

BOOSTING THROUGHPUT AND QUALITY WHILE SAVING TIME AND MONEY

Decimal Engineering Automates Machining and Adds Remote Programming with CAMWorks ShopFloor

Decimal Engineering, Inc. has provided precision manufacturing services for more than 40 years. Like all manufacturing service providers, the Florida-based company faces competitive pressures to shorten production lead times, minimize scrap/rework costs, and maximize machine up-times. Formerly, the company had spent a lot of time iterating back and forth between engineering and manufacturing to rework parts before cutting them, often wasting time and scrapping material if something was missed.



Throughout its history, Decimal Engineering has grown steadily, expanding into a full-service manufacturing services provider operating in a new state-of-the-art production facility in Pompano Beach.

Since its founding as a small sheet-metal "job shop" through its expansion into a full-service manufacturing services provider, Decimal has grown steadily and realized success through the timely acquisition of cutting-edge production equipment and innovative manufacturing software to support higher levels of automation. Decimal President Alan Garey points out that providing Decimal's highly trained engineering and manufacturing teams with the latest and greatest industry software often determines just how quickly and accurately they can take a design from concept to completion.

With the complexity of customer parts and expectations for shorter production lead times both on the rise, Decimal decided to replace its previous CAM software with CAMWorks® machining software, including the CAMWorks VoluMill™ high-speed machining module, in 2014. Some of the key criteria that Decimal considered in deciding to switch to CAMWorks included CAMWorks being fully integrated with SOLIDWORKS® CAD software, as well as its robust feature-recognition capabilities and an extensive knowledge database. The company added the CAMWorks ShopFloor™ application in 2020 to support remote programming; bring all machining/programming information for a job onto a

single dashboard; and provide shop floor personnel with access to model data for measurement, simulation, and interrogation purposes.



*Alan Garey, President of
Decimal Engineering, Inc.*

“We needed an integrated solution to automate the process of transitioning from engineering to production,” Garey recalls. “We often need to iterate a job and make changes to meet manufacturing requirements. However, because our previous solution was not integrated, those changes frequently didn’t make it back to engineering. This sometimes led to duplicate work and time wasted.

“With CAMWorks and its integration with SOLIDWORKS CAD software, we acquired the integrated system that we need to handle design changes to support manufacturability while capturing those changes in the SOLIDWORKS single modeling environment,” Garey explains. “We’ve also eliminated our reliance on paper drawings, which we’ve replaced with on-screen 3D PDFs.”



*Jason St. Pierre, Machine
Shop Supervisor of
Decimal Engineering, Inc.*

As Machine Shop Supervisor Jason St. Pierre notes, the recent addition of CAMWorks ShopFloor has extended the productivity gains that Decimal initially realized by moving to CAMWorks even further. “I really pushed for the CAMWorks ShopFloor implementation because it enables us to work smarter and faster,” St. Pierre stresses. “We frequently work with our consultant—AI Stimac of Machining Training Solutions (MTS), a

CAMWorks training partner—on both programming for our shop and to source overflow jobs at AI’s shop. With CAMWorks ShopFloor, working

THE CLIENT

Company: Decimal Engineering, Inc.

Headquarters: Pompano Beach, FL, USA

Industry: Precision Sheet Metal Fabrication, CNC Machining, Stamping, and Wire EDM Services for the Aerospace, Defense, Medical, Security, Telecommunications, Electronics, Computer, Automotive, and Marine Industries

THE OBJECTIVE

Automate engineering data transition, leverage remote programming, and support access to model data on the shop floor to improve productivity, increase accuracy, and minimize down-time, eliminating misunderstandings, delays, and unnecessary costs in the process.

THE SOLUTION

Implement CAMWorks, CAMWorks ShopFloor, and CAMWorks VoluMill high-speed machining software to take advantage of the solutions’ seamless integration with SOLIDWORKS 3D modeling software, feature-based recognition capabilities, remote programming capabilities, shop floor access to model data, and extensive knowledge database.

