

# Solution Profile

## Electric Injection Molding Machines

### Milacron Electric Technology Improves Molder's Bottom Line

### Louisiana Manufacturer Reduces Expenses, Warehouse Space With In-House Electric Injection Molding Machines



Smitty's Supply Inc. recently discovered a way to save buckets of time and money.

Through process analysis, the Roseland, La.-based manufacturer and distributor of oils, lubricants, chemicals and related products determined they could significantly reduce costs by producing plastic containers for their products in-house instead of purchasing them from a supplier.

That's why Smitty's bought two all-electric injection molding machines from Milacron, one PowerPAK<sup>®</sup> machine and one Powerline<sup>®</sup> unit, enabling the company to make its own 5-gallon buckets and lids. The new equipment, which joined 14 automated filling production lines within over 450,000 square feet of warehouse space at Smitty's facility, is now creating tremendous cost and space savings as well as cycle time advantages for the company.

#### Cost Savings Opportunity

Smitty's decided to start molding production for economic reasons. The leadership team believed they could make the pails less expensively than by outsourcing them. Additionally,

they wanted to reduce the amount of warehouse space necessary to store empty buckets.

"We're not in the business of selling buckets," said Robert Killebrew, blow mold operations manager for Smitty's. "We wanted to manufacture enough to cover our in-house needs for packaging our products. We've done the same thing with our bottles and have our own blow molding machines in-house as well."

Smitty's had experience working with Uniloy, the blow molding division of Milacron. Through this relationship, Smitty's engineers recognized that Milacron had the experience and expertise necessary to help with both project strategy and implementation for expansion. They especially favored Milacron's all-electric options and the company's comprehensive service offer that resulted in the complete system package.

Smitty's purchased the two all-new injection molding machines from Milacron at NPE 2009. After Milacron delivered both machines, the blending and water solutions, and the part conveyors, the overall buckets and lids production system was fully operational by January 2010.

#### Safe, Efficient All-Electric Operation

Smitty's chose to use Milacron's PowerPAK<sup>®</sup> all-electric machine, having had unfavorable experiences with other hydraulic equipment in the past. "Electric machines are important to us because they eliminate oil," said Killebrew. "This greatly reduces a lot of hazards on the plant floor, like fires or employees slipping and the related insurance costs associated with those risks. The cleanliness and safety of an electric-based machine are key advantages."

Another reason Smitty's chose the PowerPAK<sup>®</sup> electric machine was because its powerful electric technology uses patented rack and pinion clamps and roller screw configurations. These generate fast acting clamps and injection units to serve this market. The extremely low reflected inertia systems minimize the torque required from the servo motor to accelerate the clamps or injection axis. Milacron also created a greaseless tie bar for the machines to meet the specific needs of this segment of the packaging market. Eliminating the grease meant reducing the risk of contamination, a very attractive benefit for many OEMs.

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The setup of the machines went much more smoothly than Smitty's expected. They started performing flawlessly right from the start — so well, in fact, that the operators had to shut them down for a while because they ran out of supplies. "We allocated some extra time into the installation process because we expected it to take a while to sort out the kinks and get everything up to speed," Killebrew said. "That ended up being completely unnecessary. Instead, we couldn't keep up with the machine.

"I have been in the plastics business for the past 21 years. In all my experience, this was by far the most impressive startup of injection machines – from the blend system and support equipment to the molds and the machines themselves."

### Significant Energy Savings

One of the most noticeable benefits of the new machines is the bonus to Smitty's bottom line. The company estimated an initial ROI on the machine, but they also realized an astounding level of energy savings.

Many molders in the packaging industry continue to find that hydraulic models are necessary to meet their needs for force and speed. But one of the major drawbacks to this approach is low energy efficiency, an issue that is increasingly on the minds of today's lean manufacturers. The well-known energy-saving benefits of electric machines is one of the key reasons packaging producers have been shifting to electric in recent years. Electric-based injection molding machines deliver a minimum of 45 to 65 percent energy savings. With the high volume capabilities of these machines, the savings can add up to \$25,000 to \$50,000 per year per machine - a total savings of \$50,000 to \$100,000 annually in the case of Smitty's.

The majority of the energy savings can be

attributed to mechanical simplicity. When power comes into a motor in an electric machine, it is mechanically transferred to the clamp or whichever axis is being moved, with very little efficiency loss. This is far superior to a drivetrain with a hydraulic actuator, where the power has to go from a motor to a coupling to a pump and then to valves and hoses and cylinders, etc. Along the way, there is a tremendous amount of pressure drop and heat generation, reducing the efficiency and reliability of the machine.

The cycle times for Smitty's new in-house packaging production were also faster than anticipated. The tooling was projected to run at cycle times as high as 20 seconds. Smitty's is currently running 17.5 second cycle times in production – faster than their previous outsourcing partner was running.

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Ease of operation and maintenance are other advantages Smitty's found with their new electric machines. The physical layout of the equipment offers increased accessibility for the shop floor personnel. And, thanks to the machine's walk-up base and low centerline, a person as tall as 5 feet 10 inches can easily get inside to access a tool for faster maintenance and startups. The machine also stays cleaner and runs more quietly.

### Fast Color Changeovers

Maybe the most pleasant surprise Smitty's experienced from the new Milacron machines related to the simplicity and

speed of color changes. Often with an injection molding machine, when an operator needs to make a color change, they purge the material through until they get the right color and then have to discard the purge.

With its PowerPAK<sup>®</sup> electric machine, Smitty's can do a color changeover in as few as 40-50 buckets. The process takes minutes, instead of the hours a standard purge might take. Smitty's even uses the off-color molded buckets for label setups and tests and then regrinds them afterward.

"The PowerPAK<sup>®</sup> machine runs extremely well with no downtime," said Killebrew "Color changeovers are a breeze. Within 10 minutes, we can change over from one color to the next. We only lose about 40 buckets per color changeover. We're very pleased with all the automated features on the machine. The MOSAIC<sup>™</sup> control is user-friendly and simple to read and operate."

Even though Smitty's has only had the machines for several months, they are already very happy with their operation and with the cost savings they are experiencing. The company anticipates long, continued success producing its own buckets with the help of Milacron's efficient, easy-to-use electric machines.

"I am extremely impressed with my experience with Milacron's PowerPAK<sup>®</sup> all-electric machine. From here on out, I won't even look at anything besides electric machines. We have very high expectations moving forward."

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