



Case Study

CPT's process controls help Buckhorn's existing machinery run like today's state of the art technology.

Buckhorn Industries needed a process control retrofit for their aging Uniloy. Service calls were increasing, parts were becoming harder to find and extensive downtime was something the industry-leading bulk container manufacturer simply couldn't afford. While a retrofit would provide obvious benefits, plant management at Buckhorn's Bluffton, Indiana facility recognized an opportunity to drive additional quality and productivity improvements via the addition of sequential valve gating (SVG). Buckhorn partnered with Cincinnati Process Technologies to design and install an integrated process control and SVG system that complemented the gas-assist structural foam molding unit. The retrofit/upgrade cut material loss by reducing mold overfilling, and improved large part quality through tighter-knit-line control and consistent cavity filling in molds with high length-to-thickness ratios.



A sample of some of Buckhorn's container products

Buckhorn, a Myers Industries, Inc. company (NYSE: MYE), is one of North America's leading providers of reusable plastic packaging systems, helping customers in the manufacturing, distribution and food industries improve supply chain performance and reduce material handling costs. Focused on customer-driven innovation, Buckhorn offers a broad selection of bulk boxes, hand-held containers, intermediate bulk containers, pallets and specialty boxes.

Cincinnati Process Technologies (CPT), established in 2009, is a single solution source for plastics manufacturers looking to improve quality, reduce costs, lower energy usage, and increase the performance and efficiency of their existing equipment. CPT offers the Asian Plastic Machinery line of injection molding machines, WETEC robots and automation systems, new and re-manufactured parts, screws and barrels, variable speed drives and energy efficient lighting systems. CPT's services include calibration and repair, control system replacement and retrofits, nozzle leak detection, and energy usage monitoring and consulting.

Scope of Work

Buckhorn's Bluffton, Indiana plant has been producing large, structural foam containers and pallets since 1995. Containers are produced in a variety of

styles and sizes - some can be several feet long and weigh up to 150 pounds. Custom production pieces can require molds with complex cavities and varying thicknesses. Because Buckhorn produces such a wide variety of containers, "A single machine may run multiple molds simultaneously, each with multiple cavities having significant differences in part size and geometry," says Rex Reynolds, maintenance manager at Buckhorn's Bluffton plant. "This makes controlling material flow to each of the cavities very important." Reynolds added that Bluffton is a 24/7 operation, so "we can't afford any unplanned downtime."

One of Buckhorn's structural foam units, an older Uniloy without SVG, was in need of a new process control. While modifications had been done over the years, "the old controls were no longer supported and replacing them was the only viable option," explained Reynolds. Knowing they needed a process control upgrade, Reynolds and Plant Manager Rick Singer called on Cincinnati Process Technologies to evaluate SVG options and develop a retrofit solution that integrated PC controls and SVG functions and could be implemented in about the same timeframe as just the control retrofit alone.

A state-of-the-art B&R control system was selected and a sequential valve gating assembly was mated to the Uniloy. With scalable, single-point control of multiple gate pin movements, operators can adjust sequence timing, pin position and velocity for different molds and consistently control melt flow without excessive packing pressure. The result is uniform fills in large molds that might otherwise require a machine twice the size using a single valve gating control.

With better fills, shorter cycle times and more than a 20 percent reduction in clamp tonnage, Buckhorn's Reynolds says the SVG upgrade and control retrofit will extend machine life and provide energy and materials savings well beyond the return-on-investment window, estimated at less than two years.

"Buckhorn already knew that sequential valve gating was the way to go for their large bulk container molds. What we needed to determine was the most efficient and effective way to bring SVG to this particular unit," said CPT Sales Engineer Dane Bales. "Our engineering team spent several weeks at the Bluffton plant, evaluating not just the current equipment but projected future needs and uses," added Bales, noting, "A good retrofit/upgrade requires looking ahead and making sure we build in the programmability and flexibility to keep mechanically sound iron viable and efficient as production demands change over the years."

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