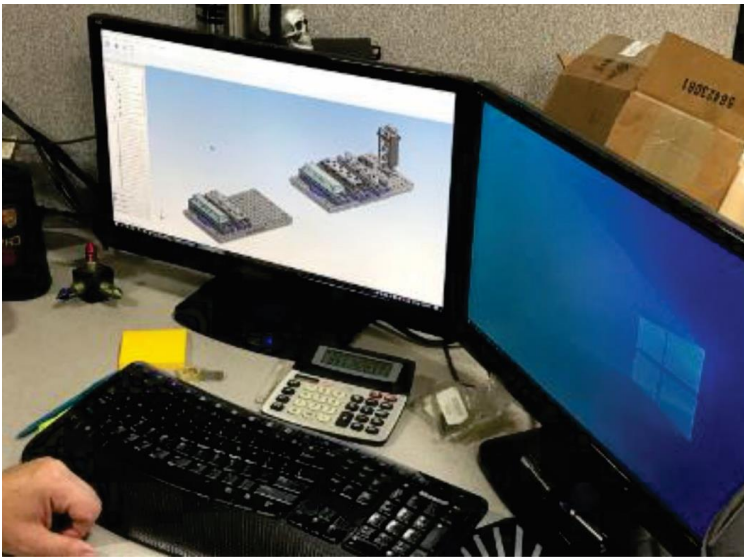
THE BENEFITS

- Reduced machine set-up time by 50 percent
- Increased machine up-time by 30 percent
- Cut scrap/rework costs by 50 percent
- Realized more than \$25,000 in annual savings by going paperless

together remotely is no different than if we were in the same location because all of the information related to a job is readily available and all in one place.”

Machine Set-Up Time Shortened with CAMWorks ShopFloor

With the implementation of CAMWorks ShopFloor software, Decimal gained the ability to have programming done remotely—with G-code and all machining information received in a single package—and acquired productivity-enhancing tools for obtaining information about or interrogating the model of a part to be machined from the shop floor, or simulating the machining process. CAMWorks ShopFloor capabilities include measurement; cross-sectioning; machining simulation; and the ability to simulate the tool, tool-holder, and stick-out length of the tool. These capabilities help Decimal avoid the back-and-forth iterations between manufacturing and engineering, which ate up time in the past. The addition of these CAMWorks ShopFloor capabilities has resulted in a 50-percent reduction in machine set-up time, helping to increase the important, bottom-line, machine shop metric of machine up-time.



“I see CAMWorks ShopFloor as the all-in-one machining package because all of the information needed to run a job—the program; the tool list; the set-up sheets; images of the set-up; 3D simulation of the machining process with X, Y, and Z coordinate planes in view; the engineering drawing; and a read-only 3D model of the part to be machined—is available on my computer and the shop floor monitors used by the set-up guys,” St. Pierre relates.

“As its name implies, CAMWorks ShopFloor is super beneficial on the shop floor,” St. Pierre adds. “If a dimension is missing from a print, we can pull out any feature and measure it. We can section-cut a model to

Fully integrated with SOLIDWORKS, CAMWorks helps Decimal Engineering automate the process of transitioning from engineering to production.

gain important missing dimension information, such as on a deep blind hole. We can even visually simulate the entire machining program—watching on screen to see how the tool moves and removes material—in all three dimensions, which helps us avoid costly collisions and make important tool corrections. CAMWorks ShopFloor even sounds an alarm if we attempt to machine the wrong revision of a part.

“Not only have we cut our set-up times in half using CAMWorks ShopFloor, the solution has also improved the quality of the set-up, which means we’re increasing both efficiency and quality,” St. Pierre says. “Our run time is up, our spindle

turning has increased, and our scrap/rework is down, all of which help us to move on to the next job more quickly and maximize throughput.

