Machine Specialty

Want to Stay Ahead of the Competition?

Better Manufacturing Management with CNC Software

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Andy Vigé couldn't find a new machine tool that could take the punishment that one of his 20-year-old Warner & Swasey lathes could.

In fact, when it comes to new machine tools, says Vigé, president of Machine Specialty and Manufacturing (Youngsville, Louisiana), they don't build them like they used to. He'd been buying used WS 1 SCs, 2 SCs, and 3 SCs for years, then driving them hard to make pipe pressure fittings and flanges for the oil industry. The iron in them was still good, but the original controls were not. The aging hardware-based CNCs on the lathes had become obsolete. And because they were proprietary, closed systems, it was starting to cost Vigé plenty.

"When a motion board goes on one of these," Vigé says, "it takes weeks to repair or replace them. Frequently the original control company can't help us at all. When a machine goes down and you get behind 300-400 pieces of flange that you would normally sell during the day, you feel it."

Furthermore, Machine Specialty and its competitors were in the middle of a two-year price war, and the company couldn't afford to lose ground.

A Secret Weapon

The solution Vigé found was so successful that 18 months later, he has now transformed 24 lathes (almost every CNC machine he owns and virtually his entire factory floor) and improved cycle time productivity by 30%. He did it without buying a single new machine and, in most cases, without buying new motors or drives.

Vigé chose OpenCNC® software CNC from MDSI (Ann Arbor, Michigan). OpenCNC is the unbundled, open-architecture, shrink-wrapped software CNC that, unlike traditional CNCs, uses no proprietary hardware or motion control cards. Because it's unbundled software that runs on off-the-shelf PCs and Microsoft® Windows operating systems, manufacturers are not locked into proprietary arrangements for hardware, control repair, or control upgrades.

With OpenCNC, Vigé reinvigorated his old machine tools, gained access to machine data that he could use to help him manage his company, avoided having to buy "throwaways" (his term for new machine tools), gained control over his production, and stayed competitive. "OpenCNC gave me a jump on everybody I compete against," he said.

Keeping up in the Oil Business

Machine Specialty and Manufacturing has been in business over 20 years. With about 75 employees, the company makes pipe flanges and fittings for a variety of oil and gas companies. The parts are in use all over the world, from deep-water drilling sites in the Gulf of Mexico to the North Sea, where they perform critical applications such as containing high-corrosion fluids or withstanding pressures of up to 20,000 psi.

The business is competitive and global. As president and co-owner of the company, Vigé is constantly in search of manufacturing solutions to help him optimize his profit and resources.

Machine Downtimes in Dollars and Cents

Machine downtimes cost money—$8,500 per day per machine, Vigé estimates. He figured his Warner & Swasey lathes were down about 20% of the time with control problems. When he realized he was spending $2,000-$3,000 per machine per month to keep the old controls going, plus what it was costing him every time a machine stopped, enough was enough.

"I was tired of being at the mercy of the service reps of the original control company, or tied to their service contracts," he said. "They were calling all the shots."

Solving Manufacturing Problems using CNC Software

Besides upgrading his old machines, Vigé was looking for answers to several manufacturing problems. He wanted to decrease cycle times. He wanted a control that his own in-house maintenance people could service. He wanted to use existing servos and drives. And most of all, he wanted access to data.

"I needed a better tracking system for what was going on with each machine," he said. "How long is the machine running each day? How long does it take to do a batch of parts? How many parts can be done in one day per machine? I can't get this information from traditional controls."

When Vigé heard about OpenCNC, he knew it was what he was looking for. "It was software that let me use any drives that I wanted or any PC," he said. "I didn't have to buy a whole package. I could buy the best drives or the best PC I wanted. The MDSI control doesn't care which one you use. It's software, so we can put it into any package we choose."

