

Steeling the Spotlight:
Reichard Industries

By Heather N. Smith

Iron & Steel Technology *visited Reichard Industries in Columbiana, Ohio, USA, for our series that spotlights the grassroots companies powering today's steel industry while positively impacting the communities in which they operate.*

When you walk into Reichard Industries' offices at its facility in Columbiana, Ohio, USA, you'd never know what lies beyond the front offices. The long halls of pictures depicting various jobs taken over the years give little indication of the noise and activity on the shop floor, where steel plate is cut, rolled and welded into huge structures.

Inside the facility, welders join massive components, plugs are installed and the smell of hot metal hangs in the air. Pieces of steel gradually take shape as ladles and electric arc furnace (EAF) components, equipment built to withstand the harsh conditions of steelmaking.

After the plate has been burned and rolled, components fitted and welded, inspections completed and the finished structure loaded onto a truck, employees can finally step back and see the scale of what they have accomplished. There is a particular satisfaction in watching something you helped create leave the shop.

That philosophy has guided the company since its founding in 1981, when its founder James "Jim" Reichard started the business from a garage. More than four decades later, the company employs approximately 98 people and has set a long-term goal of reaching 120 employees.

Its products are considerably larger than the operation that produced its first jobs.

The company manufactures steel ladles, EAF components, scrap buckets and other large, specialized equipment for steelmakers throughout the U.S. Its work is built around a combination of engineering, fabrication, welding and the practical knowledge that comes from decades of handling heavy industrial components.

"We start with a flat piece of plate, and we make that," Keith Reichard, Jim's son, said, gesturing to a photograph of a huge EAF the company had worked on.

That simple description captures much of the company's manufacturing philosophy.

> "We're building something that will go out into the world and do a job that matters."

The company was founded on 14 September 1981. Previously, Jim was chief engineer for William B. Pollock, owned by GATX, who manufactured large steel mill equipment with as many as 400 employees. When the steel industry declined in Youngstown in the early 1980s, GATX shut down Pollock and Jim started his own company.

While that meant working out of his garage initially, the business moved to Andrews Ave. and began the gradual expansion that would eventually create today's operations by 1983.

Keith grew up around the business. He started working there at 15, doing whatever needed to be done, including sweeping the floor. The family later acquired and reassembled the building in Columbiana, putting it together piece by piece, expanding the footprint of the company as its work became larger and more complex.

Today, the company operates across three buildings in Columbiana and Niles, Ohio, USA, and Michigan City, Ind., USA, with its manufacturing process divided between locations according to the work being performed.

Keith studied mechanical engineering at Youngstown State University, later earned an M.B.A. from the University of Akron and eventually moved into company leadership, becoming president in 2010. Four Reichard siblings worked for the company at various points.

Jim passed away in 2017 at the age of 69, but the opportunities he created for his children continue into another generation. Keith's own children have taken different paths as well; three out of four work at the shop during the summer when not in school.

The message has remained consistent: the opportunity is there, but it has to be earned.

> "We're a large fabricator, but we have specific products that we are good at."

The company's Niles operation handles much of the early manufacturing process. Plate is burned, shaped and rolled into the components needed for a finished structure. The Michigan City facility, meanwhile, is focused primarily on repair and assembly and represents an important part of the company's plans for continued growth.

The relationship between the facilities can be understood almost like a three-dimensional puzzle.

"If we think about the things that we make as a 3D puzzle, we make the puzzle pieces there; we put the puzzle





together here," explained Keith, referring to the Niles and Columbiana facilities.

The analogy is particularly appropriate for large ladles. Individual pieces can be enormous, but they must eventually come together with enough precision to form a single vessel capable of carrying hundreds of metric tons of molten material. All the pieces are burned and rolled in-house, requiring careful fitting before welding begins.

"While our fabrication tolerance for a structure this large is an eighth of an inch, we have a unique welding process that allows for a one-inch gap between plates," explained Keith.

