

HANSEN INDUSTRIES

Cuts through the competition
with investments in automation



Investments in machinery can be a key turning point in a company's business. Make the right choice – one that leapfrogs you over your competition – and you've got a running start at grabbing market share. Make the wrong choice, and you disappear among the many companies offering the same solution. Edwin Beange, Owner and President of Hansen Industries (www.hansenindustries.com), understands this well. When he went shopping for a laser a few years ago, he had to make an investment he hadn't planned on to ensure he would be adding to his strategic advantage.

Custom component expertise since 1975, the Richmond, B.C. based company has earned a reputation for quality work in both precision sheet metal and machining. It was one of the first job shops in BC to adopt ISO 9001 quality standards and remains one of the most horizontally integrated metal shops in the province. The company has grown from being a supplier of elevator replacement parts to a combined custom precision sheet metal, machine shop, stamping shop and laser/waterjet cutting shop. The biggest part of the company's business is supplying components and assemblies to electronic companies. The challenge there is that much of that business has been outsourced to China. "Over the past 10 years, the long-run jobs have been shipped to China," Beange explains. "What we're left with is the short run jobs that require a high amount of customization. Our business would be five times the size if we had that long-run business, but the reality is, you play the cards you've been dealt."

The company has a strong machining operation, which currently includes several Okuma lathes, and five Haas vertical machining centers, including two recently purchased VF-4's.

Cutting Versatility

Although the company had punch press operations, in the early 2000s it was decided that they'd invest in a waterjet, to improve on the company's cutting versatility.

"At the time, we thought we could compete with a laser with a waterjet machine," Beange says. "So we bought one, thinking, 'yes, it's slower than a laser, but you just drop your shop rate and you can compete.' We called it a poor man's laser. And then we found we couldn't compete at all. Although it was a good purchase - we typically pre-machine everything on a waterjet now before we do any machining – when it came to competing head-to-head with a laser on thin gauge material, there's just no way we could compete."

At that point, Beange and his team started looking at lasers. One particular laser company in the market had just introduced a low-end, 1,500 Watt laser for about \$300,000.

"That got us thinking, 'wow, we can actually afford one,'" says Beange. "Up until then, everything we'd seen was between half a million dollars and \$750,000."

The problem was, at that point about 50 percent of the sheet metal shops in town had lasers, so with an entry level machine, Hansen would have to turn down every third job.

"The other guys were already buying 4,000 and 6,000 W machines, so we knew we'd have to be in that range," says Beange. "We didn't need the really high end power, because at that point

the edge quality of the waterjet is superior, so we ended up with a 4,000 W machine."

Understanding that they were still playing catch-up with their neighbours, Hansen decided to also invest in automation. By paying about 30 percent more of the cost, Beange was able to get a Mitsubishi ML3015 NX laser with a 4,000 watt 40CF-R resonator and Auto-Flex MS automation with a 16-shelf tower. "It's fully automated, so theoretically it could run 24 hours a day, seven days a week," Beange explains. "If we're going to compete with overseas suppliers, or anyone else for that matter, if we eliminate labour costs, we're competing on the price of the machine alone. And everyone has to pay the same price for the machine."



The Mitsubishi ML3015 NX laser with a 4,000 watt 40CF-R resonator and Auto-Flex MS automation, supported with a 16-shelf tower. Photo courtesy of Hansen Industries.

Material Savings

The 16-shelf tower can hold 96,000 pounds of raw material and the programmable over/under unload carts can handle 22,000 pounds of material before intervention is necessary. The system can load, cut and unload 5x10 foot sheets of metal, 24 hours a day, 7 days a week largely unattended. The NX is Mitsubishi's fastest laser system using a 4000 Watt resonator to drive a flying optics bed.

"We also hooked up a video camera above the machine, and a control console onto a laptop so that the operator can actually watch the machine from home and program it so he can choose the sheets, choose the program and tell it to cut," says Beange. "The operator just has to check his laptop occasionally to ensure that everything is running ok. This way, if we have a job that's a little delicate, he can react immediately. The machine will send him a message if it stops. This way, the operator can have an idea of what has happened."

The big benefit of having a laser, compared to using strictly punch presses, as Hansen had done formerly, is that no further finishing is required on the material.

"With a punch press, because the table moves, you have to keep the parts tabbed in, so once the punching is done you have to break the parts out of the sheet," says Beange. "And because you are moving that sheet, and because of the force of the punching, the skeleton around that has to be fairly rigid, which means more waste material. With the laser, that skeleton can be razor thin."