The Retrofit went Smoothly

The first Machine Specialty machine to be retrofitted with OpenCNC was a Warner & Swasey 2 SC lathe. MDSI integrator Eldon Richardson of Complete CNC Machine Repair, Meridian, Mississippi, did the first lathe and has since retrofitted all of the lathes that Machine Specialty has done with OpenCNC. On the first lathe, Richardson stayed on site at Machine Specialty as he pulled all the wiring from the old cabinet, pulled off the old control, installed OpenCNC on a

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new PC, re-wired the panel, and programmed the machine. The old servos and drives were in good shape, so he left those in place.

Richardson has now refined the process so that Machine Specialty employees strip out the old control and remove all the wiring. Then, at his own shop in Mississippi, Richardson builds a bolt-on case for the monitor and PC, loads the OpenCNC onto the PC and programs it, then takes the completed package back to Machine Specialty, where he re-wires the machine and puts the new control system in place.

Faster Retrofits using Existing Servos and Drives

The process goes very fast if existing servos and drives are kept, says Richardson, which is what Machine Specialty did on most of its OpenCNC machines.

"The first machine took about two weeks," Richardson said. "Now it's much faster. We have actually taken four machines down at the same time, retrofitted them with OpenCNC, and had all four of them up and cutting parts in just eight days."

Richardson started his retrofit business in 1987 as a solo operator doing retrofits for several major control companies. Now, he represents only the MDSI control and keeps himself plus three full time employees busy. Richardson has done more than 50 machines with OpenCNC, including gantry routers, mills, and vertical turning lathes. His MDSI customers have all improved their processes with OpenCNC, he says.

"The biggest thing I've noticed with OpenCNC," Richardson says, "is that people's maintenance costs go down. They don't have to support the heavy costs of the traditional controls—power supplies, board repairs, and so on. One of my OpenCNC customers tells me he's saved up to $70,000 on his control costs, plus his machine uptime is up."

Management Perspective: Gaining an Edge

With almost all of its CNC machines equipped with OpenCNC, Machine Specialty is busy and profitable. Andy Vigé feels his company gained a competitive edge with OpenCNC, thanks to the following improvements in processes and performance:

- ***Better information on the manufacturing process.*** "We have setup guys walk the floor every morning to check the previous day's work," Vigé says. "They pull data from OpenCNC and give me daily production reports. I can now give my operators quotas per hour. It has helped me realize what should be done per day on each machine, no matter who is running it."

- ***Better machine performance.*** Vigé reports a 30% increase in cycle time productivity with OpenCNC, from six parts per hour per lathe to eight parts per hour.

- ***Improved surface finishes***. Surface finishes on the parts are smoother with OpenCNC, Vigé says. This is in part a result of OpenCNC's use of S Curve acceleration with Constant Surface Speed control, which optimizes the spindle speed and provides a smoother toolpath than the old CNC.

- ***Competitive advantage.*** "OpenCNC has helped me survive a two-year global price war in my business," Vigé says.

- ***Easier operator training.*** "With some of the traditional controls, the more the control deteriorates, the harder it is to find the problems," Vigé says. "OpenCNC has been very easy to understand. My operators like it."

> ***"With OpenCNC I can now make more money with fewer people and less overhead"***

- ***Flexibility to buy a control package the way he wants.*** "With OpenCNC I don't have to invest all my money at once," Vigé says. "I can do a retrofit with the old drives and motors, then invest in new drives and motors later."

- ***Improved bottom line for managing a business.*** "I can now make more money with fewer people and less overhead," Vigé notes.

With OpenCNC, Vigé could now network his CNC machines, then monitor all of them from a PC in his office or from home. Networking, plus the machine data accessible from MDSI's patented real-time data server in OpenCNC, opens the door to Internet-enabled manufacturing.

"I plan to get to networking the machines," Vigé concludes, "and I will, as soon as I stop buying more used machines to put the MDSI control on!"

Manufacturing Data Systems, Inc.
220 East Huron Street, Suite 600
Ann Arbor, MI 48104
Telephone: 734.769.9000
Fax: 734.769.9112
e-mail: marketing@mdsi2.com
www.mdsi2.com

Microsoft Certified Solution Provider