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Art Center College of Design

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The Art Center College of Design in Pasadena, California, is one of the most advanced schools in the country when it comes to teaching its design students the CAD/CAM technology they will need to employ in the real world. After two terms of developing "hand skills" by working with materials like clay and fiberglass, the design students are ready for classes such as Model Construction 3 and Machine Surfacing, where they do actual machining of aluminum and other materials (see figure 1). They learn 3D programs such as AutoStudio from Alias and SolidWorks Corporation's solid modeling program of the same name. Since 1994, the school's manufacturing program of choice was Mastercam from CNC Software.

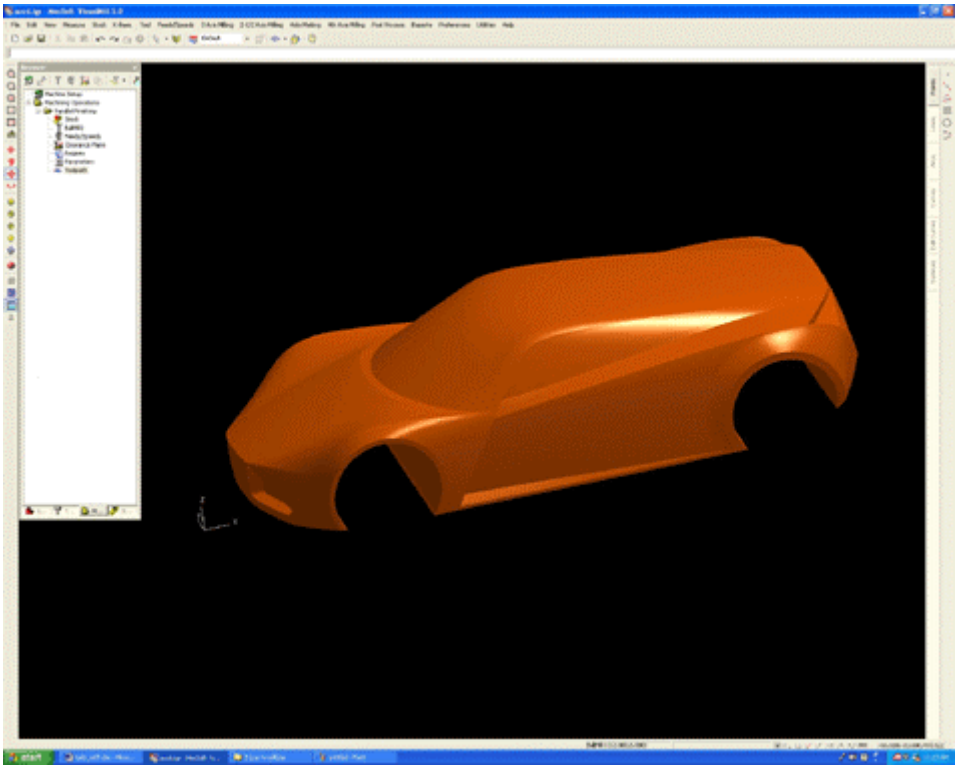

Figure 1 – A student at Art Center College of Design in Pasadena created this automotive design, then imported it into VisualMill

Professor Jason Pilarski is the Manager of the 3D Lab at the college, which means he teaches design and manufacturing classes to about 50 students every semester, three times a year. The 3D Lab has upwards of 1000 students using its facilities per term. He explained that while the students are just "thrilled by the fact that they can go from concept to finished parts in just a few weeks," the snag was always Mastercam, which most found to be too difficult. "I would constantly hear complaints like 'why can't I simply select an object to move it – why do I have to go through all these menus,'" recalled Professor Pilarski.
"Designers think visually," said Pilarski, however, Mastercam is text-based software. Mastercam made promised to incorporate a more interactive GUI (Graphic User Interface) but never followed through. "We did try to customize the interface to minimize the amount of mouse clicks, but it still proved to be rather cumbersome." This was one of the main reasons why we wanted to make a change.

The Start of a Change
So early in 2003, Professor Pilarski began his search for a new CAM program. His research included high-cost products such as Delcam's Powermill and FeatureCAM from EGS. In addition, he considered lower-cost packages such as Deskproto by Delft Spline Systems, WorkNC from Sescoi and MecSoft's VisualMill, while also researching other products online. Having had a good experience using Delcam products at his previous job, PowerMill seemed to have the early edge, but when he saw VisualMill, Professor Pilarski was impressed that it followed the same logic, and had many of the same tools, but was only a small fraction of the price.
Meanwhile some of the other lower-cost products also were interesting. For instance, Deskproto showed some promise, but it could only import STL files and he wanted software that could deal with other polygonal files as well as IGES surfaces. Also, many of the lower-cost products could only do parallel tool paths – none offered remachining or contour cutting commands, except for VisualMill, so it began to be the obvious choice.

The Move to VisualMill
Using Professor Pilarski's recommendations 40 seats of Visual Mill were purchased. Next, he went to MecSoft's Irvine headquarters for training. During his training, the application engineers instructed him on how to perform the tasks he required. They also listened to some of his ideas, a few of which were incorporated into the newest version 5.0. "They took my suggestions to heart and I really felt like I was part of the development team, with all of us trying to make a better product. I like the fact that I have a continued two-way line of communications with the application engineers at MecSoft," he said.
The best part is, in only a few months, the students have been incredibly receptive to using this software. Students are now easily producing their toolpaths, and the quality of their machining is better, because Visual Mill has made it is so much easier to do additional toolpaths such as Pencil Tracing or Remachining (see figure 2). "Now our students are not so reluctant to add secondary toolpaths, thus, they are ending up with higher quality machined parts," says Professor Pilarski.

