



A FAMILY AFFAIR IN AEROSPACE MANUFACTURING

Mundo-Tech Inc. - US

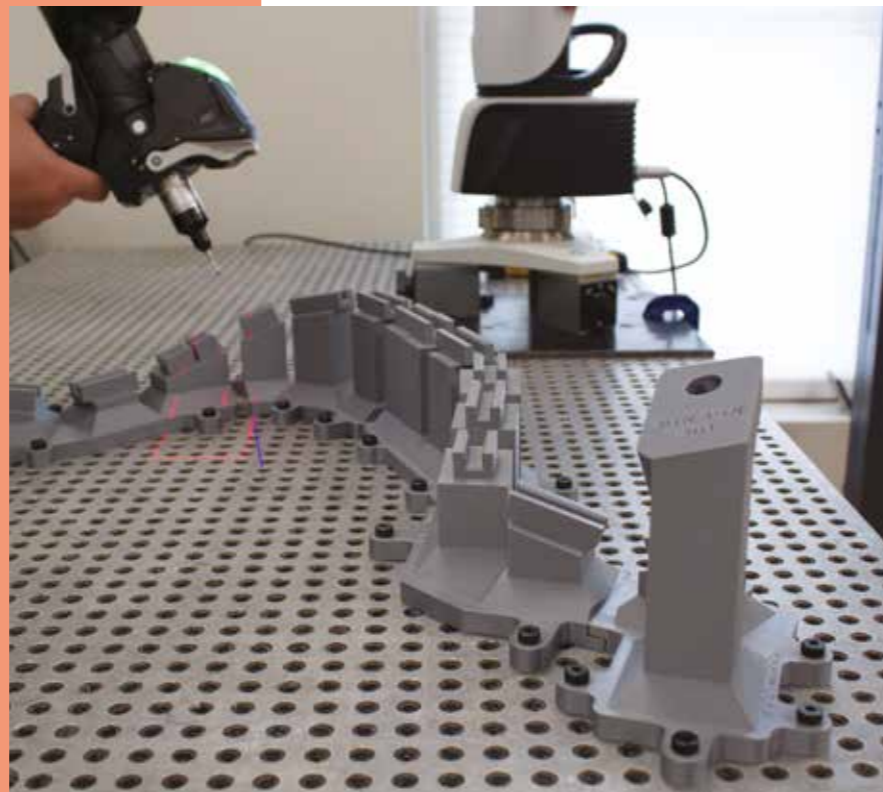
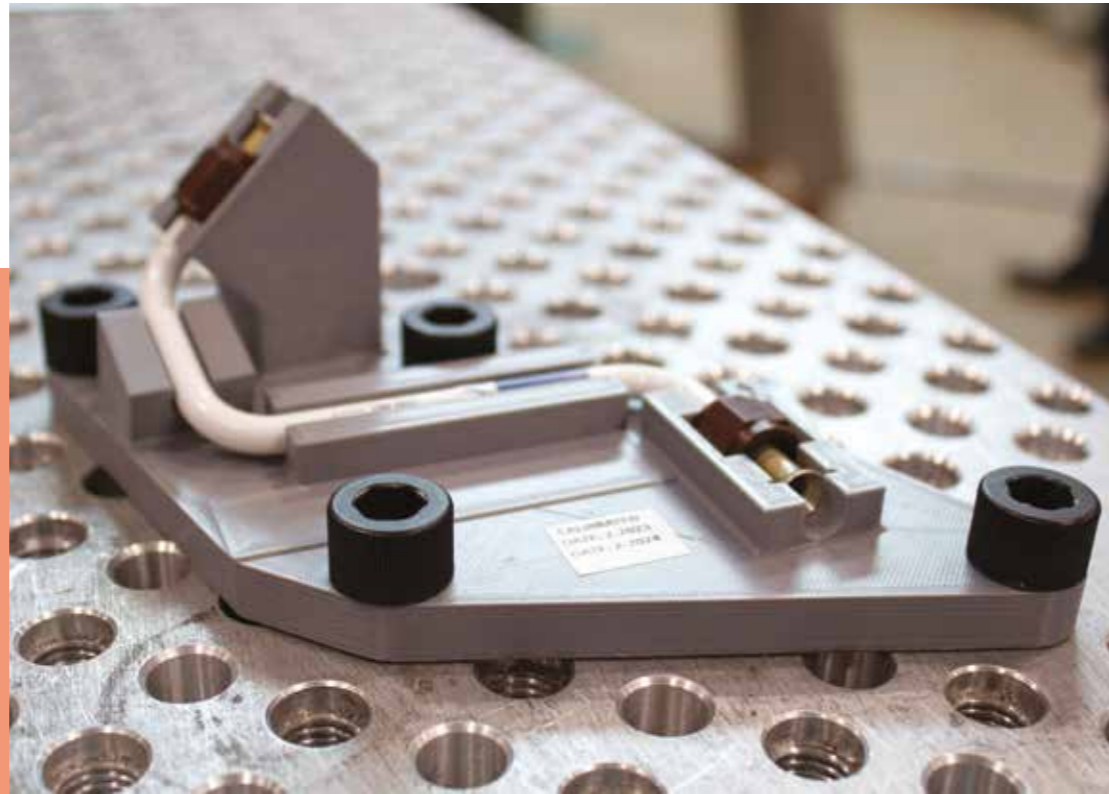
Chris Harbaugh laughs at the suggestion that he has enough brothers and sisters to make a baseball team. And while that's not strictly true, there are certainly enough Harbaughs to field a game—or manage a successful business. “My parents had thirteen children, but only a few of us work here,” he says. “I’m the vice president, my brother Joseph manages sales and estimating, and my older brother Mundo is the president. We also have a brother-in-law, Brad Filiault, who serves as our general manager.” The “here” in the statement above is Mundo-Tech Inc. of Rogers, Arkansas, a small manufacturer in a not-so-small town nestled in the state’s northwest corner, an area that’s perhaps best known as the birthplace of Sam Walton and the first Walmart store, whose doors opened in 1962.

