D&M Plastics LLC photos

In D&M's factory, an automated optical sorting machine helps identify defective parts.

THE TECHNOLOGY HOUSE

Ownership mentality, complex production drive D&M

By Angie DeRosa

WHEN *PLASTICS MACHINERY MAGAZINE* sat down with officials from D&M Plastics LLC, Burlington, Ill., they talked about everything from poverty alleviation to preventive maintenance on injection molding machines. The management group is as diverse as those topics. The president has a background in real estate and finance. The sales and marketing manager apprenticed as a tool maker, has generations of inventors on both sides of his family and earned master's degrees in violin performance and manufacturing systems engineering. The company's COO has an intricate knowledge of the inner workings of this custom injection molding business.

D&M was founded 40 years ago in a garage, eventually moving to a site with five machines. President Peyton "Chip" Owen bought the company in 2013 from its founder. The management group is determined, purposeful and passionate about the business of plastics.

The first thing that Owen might want you to know is that this is not a manufacturing company. This is a technology company. The parts it makes include bearing separators, electronic relay components and insulating conducting rods for magnetic ride control in sports cars that are shipped all over the world. The parts made by D&M are highly engineered with complex geometries. The company will be taking on more and more complex parts with the goal of working with customers at the very beginning of a concept for more sophistication in technology and innovation. It has prowess in insert molding and working with exotic resins.

"We have customers who come to us now and say, 'This is what we think we want for a part. How can we do this?' They're relying on us for our technologies, our innovations, to actually help design their part for manufacturability and for the leanest way for them to do it. So they're getting us involved in some of their systems as well," says COO Scott Hagen.

The conducting rod in particular exemplifies innovation for D&M officials. It is molded from nylon on an Engel vertical rotary press. The customer came to D&M with the goal of having a conducting rod insulated and centered. The customer was unsure how to manufacture and overmold the rod. D&M figured out how to mold it, keep it centered and insulate it. In addition, it figured out how to put an end on it. The rod has a few O rings and a button so it conducts electricity when it sends a signal. To get the end piece on the rod, officials developed a special crimp that not only would give it the mechanical strength it needed but also has the least resistance and conductibility.

"This is a technology, it's not just plastics," says Owen. "This is what we're really good at. We know how to make their technology work and that is the value add that we provide. We're not molding plastic. We're molding technology. Customers that think the way that we do, that are in the business of technology, they want to do business with us. We're really creative and we think outside the box. The story is going to get a lot more interesting."

Owen

Hagen

Just the facts

COMPANY:
D&M Plastics LLC

HEADQUARTERS: Burlington, Ill.

FOUNDED: 1972

OWNERS: Chip Owen, Scott Hagen, Marc Jaker; moving toward employee ownership

NUMBER OF EMPLOYEES: 42 permanent; up to 75 with temps

LOCATIONS: One plant in Burlington

ANNUAL SALES: Undisclosed

IN ONE DECADE: TRANSITIONING TO ALL-ELECTRICS

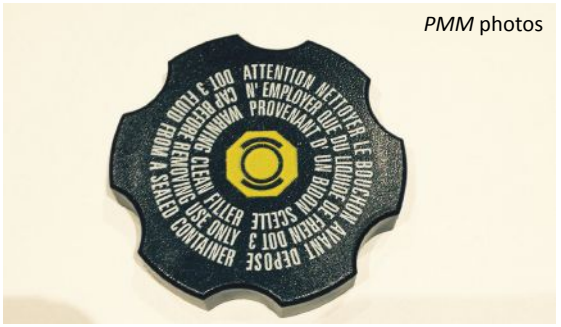
At D&M's plant outside of Chicago, a 10-year

Continued

Off the press

Samples of D&M's highly technical molding, from left: a fluid reservoir cap molded with a high-impact PP; a bearing separator molded in a nylon 6/6 machine; an electronic relay component molded from LCP; and a component for an electronic charging system

PMM photos



transition to all-electric injection molding machines is already underway. Accuracy, speed and repeatability are necessities for what is being molded.

"So far we've bought Toyos," says Hagen of its choice for all-electrics. "It doesn't mean we're going to stay with Toyo, but right now we're very happy with the quality. The next one that we buy is probably going to be a Toyo. But, like I said, the machinery manufacturers are coming out with so many different things, we don't shut anybody out. We constantly are looking at what they have."

PMM

A robot is used in D&M's in-mold labeling process. The robot was customized for use on a 200-ton Engel horizontal press.

D&M is running liquid crystal polymer (LCP) on the Toyos to make electrical connectors.

"We find that we're still improving jobs that might have been here 10 years," says Hagen of the speed and accuracy of all-electrics. "All of a sudden we say, what do you think we can get done with this? We'll put it through a Toyo and it's amazing what we can do with that technology."

The improvements have included fewer defects, reduced cycle times and improved part quality.

"It's a win-win for us, for the customer, for everybody," says Hagen.

Marc Jaker, sales and marketing manager, discusses the plant's defective parts per million (PPM) performance in glowing terms.

"This plant is a 17 PPM plant," he says. "That is an astounding little statistic. Here you are making some nasty, difficult parts and you're doing it at a 17 PPM reject rate? In Six Sigma, that is 6 ppm, which is basically statistically flawless. If we were making screws or washers or something, you might not be so impressed."