For a structure that large, even that seemingly generous tolerance represents a significant amount of precision.

"We could take a blank sheet of paper and design any size ladle you would like."

The company manufactures a range of equipment, but one product stands above the rest.

"By far, I think most people know us for ladles. That's not all we do, but it is a large portion of our business and extremely important to us," said Keith.

Ladle manufacturing has become the company's core manufacturing specialty, producing about 30 ladles a year. Reichard starts a new ladle every week to keep up with demand, custom-designed according to individual customers and applications.

That capability is increasingly important in an industry where steelmakers do not necessarily need an off-the-shelf product. The company works from customer drawings but does more than simply reproduce them.

"People come to us for specific products because of our experience and our engineering ability to design and repair those products," said Keith.

That engineering capability allows the company to modify designs, model components and identify opportunities for improvement before fabrication begins. The evolution of engineering technology has made that work considerably easier. Computer-aided design and simulation tools have replaced much of the manual calculation and drafting that once dominated the process. Engineers can model a component, make modifications and evaluate a design before material is cut.

But the fundamentals remain. The company still relies on an understanding of material behavior, structural forces, welding and fabrication, especially when the final product necessitates precision.

"We build very big things that are unique."

The scale of the equipment becomes particularly apparent during ladle operation.

One ladle Reichard was working on could hold up to 325 metric tons of molten iron, meaning its construction and balance must account for enormous loads to ensure it all rotates freely. That places demands on the structural design, assembly and inspection processes, meaning even small errors in design could make a huge difference.

The refractory system provides another critical layer of protection.

"The ladle lining keeps the refractory material inside it. The working lining may be replaced about every

two weeks, and there is also a backup or safety lining," explained Keith.

Refractory wear is part of normal steelmaking operations, which means ladles require regular maintenance and repair. That work has become an increasingly bigger part of the company's business and one reason the Michigan City facility is important to its future.

Welding accounts for a substantial portion of the labor required to manufacture a ladle. Larger ladles take over 2,000 working hours, most of which is welding. Some seams can be automated, but much of the work remains dependent on skilled welders. At this point, automation is only viable for a few things, such as the seams.

The difference between manual and automated welding can be substantial. The process that once required days of manual work can be reduced dramatically when using newer equipment. What would have previously taken up to five days to weld manually, working 12-hour shifts, now can be completed at a fraction of the time. Ladle seams that once took weeks to weld can now be fully welded in three days.

These improvements are particularly important as demand grows. While the company operates three shifts to keep pace with production requirements, newer equipment and improved processes allow the company to keep up with an increasing demand. Today, newer equipment and improved processes allow the company to increase output without adding more hours to the schedule.

Instead of automating for the purpose of replacing workers, Reichard expressed they want automation so the workers can focus on more important projects and get the products out faster. That distinction is important in a business where skilled labor remains difficult to replace. Large-scale fabrication is not easily converted into a fully automated production line since every project can involve different dimensions, orientations and component arrangements.

"We still want to add more teammates, but how do you automate it? There are too many variables — too many pieces out of position and in different orientations," Keith explained.

The equipment Reichard works on is too large and variable for robots to perform every task with current AI capabilities. Instead, automation is being applied where it makes sense, particularly to repetitive welding operations and processes where consistency can be improved.

The goal is not fewer people; it is greater productivity from the people already doing the work.

> **"The way our success has been made is by having experienced teammates."**

With equipment carrying hundreds of metric tons of materials at extreme temperatures, inspection is extremely important. Damage can occur inside a ladle's structure without immediately appearing on the



outside. That makes inspection and maintenance essential throughout the equipment's service life.

"The things that happen internally in the ladle — the damage to the ladle structure — you may never notice until it's too late, unless you have a good inspection program," explained Keith.

