

RTD Manufacturing Inc., uses SURFCAM Traditional to fulfil a wide range of customer needs



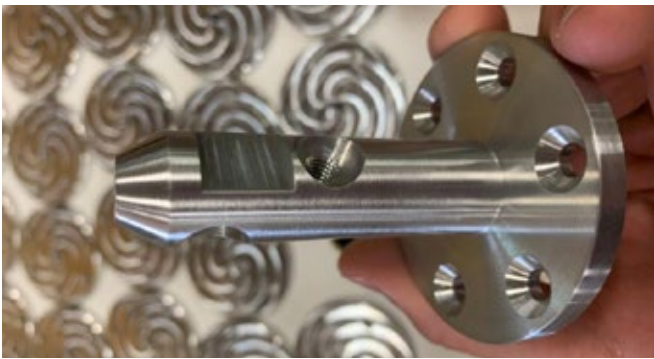
RTD Manufacturing Inc. Case Study

Flexibility is key in manufacturing, but even more so when an inability to pivot production would otherwise mean shutting your doors.

As the coronavirus pandemic ground manufacturing operations across the U.S. to a screeching halt in early 2020, RTD Manufacturing of Jackson, Michigan, kept its doors open by harnessing its ability to adapt.

“We were either going to have to do something different or shut our doors, so we started making face masks and shields, and partnered with other companies to make face shields, as well,” said Mechanical Engineer Mike Doetsch of RTD Manufacturing, Inc.

The company turned out several thousand masks per day for roughly three weeks while enforcing social-distancing protocols.



“Luckily, pivoting is something that we do frequently to fulfill a variety of requests,” said Marketing Manager Joseph Ramsey-Miller of RTD Manufacturing. “We produce anything made out of metal — from cutting raw stock for customers who go on to produce their own parts to manufacturing complex aerospace parts.”

Founded in the 1980s, family-run RTD has weathered enough storms to know that diversification is critical to longevity. Having a laundry list of machinery, including — but not limited to — mills, lathes, waterjets, grinders, and a wire EDM machine, ensures that capabilities are unlimited.

The company, which employs a team of 18, serves the automotive, aerospace, medical, printing, pharmaceutical and food-service industries, as well as manufacturers, rebuilders, fabricators, and local, state and federal government.

Taking its ability to diversify a step further, RTD also offers its own line of proprietary, customizable workplace disinfection stations marketed as Towl-Wet, in addition to custom sneeze guards for the workplace, and metal art.

“Especially with more complex machining and rapid material removal, being able to program and simulate operations is important, and I appreciate knowing that it’s not going to crash.”

Mike Doetsch,
Mechanical Engineer

“We have a lot of capabilities, and so we try to maximize our talents and experience while fulfilling the diverse needs of our variety of customers,” Ramsey-Miller said.

Maximizing technology for better production

RTD Manufacturing was an early adopter of CNC technology and brought its first machine tool online in 1986, when programming was done at the machine control, and eventually implemented a computer-aided-manufacturing (CAM) system.

In 2001, the company made the switch from its initial CAM solution to SURFCAM Traditional after discovering that the solution offered more functionality for a better value than its previous software. Today, RTD uses SURFCAM Traditional to program its mills in up to five axes, as well as lathes and EDM machinery.

Doetsch and the production team at RTD take advantage of some of the solution’s specialized cycles, including Waveform and TrueMill, which use different strategies to help users quickly and safely remove large amounts of material.

“Those two cycles are the quickest for material removal, and we use those regularly,” Doetsch said. TrueMill is used to generate optimized roughing toolpath that can be completed with a one-step 3D roughing through pre-finishing operation. The toolpath creates uniform step height across all surfaces, regardless of how many tools are used, and removes material at significantly faster rates and greater depths of cut than more traditional cycles.

The Waveform roughing strategy is a high-speed machining technique that removes large amounts of material

and maintains a constant tool-cutting load by ensuring that the tool engagement with the material is consistent throughout the cycle. The toolpath moves in a smooth path to avoid sharp changes in direction, which maintains the machine tool's velocity.

"Especially with more complex machining and rapid material removal, being able to program and simulate operations is important, and I appreciate knowing that it's not going to crash," Doetsch said.

The CAM system's multi-cut cycle comes in handy at RTD for machining complex, curved shapes, as the cycles 3-axis toolpath makes it possible to machine single or multiple surfaces in a variety of cutting patterns.

"I use a lot of the software's 3-axis roughing and finishing cycles, including multi-cut, which will take anything that you select, join it together and cut it in a 3D toolpath," Doetsch said.

The software's "curve boundaries," "check surfaces," and "gouge avoidance" options — all functions that help to ensure the generation of ideal toolpath and produce high-quality surface finish — are supported by multi-cut, which is designed to deliver greater flexibility and overall efficiency. Applying multi-cut to several surfaces also helps programmers to understand how multiple toolpaths will behave once combined, and how the combination affects the final product.

For those interested in storing data for toolpath that will be used repeatedly, toolpath templates within the software enable users to collect and reuse parameters for all toolpath types.

"If I go to machine a pocket and want to use a 3/8 end mill, I can choose that and it will give me the speeds and feeds and depths of cuts for the tools in my library. I don't have to tell it how deep to go because the template includes all of the manufacturer's information."

Hundreds of machining templates are used at RTD, where the ability to save and reuse templates helps manufacturers consistently apply best practices while cutting programming time.

"I use templates in everyday programming," Doetsch said. "I have a template for drilling, so when I select any hole, it will bring up a template for the process used to drill that specific type of hole. That saves me from having to program that process every time, and it helps when new machinists come in because they can be trained to use the processes that I've created."

With diversification always on its radar, RTD Manufacturing currently has its sights set on increasing its capacity for high-volume production. In the interim, the company will continue to do what other shops can't while being a reliable source for customers.

"We give the customer a voice, and realize that building strong relationships is just as important as delivering superior products," Ramsey-Miller said.

About the company

Name: RTD Manufacturing, Inc

Website: www.rtdtool.com

Business: Job shop with a wide array of capabilities

Key Benefits achieved:

- Machining templates help apply best practices and cut programming time
- Ability to machine complex surfaces with the software's 3-axis roughing and finishing cycles
- The high-speed Waveform roughing strategy assists with rapid material removal

Categorisation:

Industry sector: Other Industries

Industry segment: Machine shop





Hexagon is a global leader in sensor, software and autonomous solutions. We are putting data to work to boost efficiency, productivity, and quality across industrial, manufacturing, infrastructure, safety, and mobility applications.

Our technologies are shaping urban and production ecosystems to become increasingly connected and autonomous – ensuring a scalable, sustainable future.

Hexagon's Manufacturing Intelligence division provides solutions that utilise data from design and engineering, production and metrology to make manufacturing smarter. For more information, visit hexagonmi.com.

Learn more about Hexagon (Nasdaq Stockholm: HEXA B) at hexagon.com and follow us [@HexagonAB](https://twitter.com/HexagonAB).