



*reThink*  
**Engineering, Inc.**

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#### **UPCOMING EVENTS:**

##### Moldmaking Expo

June 22—29

McCormick Place  
Chicago, IL

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#### **Personnel Changes**

Changes are happening at reThink Engineering. We are adding a new employee, Larisa Shapiro as Marketing Specialist and we will lose our accounting intern, Stefany Prindle in May.

Larisa is a University of Cincinnati graduate who will take over all of our marketing activities. She will manage our CRM system, web presence, advertising and trade shows. She will also handle out maintenance renewals.

Stefany will graduate from Miami University with a degree in Accounting this May. She plans to head to the family home in Iowa. One of her tasks prior to leaving is to find and train a replacement. We will be sad to see Stefany leave, but congratulate her on her accomplishments. ■

# Newsletter

Winter 2009

## GibbsCAM 2009 Ships

GibbsCAM 2009 has shipped to all maintenance customers. There are significant new features in this release including a completely new 3-axis milling function, Advanced 3D Machining.

Gibbs has embraced a new licensing structure that will require users to register their software via the Internet. The benefit to customers over the long term is that upgrades will be handled with new registration codes instead of swapping license keys. This will also allow Gibbs to give you short trials of new features and functions without the traditional key swap.

There are some “gotchas” in the software, most noticeably in the Reporter plug-in. Gibbs is a Microsoft certified application and as such must follow Microsoft rules. This leads them to officially stop support for older versions of operating systems and other Microsoft software. This release drops support for Office 2000. The new Reporter doesn’t give users a choice of Excel version and will fail unless a user has 2003 or better installed. The fix for those of you who don’t have the newer Office software is outlined in a tech tip inside this newsletter.

Microsoft support for Windows/XP has officially ended. This means that the next major release of GibbsCAM will not support Windows/XP. Hopefully Windows 7 will be released and we can all avoid Vista. In either event, users will need additional memory to support Vista and probably Windows 7. ■



## GibbsCAM Tech Tip

### Using Reporter with Excel 2000

As many of you have undoubtedly discovered, the new version of GibbsCAM, v9, does not have the reported options for Reporter 2000 or Reporter XP. The Reporter plug-in only works with Excel 2003 and newer.

There is a work around that will allow you to use the older versions of Excel with your new version of Gibbs. All Gibbs plug-ins are forward compatible.

To use the old plug-in, you must move the old Reporter plug-in to the new version. In any version 8 folder, you will find a Reporter Folder.

The path will look like this:

C:\Program Files\Gibbs\GibbsCAM\8.x.x\Plugins\Reporter

This folder contains two files that you will want to copy. They are: ReporterXP.dll and Reporter2K.dll.

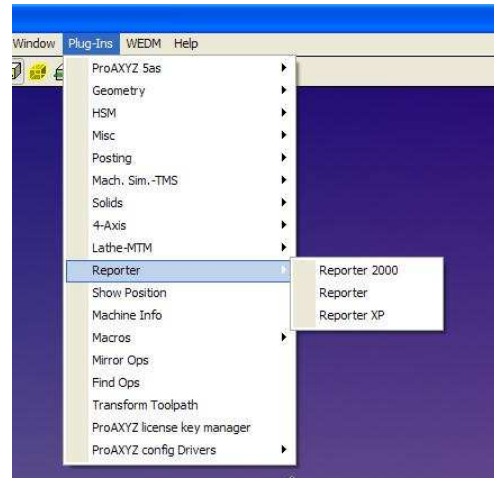
**STEP 1:** Create a folder in the v9 Plug-ins folder called Reporter

**STEP 2:** Move Reporter.dll from the v9 Plug-ins folder into the newly created Reporter folder.

**STEP 3:** Copy and Paste ReporterXP.dll from the v8 Plug-ins\Reporter folder to the v9 Plug-ins\Reporter folder.

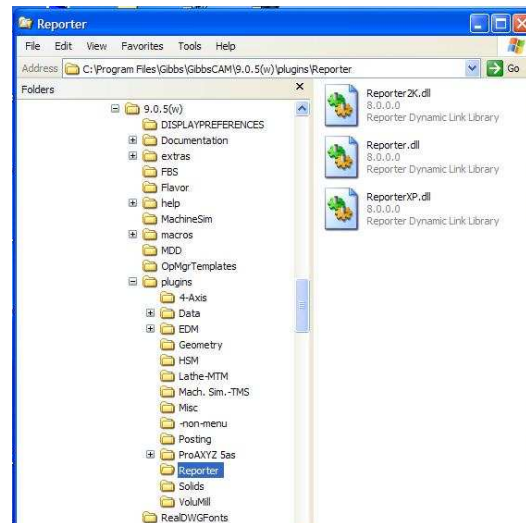
**STEP 4:** Copy and Paste Reporter2K.dll from the v8 Plug-ins\Reporter folder to the v9 Plug-ins\Reporter folder.

