Expansion projects at both facilities

WAUPACA – Waupaca Foundry is investing $27 million to expand its three plants in Waupaca.

When all phases of the project are completed, the foundry will have added a total of 64,500 square feet to its local facilities.

Plant 1

At Plant 1, the first phase of the project was finished in July. The foundry added 11,500 square feet of storage space for the sand cores used in the iron casting process.

The new storage facility has energy-efficient LED lighting. It will also warm the building by recovering heat from the compressors that circulate air throughout the building.

“Whatever we do is not run the burners,” said Dale Hardel, the head engineer at Plant 1. “The compressors will be heating this space.”

The second phase of the Plant 1 expansion project includes building a new 25,000-square-foot core production facility.

Construction crews are currently breaking ground for the addition, which is scheduled for completion in March 2016.

“We have the blessing and the curse of being on granite,” according to Brian Tesch, Plant 1 manager. “Any time we want to go subsurface, we have to use dynamite. But once it’s done, we have a very stable foundation with no vibration.”

Currently, Plant 1 has six warm-box cells, each with its own oven. After the project is completed, all six cells will have new warm-box machines with a common oven, which will be more energy efficient.

“Two of the foundry’s warm-box core-making cells are robotic. Plans are to add a third robotic cell to automate repetitive tasks,” Tesch said.

The new production cell is designed to make the process ergonomically safer and more efficient,” Tesch said.

Hardel said the engineers worked with focus groups that included core-room operators, maintenance staff, electrical technicians and suppliers to redesign the work cells.

“We mocked up a work cell,” Hardel said. “We did time studies, made sure through-put would mimic what a machine would do, made adjustments to better suit the workers.”

Hardel said the mock-ups and focus groups allowed the engineers to consider every aspect of production, from the lighting and ventilation to the placement of tools and the height of the equipment.

“When we mocked it up and had employees do those tasks, we found better ways of doing it,” Hardel said.

The six new warm-box machines will also be on a closed-loop cooling water system that will save an estimated 50,000 gallons of water per day or approximately 15 million gallons annually.

“We will be using no city water on that process during normal operating conditions,” Hardel said.

The closed-loop cooling system for the first two warm-box machines is slated for completion in March 2016 with the remaining four to follow.

Joey Leonard, vice president of human resources, said Plant 1 is one of the oldest foundry facilities in the country.

“Plant 1 is a classic example of a company that hasn’t forgotten its roots,” Leonard said. “It’s over half a century old, but you wouldn’t know it because the company has continued investing in it. The investments have been a win-win for the company, the employees and the community.”

Plant 2/3

The first phase of the foundry’s 28,000-square-foot expansion plans at Plant 2/3 was completed in April 2015.

A core production facility was built with three new double-wide warm-box core-making cells.

The project included new robotic work cells, an automated sand conditioning system, a state-of-the-art material distribution and additive system and a new core-drying oven and conveyor system.

“The new ovens use less BTUs and the fans are lower horsepower, so they use less energy,” Pagel said.

Plant 2/3 now has a separate room for storing, mixing and distributing the sand and chemicals used to make the cores for the casting process.

Pagel said the old core-materials storage room had been exposed to forklift traffic and potential spills.

“Environmental engineers said to build a protected room,” according to Paul Thiel, the engineering manager at Plant 2/3. “If this room catches fire, everything closes down and the rest of the facility would be saved.”

“Handling is waste, so getting rid of handling is getting rid of waste,” Pagel said.

Another safety feature of the storage room is that it is designed to contain spills. There are grates in the floor that lead to high-capacity tanks below the room.

When asked how he measures workflow efficiency, Pagel explained how the foundry’s iron castings must meet high tolerances.

“We have all sorts of dimensional requirements that we have to meet on our castings,” Pagel said. “Core flatness is an issue.”

Pagel noted how the size of different grain of sand can vary, how sand grains are subject to changes in the temperature, and slight variations in the mixture of sand and chemicals can affect the stability of the core.

Castings are made by pouring molten iron that is at least 2,600 degrees Fahrenheit into molds with sand-based cores.

To meet the tight tolerances allowed in a part, such as a brake drum or a crankshaft, the core can have no more than a 0.5 millimeter (20/1,000th of an inch) variation in the plane across a casting.

“That’s equal to the thickness of three sheets of paper,” Pagel said.

By making the flow of materials and the operator’s work more efficient, the foundry is able to improve the quality of its products.

“Our customers are always trying to improve what they do, so we have to always improve what we do,” Pagel said.

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BY ROBERT CLOUD

Editor

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Showing is a robotic cell for core making production currently in use at Plant 2 on Brunner Drive. This robot is similar to the cold box core making robot that will be installed at Plant 1 on Division Street once the expansion is complete. Photo courtesy of Waupaca Foundry.

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