"But the big thing is that there is no scratching of the material with the laser," he continues. "With the punch presses, we were always fighting the scratching on the underside of the material. So you'd go and cut the material and spend all of your time deburring and finishing it to get rid of all the scratches you put in when you were punching the part. With the laser, all that secondary labour is gone."

Two years after buying the machine, Beange found that cost of materials as a percentage of sales in that shop had gone down by almost 10 percent.

"I've never, ever seen a machine have that impact on a shop before in my life," he says. "Usually, we'd justify the purchase of a machine based on that kind of number, and then two years later have to explain why that hadn't happened. In this case, it actually worked." Those material cost savings alone nearly pay for the equipment.

Purchase Process

But Beange's big concern when he initially planned the purchase of a laser was service response time and costs, as he has had some machines where service was less than stellar.

"So once I had a short list of about three suppliers, I called their customers. And the Mitsubishi Laser customers were almost evangelical about the quality of service. And we feel the same. From the installation of the machine to today, service has been great. We don't feel like we're being robbed every time they come in here, and the parts don't seem unreasonably expensive."

The other thing the Hansen team did when purchasing the laser was to go to each company and have each program a part and cut it while they watched.

"It was unbelievable how that turned out," Beange

recalls. "We went from thinking we were going to buy one particular machine to ending up with the Mitsubishi. The Mitsubishi wasn't top of the list, because on paper and in the brochures, others looked better. But you don't know until you actually go and see the machine. The manufacturer who started out on top of our list had the worst edge quality and largest burrs."

"We had the same experience with our waterjet," he continues. "We were convinced we were going to



Mitsubishi Automation 16-shelf tower system.



A grasshopper created using pieces cut on the Mitsubishi.



Samples of parts produced at Hansen Industries. PHOTOS COURTESY OF HANSEN INDUSTRIES.

buy a certain product, and just went in to see OMAX on a whim. It just blew the competition out of the water. That taught us that you can't just go and buy a machine, you really have to take your own material and have the supplier do a demonstration of what you will be doing on it – how they program it, and how it loads. It's like cars – all the dealers will say the car goes 0-60 in five seconds. When you buy the fastest without testing it, you find it doesn't have any doors, or seatbelts or windows, no radio, and everybody asks, 'why did you buy this?' That's what buying equipment can be like."

Automation Benefits

Beange has been making enough good decisions about equipment and employees that company sales were up 21 percent in 2011 from the year before. The company has managed to double its sales in five years, while maintaining the same number of employees – about 70 people in the shop. In 2011, Quality Acceptance Levels were 99% and On-Time Delivery was 95%

"We managed to maintain that number of employees through automating most of our equipment," says Beange.

"We have a Trumpf TC2020 punch press with a compact load/unloader, so it will run for three to four feeders on them, so we can run those into the night on soft materials without an operator.

"We also have a Hyd-Mech Band Saw," he continues. "I can't believe we lasted so many years without it. This is a real Canadian success story. Everyone walks around saying how incredible it is. You just program it, tell it you want three pieces three inches long, two that are six inches long, two that are 12 inches, then you walk away, and an hour later you come back and it's all done. They are a world leader in that segment."

Beange is also a proponent of lean manufacturing concepts, so he configures the shop such that one operator will operate two or three machines at once. For instance, the Haas mills might be set up in a C shape so that it eliminates the need for the operator to walk between them, and all of the necessary tools are set up right next to him.

"A lot of savings come, not from capital purchases, but just organizing yourself better," says Beange. "Simple things like shadow boards for brooms and tools. We have those in every department, and we colour code everything by department so that we can track those tools. Similarly, we organized drawers so that the things you need daily are right at hand, the things you need weekly would be behind that, the tools you need once a month are behind that, etc. I used to walk into the shop and ask for a screwdriver, and it would take five minutes to get it."

Like getting the right equipment in the shop, getting processes right is an ever-changing journey, Beange says.

As for equipment, Beange says his next step will be to automate the company's bending procedures. "Right now, there are a whole bunch of different ways you can do that," he explains. "You can put a robotic arm in that feeds the brake, hydraulic clamping, automatic crowning, but more importantly for us is the idea of adopting offline programming for the brakes, so that the operator isn't so much a programmer as he is a feeder."

Hansen currently has three press brakes that it plans to replace.

"Some shops are captive Amada, Mitsubishi, or Trumpf shops, but we don't do that," Beange notes. "We try to buy the best equipment we can each time we go out and because we are in sheet metal/machining/stamping, there is no one supplier that covers all of those fields. The downside is that we can't get software from one supplier to tie all of our machinery together."

Written by Rob Colman

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