

### New method-

Squirted the Excel 440 Lubricant on the titanium part and the cutting tool and machined the whole part with no problem. We decided to just spray the tool and ran all 3 steps of the part with success.

Then we tested for how many parts could be machined without failure by spraying the tool with Excel 440 only once.

Four parts were machined with one spray application on the cutting tool.

Thirty parts were machined using this process on one point of the inserted tool.

All this was accomplished by machining titanium without coolant.

### Drilling-

The drilling was done on a CNC mill and the same method was used at first as with the heavy thick oil.

The machinist then sprayed some Excel 440 Lubricant on a brush and applied it on to the titanium prior to drilling.

Drill sizes are .219 & .098 dia., depth of drilled hole is 1/8", a center point drill is used prior to drilling the hole.

So far, 80 holes have been drilled and the drills are still good.

