For more than 75 years, Ross Casting and Innovation (RCI) has been creating aluminum castings for the military, aerospace and automotive industries. Today, the company is a leading producer of turbocharger wheels. The foundry's manufacturing process involves pouring molten metal into plaster molds, then knocking out the plaster to reveal the finished metal product.

When RCI consolidated several facilities into a single new building, it wanted to be known for more than just its quality metal products. The company set out to create a new kind of foundry - one that was clean and pleasant to work in.

“Typically people think of foundries as dark, noisy, dirty places,” says RCI Director of Engineering Brad Hohenstien. “We wanted to change that perception.”

Creating a New Kind of Foundry
The purpose of creating a clean, quiet foundry was two-fold. First, RCI wanted to solve the maintenance problems frequently created by plaster dust in the facility.

“The dust and dirt in the facility can get into the process and cause problems with the equipment,” says Hohenstein. “We’re working with gypsum, which is a powdery white material. It’s not dangerous, but the dust gets everywhere. It can soak up the oil on parts that need lubrication and create a lot of maintenance issues.”

In addition, RCI wanted to make the foundry a better place to work, and in doing so decrease employee turnover and training costs.

“One foundries employee turnover is a common issue, so
“Because this was a custom-designed system we knew there would probably be some issues we needed to work out,” says Hohenstein. “Knowing that Hapman would continue to work on the system until it was performing at 100 percent was critical to our decision-making process.”

Engineering a Solution
The engineering team at Hapman worked closely with RCI to design a solution that achieved their dust and noise reduction goals. The system Hapman designed begins with five knock-out stations that vibrate the molded parts, breaking the plaster surrounding them apart. The plaster then falls down into a hopper, while the dust created during this process is contained in dust-collection systems above the knockout stations. The stations are also lined with sound-deadening panels to significantly reduce the noise this process produces.

From the hoppers, elevating Helix® conveyors carry the broken plaster up to the ceiling, where it empties into a 400 ft (122 m) tubular drag conveyor. The Drag Chain conveyor then carries the waste out of the building and empties it into roll-off collection containers.

In addition to reducing noise and dust, the new system was also engineered to create other benefits. Added safety features reduce the risk of employee injury at the knock-
out station. Plus, the new system keeps waste metal out of the plaster, creating recycling potential.

“Because the new system does a better job at separating the waste metal and the plaster, it allows us to investigate opportunities for recycling the plaster,” says Hohenstein. “In the future, we might be able to sell it to someone else for a different use.”

Achieving a Vision
As Hohenstein expected, there have been a few issues to work out along the way. The lightweight, chunky plaster has a tendency to clog things up and resist the pull of gravity. Hapman responded with several modifications to the system to combat these effects. The result: RCI has been able to achieve its vision of creating a better foundry - one that produces the high-quality products its customers expect while providing workers with a clean, safe, quiet environment they will appreciate for years to come.

“So far, the system is doing everything we wanted it to do,” Hohenstein says. “We are very satisfied with the performance of the system.”

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— Brad Hohenstein, Director of Engineering, Ross Casting and Innovation

ABOUT HAPMAN
For 70 years, Hapman has provided manufacturing plants around the world with the most technologically advanced powder and bulk handling equipment and systems, offering custom engineered equipment and systems for chemical, food, pharmaceutical, plastics, building, minerals, and other industries. For more information on Hapman, visit hapman.com

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