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Headline: Prototype Fabricator Looks to Low Volumes

Deck: Detroit sheet metal prototype shop plans for change

By Tim Heston, Senior Editor



“Good, fast, or cheap. Pick two”

That was Kevin Woody, president of Auto Metal Craft, a prototype shop nestled on a side street in Oak Park, Mich., a short drive from the massive (and, at the moment, dormant) assembly plants of the Detroit Three. Woody runs the business with his two brothers; Kent is the quality guru, and his brother Kim runs the sales side. The trio has seen much change since their father, Patrick, took over the business in the 1970s, but that “pick two” business maxim hasn’t changed. It’s a prototype journeyman’s way of saying you can’t have your cake and eat it too.

There’s something timeless about the prototype business. So much of metal fabrication today hinges on automation. A nest is generated automatically, a laser cutting center retrieves a sheet from a storage tower, and away we go. Outside certain

welding and bending cells, there's little hands-on work left on the floor. Because repetitive manufacturing has become so automated, many sometimes can truthfully say to their customers: "Good, fast, cheap—you can have all three."

Prototyping is and, according to the brothers, always will be different. Ironically, it is partly because of automation on the production side that prototyping has thrived the way it has. Finite element analysis and similar software tools have shortened development time dramatically, but automation needs real parts for testing and tryout, so the need for prototypes won't disappear in the foreseeable future. And it will require that same creative thinking that Patrick Woody learned while attending the Henry Ford Trade School. "Our dad was involved in the early days of prototyping," Kevin recalled, "in the late 1940s—its infant stage."

The shop employs no "one-trick ponies," as Kevin put it. Everyone is cross-trained and highly skilled, and their wages reflect it. The most junior employee has worked at Auto Metal Craft for a dozen years. If a prototype needs to be hand-hammered to form it exactly to spec, everyone has the knowhow to get the job done.

Five-axis laser cutting systems, NC machining, automated control of resistance spot welding parameters, and other advances have made the environment a bit different from Patrick's day. But at its foundation, prototyping still requires skilled people to work with their hands and figure out how to make the part to print, starting from scratch. CAD's a big part of it (Auto Metal Craft is a CATIA® shop), but the meat of the operation requires workers to get their hands into the product and make it work.

And as the brothers explained, the business also requires honesty. Sometimes it's not just about making a part to print. A product may be able to be hand-hammered into the proper shape, but to reliably manufacture it may be easier said than done. If the part has serious manufacturability issues, Auto Metal managers let customers know upfront. Sure, they may lose some money on the immediate job, but they'll likely gain a long-term customer.

What *will* change is Auto Metal Craft's customer mix, away from automotive. It has to. The shop, like many in Michigan, has watched its fortunes fall with the car business. It employs 28, down from a high of 50. Kevin pointed to a stack of parts sitting near a workcell. "There's a tragedy," he said. "That was a competitor's job, and he just went out of business. He just gave up and threw in the towel."

The brothers are making progress toward diversification. Although the most consistent revenue still comes from the automotive OEMs and tier suppliers, during my visit I saw several prototypes for the appliance and cookware markets, and all required hands-on expertise. Employees working on a dishwasher, for instance, were starting hem flanges by hand before the metal was pressed by a tool.

In four or five years the brothers hope to double shop capacity, and filling it will be work Auto Metal already does somewhat regularly: low-volume production. The company has produced volumes in the range of 15,000 to meet demand for limited-run products or to serve as a stopgap, providing parts for a product launch before the

customer's production line is ready. The short-run work has ramped up in recent years, and managers expect that business to grow over the long haul.

The brothers conceded that breaking into the low-volume business has been an uphill battle. One challenge is plant layout. The shop's currently split between two buildings a block apart. Kevin said he'd like nothing more than to get all the shop's technology—its five-axis laser cutting systems, hydraulic presses (ranging from 400 to 2,000 tons), spot and arc welding, CMMs, and other equipment—under one roof for more efficient part flow. "But these buildings are paid for," he said. "And these days, that's a good thing."

The less-than-perfect layout doesn't prevent the shop from taking low-volume jobs, and to prove it the company invites potential customers to take a tour. "If they're here, they can see our quality, and they can see we have the [low-volume] capability," Kent said.

As the company's quality guru, he should know. Kent takes an old-school approach. He doesn't use the quality buzz words. Instead, he goes by two things: data and the scrap bins. "Any good quality guy looks at the scrap bins" next to the workcells, Kent said. "That's where you can tell what's really going on." Did the spot weld pass the pull test? Was that hole in spec? The scrap pile tells Kent the story. And then, of course, there's the data, which drives everything at the ISO-certified shop. If a customer requests CMM data, Kent is sure to get specific—exactly *what* data, and at what frequency?

After a look, Kevin chuckled. “And I just want to get the thing shipped. I know I drive him crazy about it, but thanks to him, our rejects are way, way down. We’ve built that reputation.”

Kevin and Kent are proof that opposites make a good management team. Kevin drives for operational efficiency, while his brother ensures everything going out the door meets or exceeds quality standards. The brothers also could be a harbinger of a bright future. The U.S. car industry will never be the same, but stateside manufacturers have a drive for efficiency and quality unmatched by many in the developing world, and they happen to be located in the middle of the world’s largest market. The product may cost more (again, “pick two”), but overall project costs go down, because the project is right the first time.

“One of our customers was doing a lot of production in Mexico and China, but now they won’t buy another thing [from those countries],” Kevin recalled. “They found much better quality here.”

Here’s the funny part: That company’s headquarters is in Mexico.

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