

# 3D Design Keys Die Shop's Survival and Success

BesTech Tool Corp. uses technology to stay competitive in the brutal world of tool design and build. The complete switchover from 2D to 3D design is one example, enabling the company to cut lead time and deliver tooling that works right from the start.

BY LOUIS A. KREN, SENIOR EDITOR

Celebrating its 15th anniversary, BesTech Tool Corp. and its 30 employees design and build progressive and transfer tooling at a 42,000-sq.-ft. plant in West Bend, WI. Once producing tooling for computer, appliance and lawn and garden stampers, the company in recent years has gravitated toward more demanding and complex automotive work.

It does that through a host of inhouse capabilities including design, heattreating, machining, waterjet cutting, prototyping and press tryout, with constant technology upgrades.

"You have to stay as current as possible," says Mike Korneli, BesTech president. "Many tool and die shops have gone by the wayside and staying current is how we've managed to survive. Opportunities in China are decreasing, costs are rising there and the Chinese currency is being adjusted in our favor, which means that U.S. tool and die shops can become more competitive. So we have to be leaner and smarter to

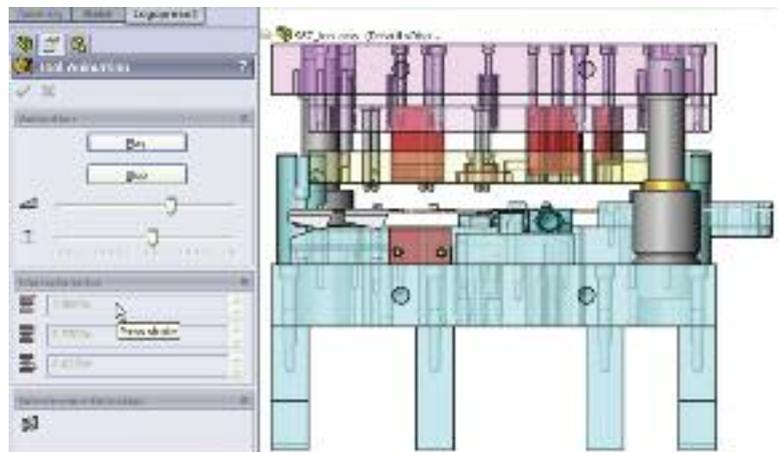
take advantage of opportunities like this."

One way BesTech works smarter is by fully adopting 3D die-design software, which helps the company meet increasingly stringent lead times demanded by customers.

"A number of years ago we looked at switching from 2D to 3D die design

but at that time the technology was too slow to fully implement," Korneli recalls.

Two years ago, Korneli felt that 3D technology had developed enough, and the company selected Logopress3 3D die-design software, from Logopress provider Accurate Die Design, Inc., New Berlin, WI. At BesTech, progressive dies range from 10 to 15 stages carrying out

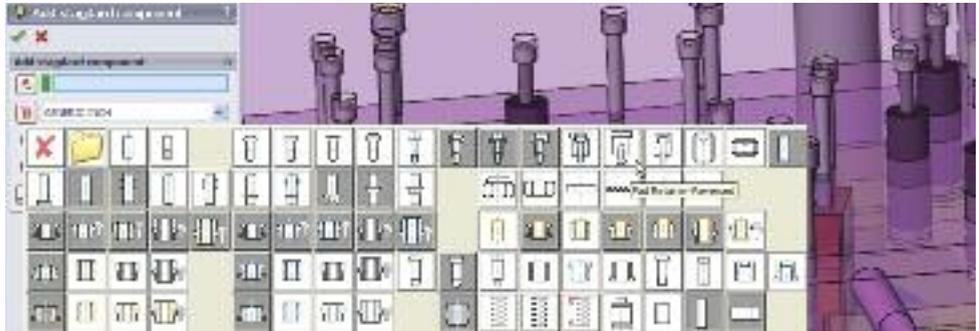


The Tool Animation command in the 3D die-design software employed at BesTech allows users to click an icon and then set the press stroke, stripper travel and strip-lift height. From there, animation shows the die running as if it were in the press. This feature also provides interference detection throughout the press stroke, including strip progression through the die.

a host of functions from deep drawing to partial drawing, to trimming and final forming, with some parts requiring extremely tight diameter tolerances. Dies produced by the company have varying heights and accept varying coil widths—including plenty of high-strength low-alloy material.

The software, operating within SolidWorks, features a strip module that its makers claim can easily create and modify the strip for difficult 3D-formed parts common in the automotive industry, and automates the creation of the skeleton/ carrier and stretch webs. Another important software feature: a time-saving tool-creation module, “since 80 to 90 percent or more of the time spent on a die design is spent after strip creation,” says Ray Proeber, Accurate Die Design president.

With its library of standard die components, the software automatically fully dimensions user-inserted components, cuts required holes, inserts components and handles all mates. This flexibility allows, for example, a nitrogen cylinder to be changed quickly to a coil spring, while



The die-design software includes a library of die components with multiple brands available for every component. The software automatically creates holes upon the insertion of the component, saving design time.

also providing feedback related to spring load and compression percentage.

“We see as much as a 20 percent reduction in lead time for tool design with Logopress3 within SolidWorks, as opposed to just using SolidWorks for design, which we still do on occasion,” says Chad Aker, design supervisor at BesTech.

BesTech employs five seats of SolidWorks, with Logopress3 operating in two of those. One designer is fully versed in the new software with another undergoing training. Aker points to file structure and strip-layout functions as the main reasons for success in using the software.

“With Logopress3, our designers only have to worry about designing the tool, not about how to assemble it and how to place the 3D components, since the software handles that,” he says. “And with material usage so critical, the software allows simple adjustment of strip progression and width, saving material and allowing us to modify strip in process without starting over.”

These efficiencies carry over to die tryout.

“We notice much fewer slug-clearance issues,” notes Aker, “and do not have to open up the dies during tryout to diagnose poor-quality parts.” **MF**

## 3D Die Design in the Classroom

Located in West Bend, WI, the Applied Manufacturing Technology Center at Moraine Park Technical College (MPTC) focuses on retraining and building a worldclass, skilled workforce. Its Tool Design Engineering Technology program, the only one in the state, is available as a part of a two-year associate's degree program, but also enrolls students strictly for the die-design portion.

During its first nine years, the program taught AutoCAD along with a couple of add-on die-design programs. 2D die design ended as a class subject in 2004, replaced by 3D design via SolidWorks with Logopress3 die-design software added in 2005.

John Cawley, tool-design instructor at MPTC since the program's start, notes that 3D design software allows him to teach students more about die design in a shorter amount of time. One reason: It automates the mundane tasks of die designing which speeds the overall process. In addition, the process is much more visual than with 2D design.

One example relates to strip-layout creation. The software speeds strip creation, along with design of the cutting and forming punches, says Cawley. And because everything is

created as a solid the students can easily click and drag a section view through any part of the strip or tool almost instantly.

Another example relates to subassemblies. Logopress3 automatically creates four different subassemblies representing the strip, die half, punch half and stripper. The students then click an icon to display a specific subassembly or combination of subassemblies. And students can quickly choose from different styles and brands of die components found in the software's component library, allowing them to learn about various components available in the tool and die industry.

Once the students complete their design—or at any point during design—they can click an icon and, using the software's built-in animation function, watch the die operating as if it were in the press. This includes the strip lifting and progressing through the die. This same tool enables instruction on clearance issues and other interference that often will not be discovered until the die is built.

For more information on the program, visit [www.morainepark.edu](http://www.morainepark.edu).