The company's repair operation builds on that experience, allowing employees to assess existing equipment, determine what needs to be replaced or repaired, and return it to service. The ability to repair equipment is also becoming increasingly important as steelmakers look for ways to extend the life of existing assets.

"They're proud of what they do on a day-to-day basis. They like seeing it get lifted onto the truck and go out the door," said Keith.

The company's growth has not been driven solely by equipment or buildings; its greatest asset may be the people who know how to use them. Many employees have stayed with the company for decades, with several having more than 30 years of experience. That institutional knowledge has become a competitive advantage.

Experienced employees understand the machinery, materials and processes in ways that only time can explain. They also take pride in seeing the finished products leave the facility. That pride is particularly visible when one of the company's larger projects leaves the facility.

The equipment is generally shipped in sections by truck and assembled at the customer's location. In some cases, the logistics involved in moving the components can be nearly as challenging as manufacturing them.

The company has shifted increasingly toward truck transportation as the steel industry has evolved from traditional blast furnace operations toward EAF production, making some equipment more difficult and expensive to ship by rail.

Maintaining an experienced workforce requires bringing in the next generation of employees. The company partners with trade schools and technical centers, including the Columbiana County Career and Technical Center, to introduce students to manufacturing. Employees speak with students about the work and what a career in industrial manufacturing can offer. High school seniors can participate in work-study programs, allowing them to gain experience while still in school. The company also has employees whose children have followed them into the shop.

The approach is especially valuable in rural communities, where schools increasingly are emphasizing skilled trades as a practical alternative to the traditional four-year college path. For the company, the path is straightforward: find people with aptitude and interest, give them an opportunity, and teach them the specialized skills they need.

One skill that often requires additional training is welding thick steel. Air arcing, for example, is not always taught sufficiently in traditional programs, meaning the company must provide some of that instruction itself.

Open houses also give employees the opportunity to bring their families into the facility and show them what they do.

The goal is to make manufacturing appealing to the next generation.

The strategy appears to be working, as the company has had 5 to 10% growth every year for the past five years. In 2003, the company had approximately 30 to 40





employees and has since almost tripled that. Sales have increased more than five-fold.

New facilities helped make that possible, particularly as the company expanded its ladle repair and assembly capabilities. The company's focus, however, remains specialized. Rather than attempting to manufacture everything, it concentrates on products where its experience and engineering capabilities provide an advantage.

Reichard recently built two railcars and is working on some of its largest projects yet, including a scrap bucket for a West Virginia-based customer measuring approximately 24 ft. in diameter. It also has manufactured EAF equipment measuring approximately 25 ft. wide.

With projects like these that are difficult to standardize, experience is critical.

> **"We try to donate when asked and help where we can."**

Reichard's footprint extends beyond the shop. It supports local charitable organizations, participates in community events and works closely with local police and other organizations. In Columbiana, annual events such as the street fair, wine festival, beer festival and Christmas lights display bring visitors into the community.

The company is both an employer and a visible part of the local economy, and the relationship works in both directions. When a massive component leaves the facility, the community notices. Large trucks move through local streets carrying pieces of equipment that will eventually become part of a steelmaking operation somewhere else in the country.

The community understands what those shipments represent; they are not simply oversized loads. They are products made locally by people who have spent years learning how to build them.

Reichard has changed dramatically since Jim began working out of a garage. It has grown from a small machine shop into a three-building operation with a growing repair and assembly facility, sophisticated engineering capabilities and customers across the U.S.

Its products have become bigger, and its machinery has become more advanced. Its engineering tools have become almost unrecognizable compared with those used when the business began. But the satisfaction of the work remains remarkably simple.

Start with a flat piece of steel. Shape it. Fit the pieces together. Weld it. Inspect it. Load it onto a truck. And then watch something enormous, something that did not exist before the work began, leave the building.

And for the people who build them, perhaps that is the best part. They can point to something that weighs many metric tons, stretches dozens of feet and is headed for a steel mill somewhere across the country and say, "We made that." ✦