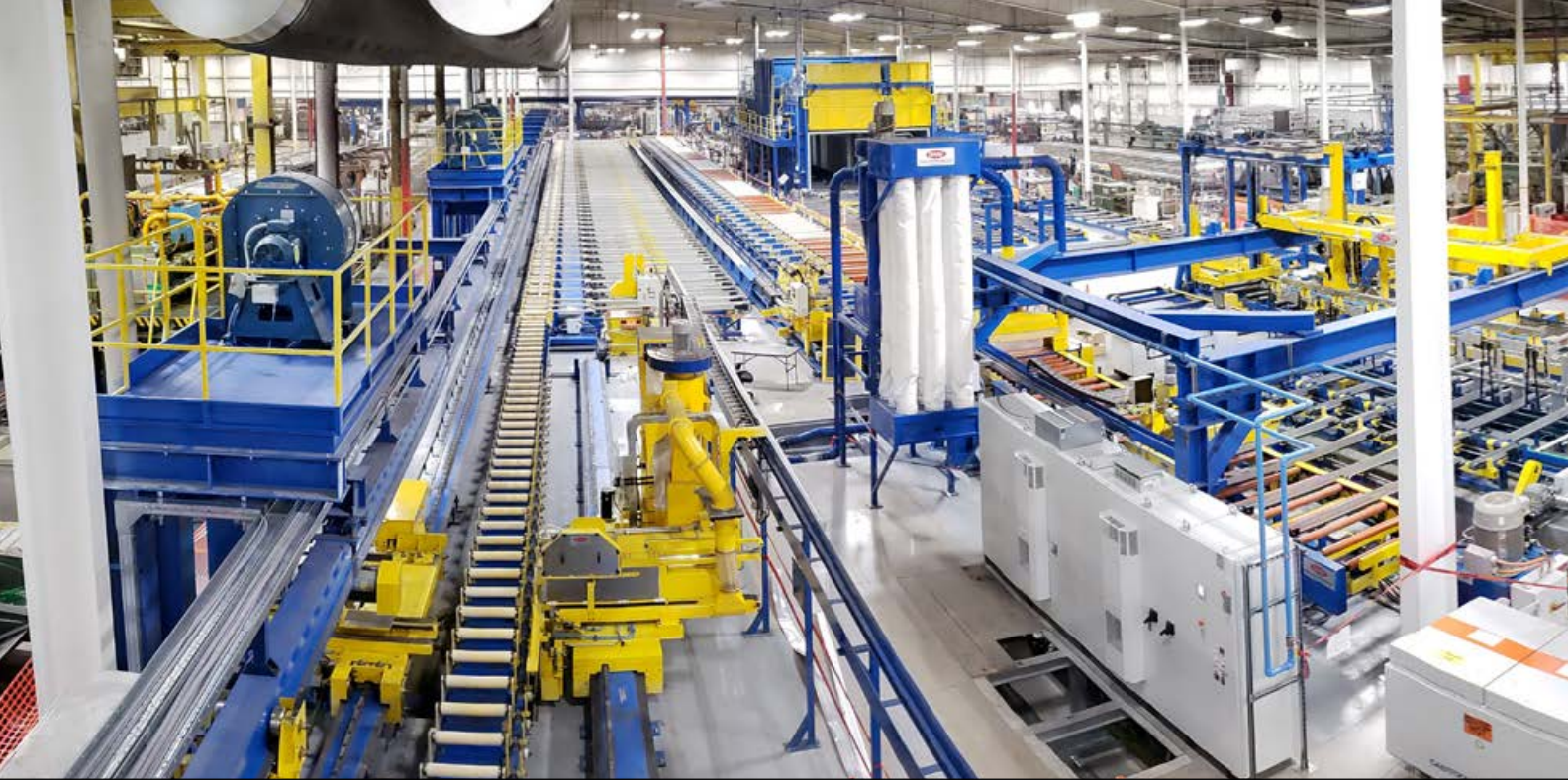

View of the material handling equipment and aging ovens on the new 8 inch press line.

