Robots Help Keep Golf Balls Flying High
Case study: Foundry

Squinting into the sunlight, you watch a tiny white ball sail through the air and land on the green. Just another day at the golf course. But who knew that robots were handling your clubs long before you took your first swing?

And, if you’re pulling PING golf clubs out of your bag, you’ll now know their story. Located in Phoenix, Ariz., Dolphin Casting manufactures PING products, specifically casting putter and iron heads. A subsidiary of Karsten Manufacturing, Dolphin Casting provides investment castings, sometimes referred to as the lost wax process, for the sporting goods industry, as well as the chemical, railroad and medical industries. Five buildings make up the company’s campus-designed, 110,000-square-foot facility.

In order to stay afloat in the golf products industry, Dolphin Casting needed something to set them apart and keep them ahead of the competition in the global marketplace. “Dolphin is the last company that is producing golf products in any volume in the United States,” explained Pete Poleon, general manager of Dolphin Casting. “Our need for robotics was based on trying to maintain a competitive advantage in a global market.”

In addition, the manual labor needed to produce cast putters and iron heads was difficult and tedious on employees. The previous cutoff operation that was set in place created the risk for injury as hands were always close to fast-moving saw blades.
The grinding cells degate the clubs by removing the metal that feeds the casting during solidification, while the specialty cells cut off and degate larger proprietary castings up to 24 inches in diameter. The cutoff cells are charged with cutting the clubs off from the runner system, after drilling the cores in the golf club hozzles (where the shaft attaches).

A ‘Hole in One’
Since the installation, the robot cells have limited the production variation and have improved the output quality. Due to lean production, each line significantly reduced waste, works in process and cycle times. In short, the robots have improved work flow, product quality and ergonomic demands on employees while still meeting market demands.

“Robots have improved the quality of life for our work force, while producing repeatable production processes,” said Poleon. “The results have met, or in some cases exceeded, our expectations. In addition Vulcan’s True Path software has dramatically shortened the programming time, giving us endless opportunities for the future.”

After selecting Vulcan Engineering and ABB Robotics, Dolphin Casting is on track to reduce operation costs, perfect quality and productivity, add flexibility to future product lines and improve the quality of work for employees.

FACTS
Highlights:
− Dolphin Casting is the last company producing golf products in any volume in the United States
− A robotic solution helped Dolphin maintain a competitive advantage in the global market
− Seven robot cells were installed, creating a lean manufacturing process for Dolphin
− To ensure quality standards, cells were equipped with a close tolerance software package
− With the robotic solution, Dolphin has achieved improved work flow, product quality and ergonomic demands on employees, while still meeting market demands

An Automatic Solution
Dolphin Casting relied on Vulcan Engineering, Helena, Ala., for expertise and suggestions to reduce operation costs and improve working conditions while maintaining quality and productivity.

“We partnered with Vulcan because of their reputation, previous success stories and their ability to listen to our needs and integrate a solution that was robust in design but simple to operate and maintain,” explained Poleon.

Vulcan provides seamless integration of ABB robots, Auburn Hills, Mich., with its equipment, controls and software, allowing the two companies to create a key foundry partnership. Using different robots in these applications would be cost prohibitive and would result in a less capable solution. ABB’s foundry duty protection appealed to Vulcan, as robot protection on all axes is required in the severe duty applications of cutoff and grinding. Sharing a commitment to foundry applications, both Vulcan and ABB worked toward the same goals.

“Vulcan was integral in taking production concepts and integrating them in robotic cells that have all of the latest safety features,” said Poleon. “They took the ABB platform and provided us with a turnkey solution for our production needs.”

Vulcan integrated a total of seven robot cells to manufacture PING’s clubs, creating a lean production process -- four grinding cells, two cutoff cells and one specialty cell with cutoff, grinding operations. The cells were also equipped with a close tolerance software package to ensure quality standards.