

ReverseEngineering.com success story **Machining Company Reinvents Itself with HighRES**

With the manufacturing base of the United States facing intense global competition, the choice is clear: give up or evolve. Modern Cam of Taylor, Michigan decided to evolve - investing in and implementing new technologies. The result: New revenues and new lines of business.

Great beginnings

Modern Cam started in 1971 as a company that rebuilt multi-spindle screw machines. These cam-driven machines, basically automated turret lathes, were used to inexpensively manufacture turned parts in volume.



Figure 1: A PCMM is used at the front end of the cam reverse engineering process.

Over the years Modern Cam found a lucrative niche in producing replacement specialty cams for many types of high-volume production machines. Companies relied on Modern Cam, rather than doing it themselves, because it is difficult and time-consuming to reverse engineer these parts. Simply put, standard measuring tools such as micrometers and calipers don't lend themselves well to creating cam splines and paths, timing, throws and dwells as part features in a CAD system.

Even Modern Cam, a specialist, had to do it the hard way, making two cams for each order - one a template, the other a finished part. Over time the company started to develop its own CAM and CNC software to run the cam machines it had on the shop floor, but executives knew they would need more – more automation, more expertise and more revenues.

An evolution

After considerable research, company owner Scott Bitters decided the best option for continued success and growth was to pursue a new business strategy based largely on ReverseEngineering.com software.

Bitters said he chose ReverseEngineering.com direct-to-CAD reverse engineering software because it could integrate easily with any PCMM he chose; it was fast to learn; it would work perfectly with any CAD system and because he could digitize directly into his CAD –saving time and money, adding efficiency and opening up new lines of business.

A company reinvented and reinvigorated

Modern Cam deployed a reverse engineering system consisting of:

- A portable coordinate measuring machine (PCMM) with a hard probe for measuring the cams (See Figure 1)

- Basic and Advanced software modules from ReverseEngineering.com for digitizing the data from the PCMM direct-to-CAD

- SolidWorks Professional for modeling the cams (See Figure 2)

- SolidCAM for cutting the parts on a machining center.

Bitters does all of the digitizing and modeling himself and has realized major time savings and higher accuracy. For example, the direct-to-CAD ReverseEngineering.com software decreased the time it takes to measure a cam from two days to just a few hours. The digitized part has an advantage of being used for physical duplication on one of his machining centers, or as the basis for similar cams that are easily modified and machined digitally. Bitters uses reverse engineering to establish a base and is then able to fine-tune functional requirements from there.

Additional revenue opportunities

With its new workflow the company is now able to provide not just a product, but an engineering service as well.

As evidence of additional opportunities the software provides, ReverseEngineering.com is also playing a role in one of Bitters' hobbies away from the shop: He's using it to reverse engineer a carburetor for a 1938 John Deere tractor he's restoring. Once the carburetor is modeled he will send the data to a service bureau to have it printed in 3D on a rapid prototyping machine. That will enable him to test for fit before having the model cast in metal. That's just the kind of flexibility Bitters believes will open up new business opportunities for his company.

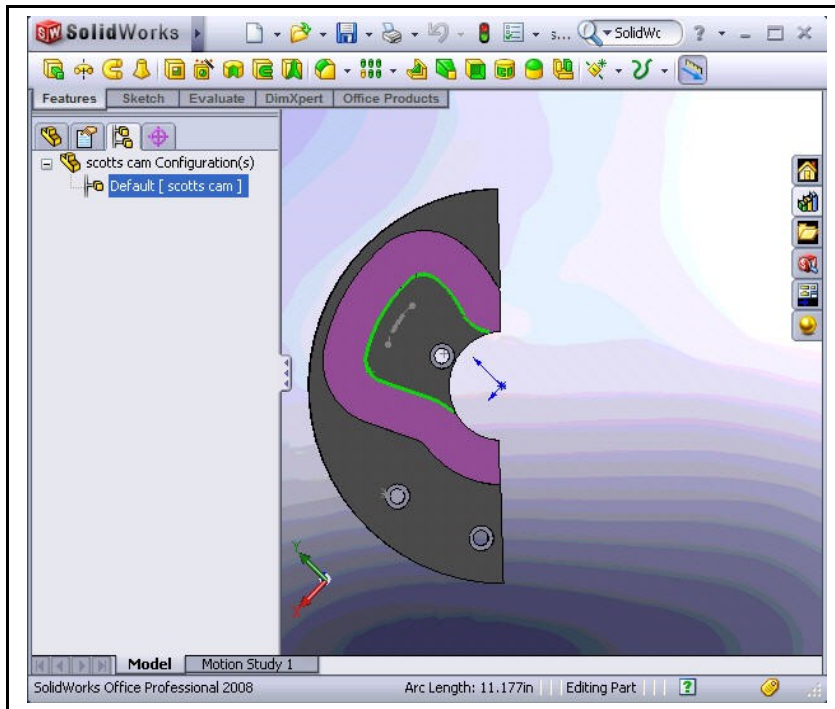


Figure 2: SolidWorks is used to model a cam during the reverse engineering process.

Bitters has also found ReverseEngineering.com very helpful for complex cam systems such as conjugate cam sets, which require highly accurate mathematical information. They can require extremely tight tolerances and will bind if they don't work in unison. Bitters says the ReverseEngineering.com solutions are well-suited for these demanding tasks.

“ReverseEngineering.com makes complex cam systems relatively simple,” he added.

A bright future

Bitters wants to expand the reverse engineering side of his business, but plans to continue to maximize the investment he has in the existing machining centers on his shop floor. This is another benefit of the ReverseEngineering.com software: It's helping maximize the investment the company has already made while at the same time enabling it to move forward with the promise of an even more prosperous future.

About ReverseEngineering.com

ReverseEngineering.com develops and markets plug-n-play software tool sets that accurately, quickly and easily import raw digitized data from portable CMMs and laser scanners into CAD/CAM systems as easily modifiable parametric sketches. Providing what is essentially a universal front end, the company eliminates the data translation issues usually associated with reverse engineering and related applications. Taking a modular approach, it provides more than 500 CAD/CAM integrated tool sets addressing any need, from entry-level to the most sophisticated CAD applications. www.ReverseEngineering.com

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A measuring job that used to take two full days now just takes a few hours, thanks to ReverseEngineering.com direct-to-CAD software and the PCMM it supports.