Aside from the heavy traffic that comes with living and working minutes from America's largest retailer's headquarters, not to mention a half dozen of its distribution centers, the city's long association with the Walton family is of lesser importance to the Harbaughs; they're too busy making hydraulic and fuel lines for another well-known company—Lockheed Martin—whose F-35 Lightning II fighter aircraft are filled with parts from this 50-employee tube fabricator. "Our Mom and Dad founded the company in 1985, after he began making parts in his garage for an ex-employer," says Harbaugh. "It was a classic job shop story. Within a few years, he had enough work to move into a rented space, and a few years after that, he bought some land in Rogers and put up a small building. Four additions later, we're at 30,000 square feet and produce tens of thousands of parts annually for many of the big aerospace firms, Northrop Grumman, Blue Origin, and Virgin Galactic among them."

Passing the torch

Every day's a new adventure for this little Arkansas shop, he adds. Aside from the aerospace and defense work just mentioned, the company also serves the commercial market, providing a wide variety of custom components ranging in size from 1/4-inch or so in diameter up to 2 inches or more (more or less from 6mm to 5cm). Thanks to the F-35 contract, the team there have become experts at processing titanium tubing, but are quite adept at other materials as well, including mild steel, stainless, aluminum, and copper.

Mundo-Tech is ITAR compliant and ISO-9001/AS-9100 certified. It's also a Women-Owned Small Business. Owners George and Teresita began their well-deserved retirement ten years ago, but they still pop their heads in the door now and then, mostly to say "hello", but sometimes just to admire what their once-small venture has



become. In the meantime, the younger generation of Harbaughs continues to build on their parents' success.

