

ERP software helps stamping manufacturer meet 100 percent OTD

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Northern Industrial stamps its parts in a compound die, grinds and deburrs them, and then color-codes them for easy identification.

Being the final link in the supply chain to a major automaker means at least two things: One, your components' dimensions have to be very precise to ensure perfect fit-up or stackup. Two, you can't hold up the assembly line, even if you have only a few hours to fulfill the order.



Such is the circumstance for Northern Industrial Manufacturing Corp., Harrison Township, Mich.

The stamping manufacturer makes what Vice President Jeff Hohlfeldt calls "the great equalizers"; precision thrust washers, selective shims, and spacers. The parts it stamps are what fill the gap in a transmission or axle assembly. Literally.

"In the manufacturing world, there's no such thing as a perfectly produced part. Parts are produced to a tolerance," Hohlfeldt said.

"Let's say that you've got 10 suppliers and they produce their part with a tolerance of between minus 1 and plus 1. Well, if every single supplier came in at minus 1, when you add them all up, the total would be minus 10. So for the assembly to be at zero, the OEM would get a plus 10 shim from us to get them back to zero," he explained.

High-pressure Deadlines

The automaker cannot know exactly which shim dimensions it needs to achieve stackup until all of the other components have been supplied and assembled. So Northern Industrial is the final link, and lead time is a luxury it doesn't have. Quantities on an annualized usage basis are between 10,000 and 3.5 million.

“We might get an email from General Motors at 5 o’clock in the morning telling us, ‘Now that we’ve measured and assembled all the other parts, we know what we need from you. We need thousands of these shims at this specific size—and you need to have them on the truck at noon.’” Hohlfeldt added that customers try to give them a heads-up. Not all deliveries have to be in six or seven hours, but in all cases, it’s under three weeks.

“It’s very stressful,” Hohlfeldt added.

Processes to Track

To help meet tight turnarounds, the company performs stamping, deburring, grinding, and color-coding in-house.

It produces the stampings using compound dies. Some of those dimensional adjustments can be done using the die, and some adjustments must be made by grinding and deburring.

When your parts are the final link in the supply chain, and stackup depends on their accuracy, precision is paramount.

Manufacturing to a high degree of precision has never been difficult for the company. “We have always been a high-quality producer for the automotive industry,” Hohlfeldt said. “We can make a part tolerance to 1/10 of a human hair. That wasn’t the problem.”



Where the company struggled was in the documentation and tracking.

Top 6 Mistakes: Documentation

The stamper’s customer complaints were all documentation-related: incorrect part numbers, wrong labels and packing slips, and incorrect invoicing.

“Where we were coming up short was in the labeling of the parts, in the EDI transmissions, the packing slips, the bill of lading, the invoicing ... customer touch points having nothing to do with the actual parts,” Hohlfeldt said.

“And so our No. 1, 2, 3, 4, 5, and 6 complaints all streamed from document creation. Just to ship parts to a customer, it took two people sitting at a desk about three hours to generate all of the information. In our world, even one wrong decimal point or one letter or one number off causes a rejection. When you’ve got a document with 1,000 data points that are being entered every time ... you can see where things went off the rails,” Hohlfeldt said.

Exiting the Hamster Wheel

Those documentation snafus created what Hohlfeldt called an “overreactive hamster wheel” on the production floor,

“Let’s say you need to stamp 100,000 parts a month. Ideally, everything goes right and you make 100,000 parts every month. Well, that’s not at all how production goes,” he said. “Press one goes down and you’re 20,000 short right away. So now you’re going to have to make that up. Then your customer just called and they’re out of another part. So now you’re jumping the line to stamp that part, and pretty soon you’ve got all of this clutter embedded into the system. And what should have been 100,000 parts may be only 60,000 parts. Now you’re down 40,000 parts and a customer’s line is down. So for next month’s shipment, you need 140,000 parts and you’ve got to get caught up. That’s induced stress into the system. Now you’re in this giant, never-ending hamster wheel where your plant is roller coasting way up and then way down. You’re completely out of parts. Then you’re swimming in parts—you’ve got too many of the parts you don’t need and not enough of the parts you do need.

“That was exactly what was happening in our company,” Hohlfeldt continued. “Our plant manager had to keep 900 parts in inventory in his head and know who was doing what at all times. We’d have five weeks’ worth of inventory. ‘Oh, we’re in good shape. And then we’re completely out.’

“We found ourselves in a highly reactionary state. So instead of being able to calmly and collectively produce a batch of 5,000, 10,000, 20,000, or 50,000 parts, depending on the program, we were producing 500 and changing over to get another 500 to avoid letting our customers’ production lines go down.”

