All of the major equipment at INTEX is adorned with custom artwork by French artist Manucollage as a reflection of the company's strength, independence, and resilience. This includes the new vertical powder coating line (pictured), nicknamed the Black Widow.

INTEX Reinvents Itself with Major Expansion Projects

Two New Presses and a State-of-the-Art Powder Coating Line

By Andrea Svendsen, Managing Editor

Headquartered in Garden City, MI, International Extrusions (INTEX) is an independent, family-owned company in the process of reinventing itself through capital investments designed to grow its capabilities and capacities. This includes the installation and start up of a new extrusion operation with two new presses, as well as a new vertical powder coating line. Across all of its investments, the company is focusing on the production of high quality profiles, while providing a high level of automation to not only ensure repeatability, but also to make the operation of its equipment safer and more ergonomic for employees.

Journey of Reinvention

INTEX was formed in 1965 by parent company Kaufmann Window and Door (originally founded in 1937 and bought by Marshall Noecker in 1948), with the aim of producing extruded profiles for its building and construction business. Since starting operation, the company has grown to become a premier extrusion company in the Midwest. At the time, the former parent company held several building supply companies. In 1993, the extrusion company split off under the direction of Nicholas Noecker.

Currently, INTEX operates out of two campuses—their headquarters in Garden City, MI, and their new facility in Livonia, MI, which started up in December 2019. The company's two campuses are home to five buildings, with a total of over half a million square feet under roof. The company's operations include aluminum extrusion, CNC fabrication, and custom powder coating solutions, serving a variety of industries.

Over the past several years, the company has been making strides to significantly expand its operations and capabilities. Investing in state-of-the-art equipment—such as their new extrusion presses and vertical powder coating line—was a key element of this process.

"When I took over the company, we were under capitalized with a mountain of debt and didn't have the opportunity to invest. As a result, we struggled with old equipment for about 20 years," said Nicholas Noecker, president of INTEX. "We now have a rock solid balance sheet along with a growth and investment focus that incorporates the value of new equipment in the continued pursuit of being a premier company for years to come."

The new equipment will ultimately make life easier for INTEX's personnel, as it will be less likely to break down and features a high level of automation and ergonomics that ensures that the staff will not have to work as hard. In this way, the equipment becomes the superhero doing the heavy lifting—which is why each piece of new equipment is given a comic book nickname and adorned with commissioned art depicting the hero in question.

According to Noecker, the key to success is a combination of advanced equipment that is able to provide high quality products with dedicated and smart personnel who can run the equipment and provide excellent service. Maintaining that staff is vital to ensuring the company's future. "What I want to do is prepare the company to operate with less employees going forward, because issues around employee shortages are not going to go away," explained Noecker. "To be clear, I don't want to lose any of my employees. They're wonderful. But if I can automate jobs and let the machines be the super-

heroes, then I can make my employees' lives easier and make them happier while they're here. At the end of the day, that is what's going to help me to keep my employees and grow without having to add as many people."

Expanded Extrusion Capacity

INTEX's plans to reinvent itself began with the construction of its new Livonia facility. "When we started planning for the new plant, we were looking for a building that was at least 500 ft long, which is difficult to find," said Noecker. "Fortunately, one fell into our lap, and we were able to move forward with the project. It was very exciting, because this was our first major new facility and investment in over six years."

The company moved quickly on the project, completing the purchase of the site in September 2019, with the start up of the plant's 25 MN, 9 inch press occurring just a few months later in December 2019 (Figure 1). With the facility up and running efficiently, INTEX began expansion plans less than two years later, with the aim of installing a second 25 MN, 9 inch press at the site, along with fabrication capabilities. The second press is in the process of being installed and is expected to start operation in May 2022.

Figure 1. Overview of the first 25 MN, 9 inch press line installed at the Livonia facility.

Each of the new presses have received their own superhero nicknames, with the first one being dubbed Wonder Woman and the second the Captain (as in Captain Marvel). Both presses were supplied by Extral Technology, based in Castelli Calepio, Italy, due to the supplier's ability to provide complete extrusion lines. In addition to the presses, the supplier provided the log heating and shear, quench system, pullers, stretchers, runout tables, stackers and destackers, and aging ovens.

Both of the Livonia extrusion presses feature nearly identical designs. The 25 MN, 9 inch press has a short-stroke, front-loading design, with a nutless tie rod on the front end and efficient Rexroth hydraulic pumps. At the press exit, the profiles are removed using a double bypass puller system with a flying hot saw (Figure 2). The profiles are then moved via the Kevlar belt runout table and handling system to the automated stretcher and cut-to-length saw.