Mid-States Aluminum Focuses on Value-Added with Balanced Growth

Mid-States Aluminum in Fond du Lac, WI, recently completed the expansion of its operations. The $23 million investment includes the installation of a new 8 inch extrusion line and three new robotic machining cells. The expansion provides greater efficiency compared to the company's existing equipment, while also providing the capability to manufacture larger extrusion profiles. This will enable the company to address customer needs for high quality extruded aluminum parts with short lead times across all the industries it serves.

Company Profile

The story of Mid-States Aluminum began when Midwest Aluminum, an extrusion company headquartered in Kalamazoo, MI, launched a new extrusion plant in Fond du Lac, WI, in 1964 (one of several plants operated by the extruder). The Fond du Lac plant manufactured lineal mill-finished aluminum extrusions on a single extrusion press. When Midwest Aluminum announced plans to close its Fond du Lac site a decade later, Dave Schaberg and other investors came together to purchase the extrusion plant. The Fond du Lac facility then became its own business, operating as Mid-States Aluminum Corp. in 1974. Another major turning point for Mid-States came in 1984, when it was purchased by Joe Colwin, who remains chairman and owner of the company to this day.

Over the years, Mid-States Aluminum has made several investments to expand its extrusion capacity and overall capabilities, including value-added operations such as fabrication and finishing. In 1999, the company achieved ISO 9001 certification, which had been requested by a number of their large automotive customers.

Today, Mid-States Aluminum operates out of a single location in Fond du Lac. Housed under one roof, the 300,000 sq ft facility provides vertically integrated operations, from extrusion to fabrication, finishing, and assembly. The site operates three extrusion presses—a 4.5 inch, 880 ton press; an 8 inch, 2,200 ton press; and the company's new 8 inch, 3,150 ton press (which replaced an older 7 inch line). The company's fabrication area includes robotic machining and punching cells, vertical and horizontal machining up to 200 inches, CNC forming, and precision cutting, as well as light assembly. In addition, the plant has in-house anodizing capabilities for components up to 150 inches.

Mid-States Aluminum manufactures solid and hollow profiles in 6063, 6430, 6005A, and 6061 alloys. "We work with a couple of die manufacturers to produce thin-walled and tight tolerance profiles," said James Spannbauer, Mid-States president and ceo. "Mid-States Aluminum is proud to have long-tenured die suppliers. The relationship with our suppliers is crucial to getting quick turns, on new and replacement tooling, to meet customer demands for quick deliveries. It takes a partnership with the tooling suppliers to develop reliable designs and provide dependable service."

The company serves four main industrial markets: machinery and equipment, transportation, building and construction, and the electrical/electronics industries. "We strive to maintain a balance among these industries to maintain a stable business for our associates, our customers, and our community," said Spannbauer.

New Press Line

After a careful review of several manufacturers, Mid-States Aluminum contracted with OMAV for the supply of their new SMS-model press and associated handling systems. Since the new line would be replacing an older 7 inch press, the company needed to perform a significant amount of prep work for the installation to take place.

The 7 inch extrusion line and an aging oven were removed. The existing building was expanded by 39,000 sq ft

Figure 1. The new extrusion press is capable of processing profiles up to 25 ft in length.

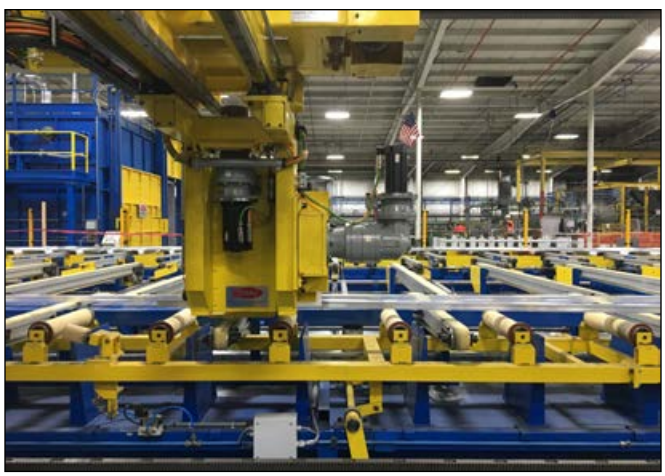

Figure 2. Electric double puller with flying hot saw.

