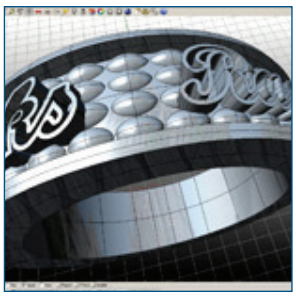
CUSTOMER: **R&D Manufacturing, Inc.** ☐ 60 Dunnell Lane ☐ Pawtucket, RI 02860 ☐ www.rdmfgonline.com

Evolving America's Jewelry Industry.

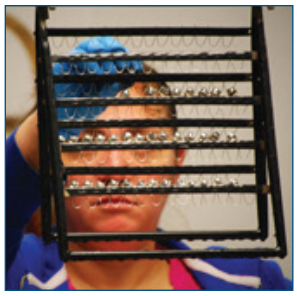
R&D Manufacturing is a contract jewelry manufacturer that, on the surface may look like other U.S. manufacturers working in sectors like aerospace or automotive, designing and producing metal products for consumption around the world. But in this case, they manufacture jewelry for brands like Tiffany and Bryan Anthonys who may need as many as one million pieces a year. Not all of their customers are that big. Many are artisans who bring new design ideas to them asking them to make as few as 25 pieces. R&D can accommodate almost anyone and produce precious metal or costume jewelry. Regardless of material, jobs often require mold making.



The company started in 2003 and currently employs just over 100 people. In the beginning, they grappled with an industry that had experienced significant change. Specifically, so much machinery, engineering property, and mold making had gone to China, that the experienced craftsmen who hand carved the models used to make jewelry molds had aged out — leaving a loss of knowledge and skill in the jewelry industry.

R&D Manufacturing CEO, Phil Montalto with the DATRON neo, a machine that he calls "game-changing technology" for them.

CEO, Phil Montalto, who had experience in the manufacturing sector redirecting negative growth businesses, joined the company in 2010. He explains, *"I started off in aerospace in job shop environments and then moved from that space to investing in other manufacturing businesses that were struggling to remain relevant and profitable. When I got involved with R&D Manufacturing, I was just looking at creating some efficiencies and trying to figure out how we could keep a jewelry manufacturing business alive in this new era."* Having achieved some success, Montalto decided to buy out one of the partners and has never looked back.



These days, the company manufactures as many components, tools and machines as possible. They manufacture both from a casting perspective using molds, and also with pneumatic stamping and striking using dies to form metal. These are the two biggest starting points for generating a base piece before it goes through the rest of their production process. They have an impressive arsenal of equipment and capabilities including enameling, a 50 head polishing department, inspection, mass finishing, soldering, assembly, CNC milling, wire EDM, conventional EDM, 3D printing, hydraulic presses, pneumatic presses, electro-polishing, laser welding, laser engraving,

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weld fusion, centrifugal casting gear, casting machines (automated and manual), mass finishing with vibratories, automated tubs, ultrasonic equipment for cleaning, dryers, natural gas fired atmospheric ovens, and sandblasting.

IIn transitioning the company for the future, Montalto needed to fill the void left by hand craftsmen. He explains, *"Our challenge was figuring out how to adapt some machine tools to the industry by taking the CAD capabilities that we already had harnessed, and then coupling those with technology that could yield something close to what a human can make by hand. I didn't know how to do that."*

Bracelet clasp mold milled in aluminum on the DATRON neo.

Wax is encased in plaster and put in oven to burn out wax. Molten metal is poured in the cavity left in the plaster.

Final Sterling Silver clasp made with this process.

So, Design Engineer, Marc Fournier, took the reins in researching and finding a solution to their problem. He says, *"I learned that it all came down to RPM. We needed to be able to run really small tools in order to get that hand-made look and intricate detail. I realized this wasn't going to come from a 12-foot-long metal hogging CNC or a high-speed mini-mill using air spindles with high failure rates. When I found DATRON on the Internet their solution looked promising."*

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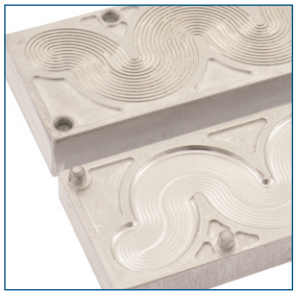
A trip to DATRON's Technology Center in New Hampshire confirmed Fournier's instinct and he and Montalto were both pleased with the technology and the DATRON staff. Montalto says, *"Credit where credit is due, the team that DATRON assembled was way different than the teams at some larger machine tool companies. At one of those well-known companies, we ended up with a salesman who talked only about specs. It was more marketing than anything else."* Fournier adds, *"I am not a machinist. I do not talk the talk. I may have been asking questions wrong, but they knew what I was getting at and were able to explain everything to me in layman's terms that I could understand."*

Design Engineer, Marc Fournier, using the DATRON neo's touch-screen interface to set up the next job — an aluminum mold.