Following the saw, the profiles are fed into the stacking/destacking system, which uses a spacer-less design to stack the profiles. The profiles are automatically loaded into the trays, which are capable of holding profiles up to 28 ft in length. The trays are then carried to the aging oven, where the tray system allows for improved airflow between the profiles, which helps to shorten the aging cycle. Once the profiles have been aged, they are automatically delivered to the packing area, where they are destacked. The empty

Figure 2. The automated flying hot saw cuts the profiles as they exit the press.

trays are returned to the handling area to continue the efficient flow of material through the line.

With the second press line about to start up in Livonia, INTEX is now in the process of planning an investment for yet another new press line. This third press is still in the planning stage and the company has not decided on the final location as of yet. One option is to scout for new locations. Another option is to retire two older presses at the Garden City plant and replace them with the new equipment. The company plans to make its final decision soon, with the aim of installing and starting up the new press in summer of 2023.

New Vertical Powder Coating Line

At its Garden City location, INTEX had an existing horizontal powder coating line, which had been upgraded in 2019 to boost the processing speed and booth technology. Despite these improvements, the company found itself at capacity and was forced to turn away business opportunities from both existing and new customers. In addition, Noecker was confident that the extrusion industry would see further growth in the near future.

As a result, the company decided to take action and invest in a new vertical powder coating line at the Garden City plant—right at the start of the COVID-19 pandemic. After conducting some research, Noecker selected a CUBE™ Plus vertical powder coating line from SAT Srl, a subsidiary of Gema. "After seeing some videos online, looking at the technical drawings, and speaking with SAT, I could tell that the line could fit everything in a tight space under one roof, while providing the productivity, automation, and ergonomics we wanted," he said. "I bought it sight-unseen. Our company culture is to react fast, so I was willing to make the leap of faith."

INTEX knew that it wanted to house the paint and extrusion operations within the same building for logistical and efficiency reasons. The company made the decision to retire and dismantle an old press in order to make room for the new vertical powder coating operation. The redesign and retrofit of the existing building was a major undertaking that required huge modifications, including ripping out half of the building and extending the roof to 60 ft to accommodate the powder coating line. "We needed a code exception from the city to allow us to build the 60 ft high structure. Fortunately, our city was excited to see us grow and quickly granted a waiver," explained Noecker. "Essentially, using this small, but very tall, space is what allowed us to add the line to our existing Garden City facility."

According to Noecker, most of the startup challenges could be attributed to visa and importation issues caused by the pandemic, which resulted in various delays. At one point, an entire team from SAT had flown into Detroit, MI, to support the installation—only to be turned away at the

airport and sent back to Italy. SAT worked closely with INTEX to work through these challenges, finding alternative ways to ensure the installation and start up of the line.

Despite the bumps in the road, the CUBE vertical powder coating line—dubbed Black Widow—went live in January of this year. The first of its kind in the U.S., the highly compact powder coating line combines all of the major processing steps (pretreatment, drying, powder application, and curing) into a small, integrated footprint. The line is highly efficient, with a conveyor speed of 6.5 ft/min and the ability to produce about 4,800 coated profiles per day, with an average weight of 51,000 lbs per day (Figure 3).

Following the cascade-style pre-treatment tunnel, the V-shaped powder coating booth is designed to provide high transfer efficiency with 16 automatic OptiGun GA03-P guns and AP01 dense phase application pumps from Gema, which are installed on a multi-arm vertical reciprocator. The booth consists of two vertical walls that surround the overhead conveyor. Powder is simultaneously applied to both sides of the profiles inside the wall area.

Figure 3. Personnel at the Garden City plant monitor the coated extrusions as they come off the new CUBE vertical powder coating line.

In order to ensure that each extrusion is properly painted, the booth includes the SAT Visicoat system, a camera-managed technology designed to recognize and match profile geometries loaded on the line. As each profile is optically measured, the electrostatic guns are automatically set to ensure the final quality of the coating layer, reduce powder consumption, and ensure repeatability.

After the profiles are coated, they are processed through a specially designed oven that combines both the drying and polymerization phases, which increases energy efficiency and reduces thermal consumption. The oven is engineered to have vertically recirculated air flow to achieve heat uniformity throughout the oven and limit the amount of heat that escapes. It also prevents the profiles from swinging during the process, which reduces the risk of damage to the coating.

The entire powder coating process is controlled with the Gema OptiCenter OC07 management system. In the three months, since it has started operation, INTEX has been pleased with the quality and capabilities of the line.

Conclusion

With its range of expansion projects—both recently completed and currently underway—INTEX is positioning itself to be a significant force in the extrusion industry. "We are diligently focused on becoming the best extrusion company in the world," said Noecker. "We have a team of individuals that are second to none. Great people combined with great equipment continues to produce tremendous results for our team. Ultimately, our success is rooted in the people and culture we have and will maintain for years to come." ■