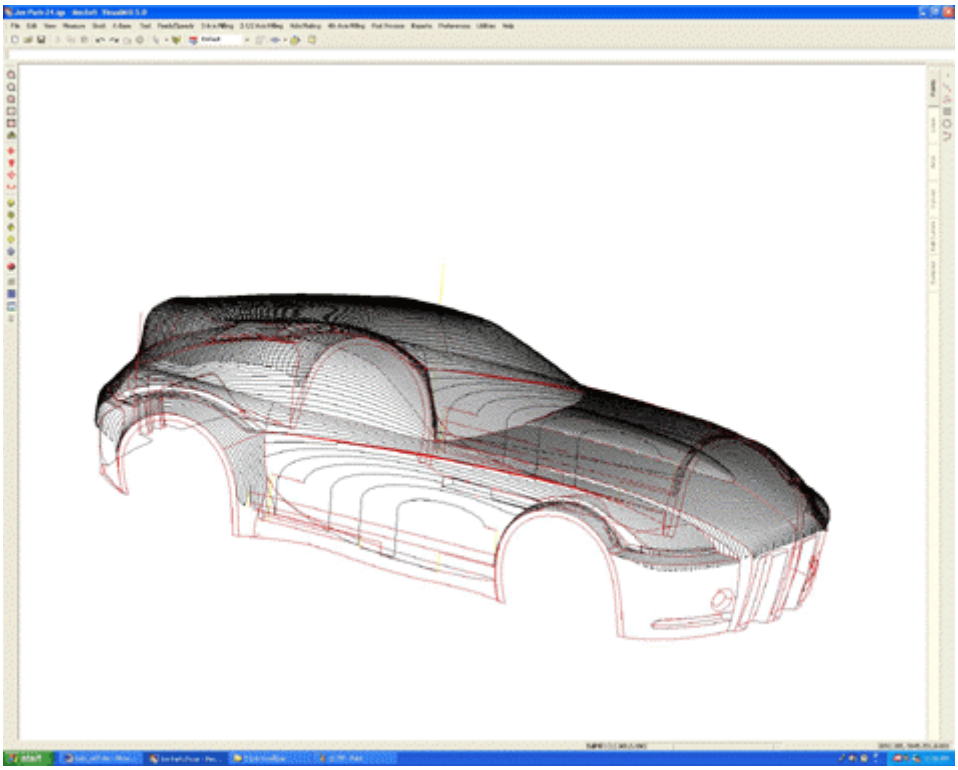

Figure 2 – A parallel finishing toolpath run in VisualMill.

Interoperability

Robust interoperability was a key factor in choosing Visual Mill. He noted how VisualMill can read in SolidWorks IGES files and STL files perfectly. The biggest time-saver, however, is with the machining of AutoStudio surface files. "Sometimes in AutoStudio, you just can't get the model to be completely continuous and fussing with it can be an enormous headache. The great thing is VisualMill doesn't care if the model is watertight, or if the normals are harmonized – it just brings in the data. This just makes it much easier for the students," he concluded.

Conclusions

In short, Visual Mill has made tool path production so much easier. This product is key in introducing students to a new method of designing; a method where prototypes are rapidly created in the actual material of the finished product (see figure 3 and 4). "In essence, our students are getting a deeper understanding of how their designs relate in the real world manufacturing process," Professor Pilarski summarized.

Figure 3

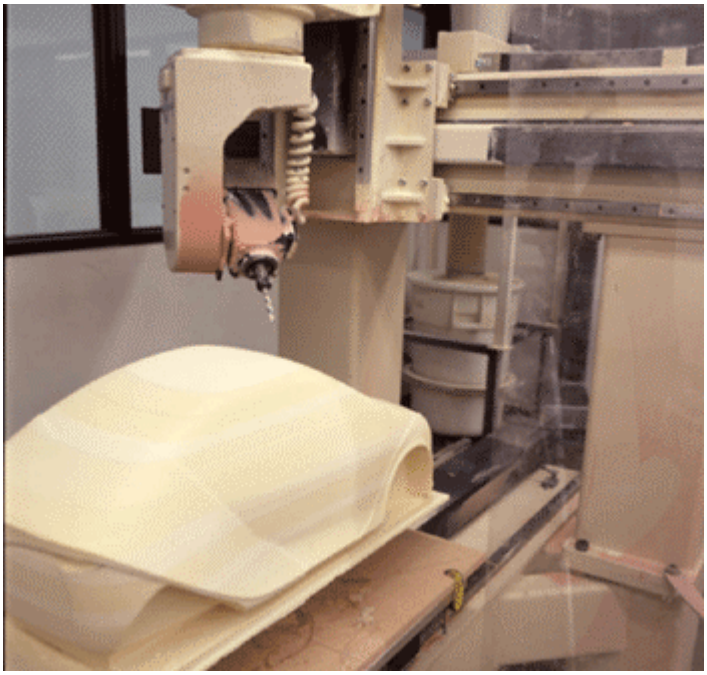

Figure 3 and 4–Actual component parts are machined by the students, using VisualMill, usually at 1/4 scale.