HCLSoftware

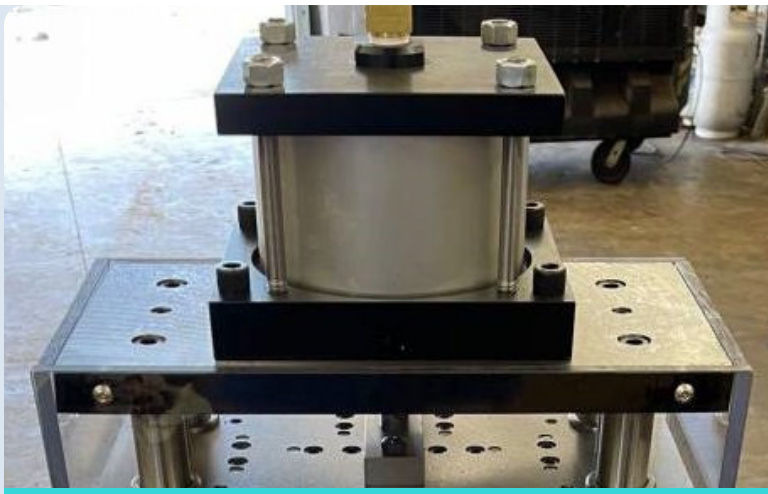
High-Quality, Efficient Tooling for the Fenestration Industry

HCL CAMWorks

Bears Metal Works Leverages CAMWorks 2.5-Axis Milling and Wire EDM Solutions to Improve Production of Aluminum Window and Door Machinery and Tooling

A family-owned and family-run machine shop based in Bartow, Florida, Bears Metal Works was founded by David "Bear" Fox in 1980. Initially, the company machined metal parts for automotive and other uses. A CB radio aficionado, David used part of his CB handle "Papa Bear" for the name of his new company. In the shop's early years, he assembled homebased CB radio antennas and towers, which included machining and welding parts for them. Since then, the company has evolved under the leadership of Bear's son, current President Tim Fox, to become a leading developer and manufacturer of production machinery, tooling, and parts for manufacturing aluminum windows and doors. The company's equipment is used to make parts by many of the top manufacturers in the fenestration industry.

At first, Bears Metal Works used a drafting board and manual machining techniques to cut parts. As the company grew, it made greater investments in machining technology. The firm added ProCAM® 2D machining software in the late 1980s and utilized that software—including a 3D version—to mill parts for a little over a decade. According to Tim Fox, as the company grew and its business evolved from primarily cutting parts to designing and building production machinery, tooling, and equipment for manufacturing aluminum windows and doors, the firm needed efficient 3D design and machining tools to create design models of parts, machine components, and assemble machines.



Bears Metal Works manufactures production machinery, tooling, and parts for aluminum windows and doors. Their customers are top manufacturers in the fenestration industry.

"Today, our main business is custom production equipment for the window and door industry, such as punch dies, end mills, cutoff saws, routers, crimping tools, and weathership insertion tools," Fox explains. "While we do produce some parts for customers—mainly clips and brackets—our primary focus is designing components and assemblies for our production machinery, milling those parts in-house, and assembling our equipment."

Fox says that the company acquired SOLIDWORKS® 3D design software in the late 1990s to improve machine design efficiency and accuracy—particularly in modeling parts and assemblies—and added CAMWorks® 2.5-axis milling software in 2000 to take its machining operations to the next level. The company later added the CAMWorks wire electrical discharge machining (EDM) solution. "Acquiring SOLIDWORKS and CAMWorks was integral to our growth and success," Fox stresses. "The integration between SOLIDWORKS and CAMWorks and the bi-directional associativity between a model and the toolpath are both substantial time and money savers."

Supporting 3D Design and Machining

With CAMWorks solutions, Bears Metal Works has best-in-class 3D CAD and CAM solutions in a single package, which provides important benefits for creating machine designs, cutting parts, and assembling production machines as efficiently as possible. "Our operation—both on the design and machining side—has become much more efficient because of the integration of CAMWorks and SOLIDWORKS," Fox notes.

"We now have three (3) full CNC machining centers and two (2) wire EDM machines, and are able to mill parts much faster," Fox adds. "For example, doing a die set on a machine used to take us a half day and now takes about an hour. The speed with which we perform machining is very important because the faster we can complete it, the more time is freed up for our assembly work and equipment builds. CAMWorks has consistently helped us machine parts in a more timely manner."

Tim Fox, President
Bears Metal Works

The Client

Company: Bears Metal Works
Headquarters: Bartow, Florida, USA
Industry: Custom production machinery/tooling for manufacturing aluminum parts for windows and doors.

The Challenge

Transform a family-owned, family-run machine shop into a top developer and manufacturer of production machinery, tooling, and parts for manufacturing aluminum windows and doors by automating the design, machining, and assembly of production machinery. Also, improve productivity, increase accuracy, and eliminate unnecessary costs and delays, while building the company into a leader in the fenestration industry.

The Solution

Implement CAMWorks 2.5-axis milling and CAMWorks Wire EDM solutions to take advantage of the solutions' seamless integration with SOLIDWORKS 3D modeling software, feature-based recognition capabilities, and greater automation through the extensive knowledge database with the CAMWorks TechDB™.

The Results

- Realized the ability to design, machine, and assemble equipment more quickly.
- Saved time and money through automation efficiencies and improved productivity.
- Reduced die set time from half a day to one hour.
- Cut assembly time in half due to improved quality.
- Improved ease of design re-use and design changes.

Automating Machining Parameters with CAMWorks TechDB™

One of the CAMWorks features that is especially beneficial to Bears Metal Works is its Technology Database (TechDB™). The database enables users to save specific machining parameters and toolpaths for future use, which saves programming time. "I couldn't imagine doing what we do now without CAMWorks," Fox says. "We've been able to automate much of our machining because we've built a knowledge base of machining parameters in the Technology Database."

"When it's time to machine a part, the machine automatically selects the pre-loaded parameters from our knowledge database," Fox continues. "This saves time and ensures quality, and when we have more complex shapes, we save time by using our wire EDM machines to wire-cut the part. In both instances, CAMWorks is helping us automate machining to increase productivity."

Ease of Editing Boosts Quality, Saves Machining and Assembly Time

With the capabilities of the Technology Database and the bidirectional associativity between the SOLIDWORKS design model and the CAMWorks features used to create toolpaths, which enables changes to the design model to automatically update the machining G code in CAMWorks, Bears Metal Works can more easily re-use previous designs as well as make design changes prior to machining. These capabilities save both machining and assembly time while simultaneously improving quality.

"The biggest benefit of the integration between SOLIDWORKS and CAMWorks is that we easily see mistakes on the computer before cutting metal," Fox points out. "Back when we used 2D, we'd discover problems during assembly and had to fix them in metal. Now, with CAMWorks, we fix problems on the computer in SOLIDWORKS and the changes are automatically updated in the toolpath. This makes it easier to re-use, or slightly modify, existing designs, and minimizes mistakes. It also shortens assembly time, enabling us to cut assembly time in half. In short, CAMWorks has enabled us to produce more work without adding resources and has been a significant contributor to our success."

HCL CAMWorks

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