and the foundations were modified and expanded in order to accommodate the larger 8 inch press. This considerable foundation work was performed in stages, with approximately 58 tons of rebar and 3,700 cubic yards of concrete used for the building, foundations, pits, and floor areas. "Our expansion project was a balancing act," noted Spannbauer. "The engineering and extrusion departments carefully planned the shift in production from the 7 inch press to one of our other presses to be able to continue to supply customers with product during the installation period. We also expanded hours of operation to accommodate the additional pounds being produced on the two remaining presses."

The new state-of-the-art 8 inch, 28 MN (3,150 ton) extrusion press is capable of processing profiles up to 25 ft in length (Figure 1). The press includes a container and tooling from Castool. It also has a high efficiency air and water quench system designed to achieve tight tolerances in the final profiles, along with an electric double puller with flying hot saw (Figure 2). The 78 ton stretcher is fully automatic for some profiles.

Following extrusion, the profiles are automatically stacked into baskets prior to loading into one of two aging ovens. Upon exit, the baskets are automatically destacked and the profiles are fed to the packing and racking areas or are sent to the two new MetlSaw sawing tables for precision cutting. Empty baskets are automatically queued to the extrusion area. A conveyor system was supplied by Titan to automatically recover scrap material for recycling, thereby reducing manual material handling.

The press line also features a double log breakdown table, an HP7 log furnace, and a log shear. Castool also supplied infrared die ovens, and Combilift provided a new combination lift for improved material management.

Expanded Fabrication Capabilities

Along with the new press line, three new robotic manufacturing cells were installed in 2019 for high volume machining and forming production. Using in-house engineering resources, Mid-States Aluminum designed the layout for each of the cells and then worked with a local integrator to supply the equipment and install the cells. "We are very excited about the technology that we have developed to manufacture these high precision parts," said Spannbauer.

Two robotic manufacturing cells with vertical machining centers were supplied by Mazak, which included Neff hydraulic forming presses and Fanuc robots (Figure 3). The third cell is a robotic assembly cell, which includes two Fanuc robots and equipment designed to apply steel and stainless steel hardware to aluminum rails (Figure 4).

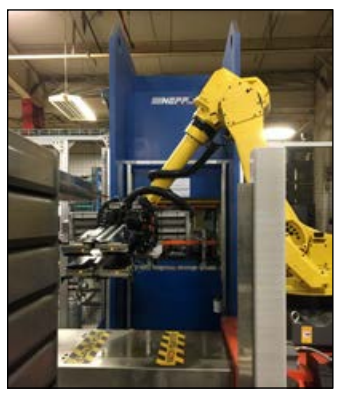

Figure 3. Hydraulic press for forming aluminum parts in a robotic manufacturing cell.

Figure 4. New robotic cell for high-volume manufacturing of aluminum rails for the automotive industry.

In addition, Mid-States is currently installing another robotic manufacturing cell, which will increase the company's vertical machining capabilities to up to 200 inches (5,080 mm) in length. "We have seen increased market demand for longer and larger profiles from the machinery and equipment sectors and, at the same time, limited machining capacity in the marketplace," explained Spannbauer. "The new equipment will allow us to access new markets." The fourth robotic cell is expected to be operational in February 2020.

Conclusion

The startup of the new extrusion press and robotic machining cells at Mid-States Aluminum provides increased capacity and efficiency to support the company's current and future growth plans in the industries they serve. "Mid-States Aluminum's goal is to be a cost-competitive, high quality aluminum extrusion company focusing on value-added services," said Spannbauer. "This includes balanced growth over the markets that we serve and providing our customers with the best service in the marketplace." ■