Ultimately, R&D Manufacturing became one of the first manufacturers in North America to install a DATRON neo. This machine was the first DATRON model to be driven by the "DATRON next" touch-screen interface and control software. This was a logical choice for R&D Manufacturing because it provided Fournier with an easy workflow to leverage his significant CAD expertise and tap into robust machining capability without being a trained machinist. The DATRON neo features an integrated camera/probe combination designed to eliminate the time-consuming task of setting up jobs. The camera shows the machining table below and the operator can select the workpiece simply by tracing the area on the touchscreen where the workpiece is displayed. Once the part is located, and the machining parameters are set, any irregularity is automatically compensated for in the software. This virtually eliminates part rejection due to improper setup. An on-board "CAM Assistant" guides the operator through the program and tool management on an interface that looks and feels like using a smartphone. All of these tools combine to help even a novice operator create a machined part in just four steps.

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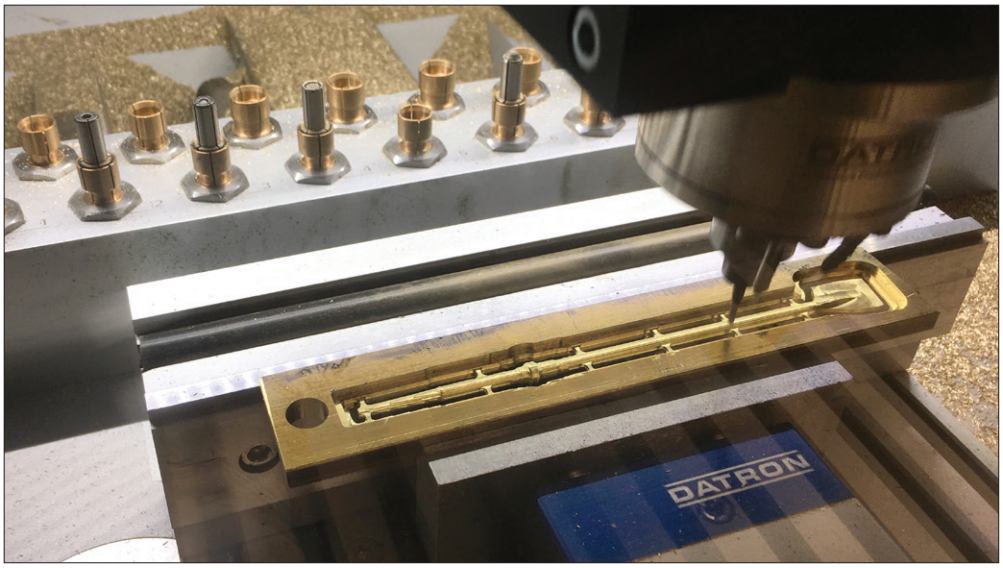
Fournier says, *"I'm a CAD person and the Neo has gone into my workflow flawlessly. I'm learning machining and it's been such an easy transition. What I love so much about this machine is how versatile it is and how simple it is. With the pneumatic clamping system, one minute I could be milling a block of teak and the next I'm milling aluminum. I literally never know what's going in that machine. The Neo has grown our capacity tremendously, because of how fast it is I'm able to complete projects and tests significantly faster than I was before."*



The DATRON neo machining a part in brass.

Currently R&D Manufacturing is using the DATRON neo almost exclusively for product development and prototyping and creation of master models, one offs, and unique pieces. These would normally take an experienced hand model maker three or four days to create. With the DATRON neo they are producing them in about 15 minutes. More complex pieces may take up to 2 hours.

Unlike most companies in the jewelry industry, R&D manufacturing is moving away from 3D printing in the creation of master models and prototyping because the DATRON neo allows them to machine a metal model and skip the casting from the wax 3D print. Now they can go straight to the model or straight to the mold and skip a number of steps. Montalto marvels, *"A project used to take 12 hours to 3D print, and then we'd send it into casting, wait for it to come back and then polish it. The process would take a week if we were lucky. So, let's quantify, we went from a week (7,200 minutes) to 15 minutes. Even a 30-minute cut, this is a 4,000% improvement [laughing]. The DATRON neo is 240 times faster than the casting process. And we are completing the process within our own facility."*

This advanced technology and added efficiency helped R&D Manufacturing to grow which has also contributed to the growth of their customers. Montalto explains that some of these customers are great American success stories. For example, one young couple who started a brand with them making 20 pieces in an initial order five years ago, ordered almost a million pieces last year. As if it were almost a challenge Montalto says, *"We don't really know what the capacity is ... we haven't gotten there yet."*

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