When you start GibbsCAM v9 and pull down the Plug-ins Menu, you will see a Reporter option as shown at the top of the following column.



When you use GibbsCAM v9, you will get these options in your Plug-in pull down menu. They will work with GibbsCAM v9.

The new Reporter folder in v9 should look like the one below:



Remember that you will have to repeat this process with each new version of Gibbs, or until you upgrade your Excel to a more current version.

Again, Gibbs does this to maintain the Microsoft certification for their software. The certification does many things to insure that the software works with the operating systems and meets programming standards. We all benefit from this certification. ■

## Of Inverse Time & Singularities

No, you are not reading a script from the Science Fiction Channel. For those of you who are 5-axis programmers, inverse time is a very real mode in your machine controls and must be planned for when programming. For Gibbs 5-axis programmers, Singularities are things to be avoided.

Inverse Time is a mode within controls that changes the feedrate. When examining axis travel speeds, linear axes (X,Y,Z) are capable of moving significantly faster than rotary axes (A,B,C). If your machine is making a move that is not far in linear terms, but significant in a rotary axis, then the linear move must be slowed down to allow the rotary move to finish at the same time.

For example, assume your program calls for a linear move of 0.25" in X, 0.05" in Y and 0.0" in Z while moving 150 degrees in A. At a feedrate of 50 ipm, the linear moves take less than a second to complete. Very few machines can rotate a part 150 degrees in less than a second. In order to prevent a crash (beginning a new cut while the part is indexing), the control must calculate a new feedrate for the linear moves so that the machine can make the cut that is being called for in the program.

The good news is that the inverse time feedrate is calculated and outputted by the post processor. This means part programmers really don't need to be concerned about inverse time. That is unless a problem arises out at the machine.

The formula for calculating inverse time is fairly straightforward. The calculation uses a constant, usually 1 minute. The formula is:

$$F(\text{code}) = 1(\text{minute}) / \text{Time}$$

The time is the 3D distance, calculated in model coordinate space - not machine coordinate space - at the NC control point. The NC control point is usually the tool tip.

Examples: A 5 inch move at 50 ipm takes 5/50ths or 1/10th of a minute. The inverse time calculation therefore is  $F = 1/0.1$  or F10. The same move at 700 ipm would look as following:  $F = 1/(5/700)$  or 1/.0071428. This yields an F1400.168.

Inverse time is invoked in a typical Fanuc control using a G93. G94 turns it off. Users should see this output when moving both linear and rotary axes simultaneously. It is not unusual in a 5-axis program to see a different feedrate on every line of code.

Singularities occur when the tool becomes parallel to the X or Y axis. Because 5-axis programmers must control both the top and bottom of a tool during cuts, it is possible for a tool to parallel an axis. The 5-axis software Gibbs users can get confused as to which end of the tool is the tip. This can cause the tool to perform some interesting gyrations and approach the cut from the back of the holder. Singularities will be obvious when rendering 5-axis programs in simulation mode.

The good news about Singularities is that they are easily fixed. Changing the tilt of the tool is the most common fix. Re-fixturing the part is also an option.

If the Singularity occurs during a retract, changing the retract angles or the retract point should fix the problem. Moving from an orthogonal tool approach to a perpendicular one can also fix the problem.

While Inverse Time is an issue for all 5-axis programming, Singularities seem to impact the ModuleWorks engine. TopSolid does not have Singularity issues, perhaps because the application is generating toolpath with full knowledge of the machine tool. ■



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## **TopSolid**

TopSolid'Mold is a dedicated mold design software. TopSolid'Mold enables calculation of the shrinkage factor, analysis of undercuts, calculation of the parting line and surface of the joint, automatic creation and definition of the core block and cavity, implementation of the standard carcass, systems of injection and ejection and analysis of the cooling system.

Here are some major improvements for TopSolid'Mold 2009:

TopSolid'Mold 2009 allows the design of a mold in a collaborative environment. This means that it is now possible to allow several users to work on designing the mold at the same time, thus reducing design times. This new function is essential for today's mold makers who are increasingly obligated to design molds faster. The flexibility offered by TopSolid'Mold 2009 permits different organization structures:

Sub-assemblies are split between different users:

Divide injection / ejection / movements

Divide die base / core and cavity blocks / feeding system

Divide inserts + associated movements / core and cavity blocks / die base

Etc...

Simultaneous mold design by the visualization of an assembly context (which shows all elements of the mold design being worked on) in order to control the work of all users at the synchronization stage. Thereby, different users can work on the one mold at the same time.

Distant sharing: an on-demand synchronization system between different work stations permits work to continue in an environment which may be temporarily unsynchronized. The user thereby works on an image of his study off-site (while on a business trip, at the customer site, outside the design office ...) and can synchronize their work with their team on their return. ■