Greater Automation, Accuracy = Fewer Errors, Less Down Time

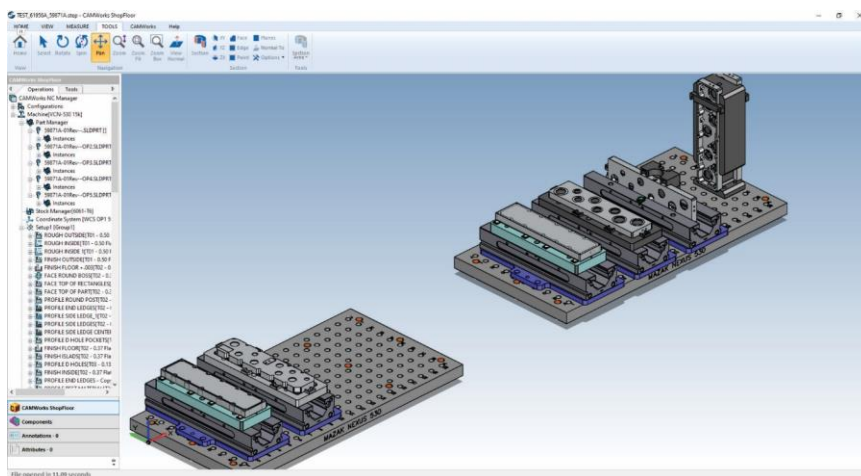
Since implementing CAMWorks machining software, Decimal Engineering has realized greater automation and increased accuracy, resulting in fewer errors and less machine down time. In fact, Garey says the move to CAMWorks has led to a 30-percent increase in machine up-time.

“Whenever we had to iterate a job using our previous software, we experienced down time, and we gradually lost confidence in the solution,” Senior Engineer Gary Saltzer points out. “With CAMWorks, it’s much easier to make a design change, and have the change automatically reflect in the manufacturing model. The software is more efficient—something what took 20 mouse clicks in our previous CAM software takes about five mouse clicks with CAMWorks—and because CAMWorks uses SOLIDWORKS as its modeling front end, all changes are captured and reflected in our engineering model. None of the modifications are lost, which leads to fewer mistakes.”

“Using CAMWorks gives engineering more control of the process,” Saltzer adds. “The difference in how we work now with CAMWorks compared to before we implemented the solution is ‘night and day.’ With CAMWorks, we can post a G-code program and our machinists can just run it instead of coming back to us and iterating on it over and over.”

Eliminating Paper, Minimizing Scrap and Rework

In addition to reducing machine set-up time, increasing machine up-time, and improving accuracy, the move to CAMWorks and the addition of the CAMWorks ShopFloor solution have allowed Decimal Engineering to implement a



completely paperless documentation system—with all drawings, setup sheets, shop prints, tool lists, models, and machining processes digitally represented via monitors on the shop floor. The CAMWorks implementation is not only helping Decimal to eliminate over \$25,000 in annual costs related to paper, plotters, and printers, but it’s also allowing the company to cut scrap/rework costs in half, even though the company is handling parts of increasing complexity and sophistication.

CAMWorks ShopFloor provides a digital manufacturing solution by providing 3D models with MBD & PMI data, along with CNC programming information to the shop floor in a single, compact digital format.

“With the automation that we’ve achieved with CAMWorks, we’re able to handle complex parts without extending delivery times, while simultaneously reducing scrap and rework,” St. Pierre notes. “Everything related to a job is now accessible from the shop floor. This gives production personnel access to the information that they need—through CAMWorks ShopFloor—without having to call engineering. They can pull up the information that they need and even section the model if they need additional details, instead of having to decipher a paper drawing, ask engineering, or go back to the customer. Ultimately, the move to CAMWorks has helped us to shorten lead times while improving quality and surface finishes at the same time.”

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About CAMWorks

2020 © HCL Technologies. All rights reserved. CAMWorks is the next generation best-in-class CNC programming solution that enables users to program smarter and machine faster was originally introduced in 1997. This state-of-the-art solids CAM product is designed for product-oriented manufacturing companies, and is available for machining centers, turning, mill/turn, and wire EDM applications. CAMWorks® with Machining Intelligence is the most advanced CAM programming software available for getting products to market faster, more efficiently, and within budget.

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