ACHIEVING PARTS PERFORMANCE THROUGH SOPHISTICATED SYSTEMS

Key to that PPM rate is automatic inspection and the use of automatic systems wherever possible. That is carried throughout the organization. D&M uses a real-time IQMS Enterprise Resource Planning system, for example.

"All the machines are networked and hooked up to the ERP system," says Hagen. "It's customizable, too. The setup guys are looking at how things are running. The shipping warehouse people are watching. Operators are looking at it. Material handlers are looking at it. Everybody uses that system from bottom to top. It's extremely helpful to be plugged in like that."

The need for high-performance parts is reinforced throughout the plant, including in the quality lab, where an Optical Gaging Products SmartScope vision measurement system is the most significant piece of equipment, says Hagen. This system, which measures the XYZ axis, is accurate to 50 millionths of an inch.

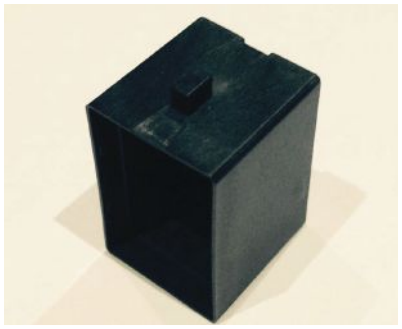
"That is one of the things that we like about them, the accuracy, because the parts that we're making have very demanding specifications," he says.

D&M uses automated weigh-fill systems for counting parts. For example, D&M has a Husky press that is running 96-cavity molds with a cycle time of 7 seconds for producing parts for a disposable diabetic lancing device.

"We're producing hundreds of millions of parts per year. They convey into the automated weigh-fill system," says Hagen.

On another press, in-mold labeling is achieved through the use of a customized robot built by an outside automation company. D&M had it built specifically for the injection press, a 200-ton Engel horizontal that is used to mold a fluid reservoir cap from high-impact PP.

To make molds, D&M contracts with mold



builders in the Chicago area but maintains the molds itself. Once a mold comes to D&M, officials' goal is to never have it leave for any reason. They have very high-quality molds built to precise, exacting dimensions. Within the plant, a small, complete shop supports the manufacturing floor for cleaning and maintenance of the tools.

Contact: D&M Plastics LLC,
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With the goals of D&M, the parts being molded are only going to get more demanding.

"We're formulating new materials here, surprise," says Jaker. "We're going to do new things with our processing knowledge. I have a lot of experience in hot-runner/manifold molds and molds with mechanisms — automatic unscrewing, collapsible cores, etc. It comes with the territory with PIM (powder injection molding), but I was also involved in optics. So I have been involved in molds that have tolerances, literally, to a millionth of an inch."

Remember, Jaker is the official whose background includes a musical career, a family of inventors and a toolmaker apprenticeship. Jaker's ability to handle complex projects also reflects his broad experience at 3M Co. and years of work with 3M Optical Systems. That creativity is critical to where D&M wants to go.

"If you want creativity, this guy has it in spades," says Hagen.

Jaker was on the ground floor with a lot of product launches with 3M, including the viewer display for digital cameras. Think of the laptop screens designed to protect privacy, in which the screen appears black if viewed from 17 degrees off axis or more from the side. He owns 13 patents and has been involved with developments for close to 100 patents.

"He has the creativity and visibility to see things that someone with only his varied background can see," says Owen. "It's fun. He gets us to think a little more broadly."

A COMPANY IN TRANSITION

Over time, Owen's goal also includes transitioning the company to an ownership culture. He and Hagen now own the business. Jaker is joining the ownership team along with three other senior officials in the company.

D&M currently has 42 permanent employees and that increases to 75 with temporary workers as needed.

"We have said to everyone, 'You have to think like an owner to be an owner,' " says Owen. Part of that includes having the company commit to being a lean manufacturer. The company continues to improve its lean performance, adapting Paul Akers' "2 Second Lean: How to Grow People and Build a Fun Lean Culture."

"Every day we ask people to come up with a 2-second way to improve their work tasks," says Owen. "There are ideas that have saved us tens of thousands of dollars. We tell people, 'Don't ask for permission. Go ahead and try it and see what happens.' "

Employees are encouraged to use their heads, not just their hands.

"We don't have a lot of people," Owen says. "We need everybody's head in the game to be successful."

The company has a meeting at the beginning of every shift to get ideas. Managers share financial information not just on a monthly or quarterly basis but every day.

Owen's influence and management philosophy comes from his experience in other industries. He has a nontraditional background, but he believes that manufacturers can solve a lot of problems. He hopes to make manufacturing cool again.

"I believe in order for America to be strong, it has to make things," he says. "Some of the best jobs out there are people who work with their hands."

Four major points had to align for him to buy a company. First, Owen had to find a willing seller. Also, a lot of sellers think that their businesses are worth more than they are, he says, so he had to find a business with a realistic price. It had be a viable business. And last, it had to be a business that Owen clearly understood, or could find people who did.

D&M was an "extraordinarily well-run business," Owen says. "There is a certain leap of faith that you take and that leap of faith is confirmed every day."

If the company expands, for example, by adding another facility, he would consider occupying a plant on the south side of Chicago.

"I've got a soft spot in my heart for figuring out how to help those communities," says Owen, who serves on the board of a social services organization. "If we were to build another plant that is where I would think about doing it."

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