"Our services include everything from bending and forming to pressure testing, welding, swaging, aqueous cleaning, and nitrogen bagging," says Harbaugh. "We also do some CNC machining and sheet metal work, hardware insertion, that sort of thing. But simply put, if it's needed for tube fabrication, chances are we're doing it."

Mundo-Tech also launched a new division recently, called FIXTUR3D. As its name suggests, the startup designs and manufactures bespoke checking fixtures for tube fabricators, which it produces on a small fleet of Ultimaker fused deposition modeling (FDM) 3D printers. In fact, visitors to last year's FABTECH expo in Atlanta may have seen Mundo-Tech's newest products

displayed in an unexpected place: Booth B7513, the temporary home to BLM GROUP USA.

The machine legacy

That's because BLM GROUP is one of Mundo-Tech's most important equipment suppliers, which only makes sense for a team of people who spend their days fabricating the most accurate, high-quality tube components they can muster. "As I said, we make mission-critical parts for some of the biggest names in the aerospace market, and to do that, we need the very best bending technology available."

The centerpieces of this technology are a pair of ELECT40 servo-powered tube benders from BLM GROUP. The first was purchased more than eight years ago, with the second arriving soon after. Harbaugh explains that aerospace components are understandably close-tolerance, and their previous brand of hydraulic bender was not up to the task. They needed equipment that could produce top-notch parts with minimal intervention. In addition, Mundo-Tech faces the same labor challenges as countless other manufacturers, and the ELECT machines have proven both easy to operate and dependable.

"I won't name the other brand, but we were constantly tweaking the machine to achieve any level of accuracy," he says. "Part of that is the weather here—the mornings are often cool and the afternoons hot, so there's some machine expansion to deal with—but I can honestly say that none of that affects the ELECT benders. That's why we're looking at a third machine later this year."

There's more to this story than good equipment. As Harbaugh points out, "If I need help with something, whether it's a new material or a new operator, I can count on support from the applications engineers and product managers at the BLM GROUP USA headquarters in Michigan. If needed, they'll pull in someone

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from Italy. Eric Chambers, Gunar Gossard, and everyone else at the company has been great to work with.”

A workable workflow

This commitment extends to non-BLM GROUP products. The parts made at Mundo-Tech are very labor intensive, so the Harbaughs are always looking for ways to make their operations more efficient. For instance, they have gone through several iterations of metrology equipment over the years, and most recently implemented a vision system from Hexagon Manufacturing Intelligence, which has since been linked directly to the ELECT40 benders. “This was part of the driver for our move into 3D-printed inspection fixtures,” he says. “Now, we can drop a part in, measure it in less than a minute, and send the dimensions to the bender. The VGP bender software is great—it knows exactly what to change and how much, so the next part is perfect. The improved workflow made possible by this marriage of technologies has definitely increased our productivity.” Harbaugh notes that Mundo-Tech services “a pretty wide customer base” and makes some very complex parts in small quantities. So not only is dimensional accuracy critical, but the

changeover has to be fast and easy. Here again, BLM GROUP has brought some big benefits to the tube bending table. “The machines are equipped with a quick-change tooling system, so setups were already pretty fast, but we had some triple-stack tooling made that cuts them even further—for repeat jobs, we can just drop the whole stack in there and not have to change anything for days.”

Compared to the days when a much younger Chris Harbaugh helped his father on a manual bending jig, shop life (and productivity) have improved immensely. “There was a time when my Dad and I were the only ones here who knew how to bend tubes. Now look at us. My brothers and I are blessed to have such a great set of employees. They’re always innovating, always trying to accomplish something new and make the most of what we have here, which is why our next machine will probably be one of the SMART series bender from BLM GROUP. Even though we have very little turnover, it’s still difficult to find, train, and keep talent, so in the interest of corporate growth, it’s crucial to invest in machinery that’s super user-friendly yet easy to automate. That’s the future of manufacturing, no matter what you make.”