The ERP Software Differential

Eliminating the documentation-related customer complaints and ensuing production mayhem was his directive, Hohlfeldt said.

The stamper’s shims, washers, and spacers are integral parts of automotive axles and transmissions.

The VP had witnessed the difference enterprise resource planning (ERP) software could make at his former employer, a FORTUNE 500® company. They had a very successful SAP implementation there and he saw how well the software supported their business.

Hohlfeldt purchased IQMS ERP software.



Overcoming Resistance Within

It wasn't easy to bring change to the company culture at first. Implementing the new ERP system was not simple—not because the software was difficult, but because the changes were not readily accepted.

"My grandfather, the company founder, would say, 'An ERP system doesn't make more parts.' That was the basis of his opposition. And he was right; a computer system does not actually produce a part," Hohlfeldt conceded.

"Who does make your parts are people. They set up the machines to run the parts. If you don't have a framework in which your people can succeed, the business can be suboptimized. And that's where we were."

What the ERP Software Does

Once the data, such as a part ID number, has been entered correctly, it can be called up again and again, so it's always accurate. "So that resolved that really huge problem," Hohlfeldt said.

Inventory Snapshot. Instead of the plant manager having to store the inventory status of 900 parts in his head, inventory is stored in the system, providing a 95 percent accurate snapshot of inventory. "So now we're no longer producing parts that we don't need, we're freeing up machine time because we're not producing those parts we don't need, and we can take advantage of those larger runs to produce faster," he said.

Proactive Production. Machine use and availability is stored in the ERP software also, so machine use is planned. "We have 30 work centers in our IQMS system that are all now being scheduled and documented proactively. So we're able to schedule up to a week in advance. The schedule might change a little bit, but instead of it changing by the hour, it changes by the day or by the week," he said.

Improved Supplier Management. Northern Industrial had been sourcing supplies from about 100 different companies, Hohlfeldt relayed. One supplier sold the company nitrile gloves, one supplier sold earplugs, and yet another supplier provided cardboard boxes. The leadership team was tasked with keeping and maintaining all of that inventory.

"We had circumstances where we would run out of nitrile gloves and our plant would have to shut down until our driver came back with some. Or a press would go down for three hours because we didn't have a \$2 bolt in stock. Hours might be spent looking for it. Meanwhile you've lost half a day for a \$2 bolt," Hohlfeldt said.

The stamper partnered with a local distributor to supply 80 percent of the items that it buys. That company comes in once a week to maintain inventory. "We're no longer lying down for a \$2 bolt because we've got it in stock."

Preventive Maintenance Overhaul. The manufacturer used the IQMS system to overhaul its equipment preventive maintenance. The expected lifespan of a particular machine part, such as a gear, is entered into the software. It sends notifications when the part is near its end of

life so that the maintenance crew can schedule a replacement before it fails.

The company also has its machine operators perform daily maintenance tasks, such as lubricating, cleaning, and inspecting machine parts, that have to be signed off on. "They're able to catch a lot of the issues before something happens because now there's that level of ownership."

The results were remarkable, Hohlfeldt said. In the first full year of implementing the ERP software, the company had zero lost days caused by machine breakdowns. "I kid you not, I don't think we've ever had a year with fewer than 40 days lost on one of our pieces of equipment."

Not surprisingly, the improved operations help doubled the company's production output in the process.

OTD, 0 Defects

All of those improvements helped Northern Industrial achieve a 100 percent on-time delivery (OTD) rate while maintaining its zero defects practice.

In addition, the company has embedded statistical process control (SPC) within the ERP software program. "It allows us to retain all of our checked information.

"We used to have these pretty cumbersome sheets that said what needed to be checked. Our operators or quality managers and technicians would go through, they would check the parts, write the notes down on a piece of paper, and then file that away in a cabinet somewhere.

"Tracking all of those dimensions—hundreds of thousands of dimensions—in the software instead of by hand has saved quite a lot of time."

Now, those are already in the system.

Six-time GM Supplier Award Winner. The company has been awarded the GM Supplier Excellence Award for six consecutive years.

"We've achieved zero PPM and 100 percent on-time delivery," Hohlfeldt reported. Not a bad record.

Essentially, the ERP software filled in the gap between the company's excellent production quality and its documentation quality that affected its operations quality.

Photos courtesy of Northern Industrial Manufacturing Corp., www.northernindmfg.com.

IQMS, www.iqms.com