

# Permanent Graphic Technologies for Plastics

*“What was in can now be on.  
And what is on is now definitely in.”*

This is now the new slogan for Mold In Graphic Systems®, the company which pioneered permanent graphic applications for the rotational molding industry. Well-known worldwide for their line of Mold In Graphics® (MIGs) products, the company in 1997 unveiled their newest development at the ARM Conference in Birmingham, England -- their Generation Two Mold On Graphics®. Now the company offers rotomolders two excellent methods to apply permanent, thermofused graphics into their hard-to-decorate polyolefin plastic parts. Both of the unique and patented processes involve two fundamental principles, 100% compatibility of the graphic material compositions and second, heat. Mold In Graphics® and Mold On Graphics® rely on this simple, but revolutionary concept. “The essence of our graphic systems permanently thermofuse compatible polymer materials inside the matrix of plastic products,” said Scott Saxman, senior VP of Sales at Mold In Graphic Systems®. “Our proven Mold In Graphics® capitalize on the heat source produced by a rotational molder’s oven. Our Millennium Mold On Graphics® (MOMs) are thermofused into the surface of a plastic after the part has been molded, using the heat generated by a common hand-held heat gun.” Mold In Graphic Systems® has been diligently working on this project for many years and has come up with an unmatched, permanent graphic system for application after the plastic has been fabricated.

## Generation Two...Mold On Graphics®

“The new Mold On Graphic System® is the first revolutionary, cost-effective, after-mold decorating and labeling system for hard-to-decorate plastics that is truly permanent,” said Saxman. Unlike chemically applied rub-on ink transfers or traditional pressure-sensitive labels, durable MOMs are permanently thermofused directly into the outer surface of polyolefin products. The heat fusion creates an unbreakable bond by encapsulating the graphic design within the polymer matrix.



Coach Vac, manufactured by Pro-Team, Inc., Boise, ID--featuring new Mold On Graphics®.

This process makes the graphic impervious to attack not only by chemicals and solvents, but from saltwater, rain, steam, ice, hot pressure washing, or standing water which will eventually degrade and lift other types of stick-on labels. “As most of us are well aware, polyolefin plastics are historically very difficult to decorate with paint or non-compatible screening inks. Polyethylene surfaces do not lend themselves to good adhesion from foreign substrate materials.” High-quality Millennium Mold On Graphics® pigments are also UV ray stable, and they are abrasion resistant because there are no foreign substrate materials to lift off, crack or peel. The compatibility of MOMs enables them to maintain their integrity even when used in the harshest outdoor and indoor environments. They can withstand the constant daily expansion and contraction of the basic plastic material when exposed to extreme heat, humidity or freezing conditions.

They also allow for effective hydrocarbon and gas permeation without adverse effects. "We have had great initial success with this new system with large producers of fuel tanks because of the unique ability of the MOMs to allow for the escape of gases without degrading their warning labels or corporate logos," Saxman said. This proprietary new decorating process is also clean, simple, and easy-to-use. It offers the designated graphics operator great flexibility by providing a wide application window. Finished goods inventory can now be permanently labeled after the parts have been molded because MOMs can be applied within the first few minutes after the plastic product has been formed, or they can be thermofused to the part years after it has been fabricated. The application procedures are simple, easy and can be done anytime and anywhere, and no large capital expenditures, sophisticated technical training or equipment are required. The MOMs System is compatible with any polyolefin material, regardless of the process used to fabricate the part, which makes them quite versatile for plastics companies which utilize more than one in-house process.

### 15 years in Clarkdale in 2007 Where Do These Ideas Come From?

Mold In Graphic Systems® (MIGS) is an international marketing company that began doing business in California in 1983. After spending many years researching polymer sciences and managing many plastics operations, MIGS CEO Mike Stevenson perfected a proprietary method to permanently integrate colorful custom-made graphics into products made exclusively by using the rotational molding process. In 1985, the company moved into a small, 3,000-square-foot facility in the beautiful, red-rock setting of Sedona, Arizona. In 1992, MIGS opened the doors of a brand-new, 30,000-square-foot state-of-the-art manufacturing plant in nearby Clarkdale, Arizona (about 1 ½ hours north of Phoenix). In early 1997, the company expanded its facility to over 55,000 square feet in an effort to handle the growing needs and concerns of their ever-expanding Mold In Graphic Systems® customer base and to handle the anticipated demand for their new Mold On Graphics®.



Chemical & Bulk Handling Containers-- ChemStation, manufactured by ChemStation International.

So what has been the secret to the success and growth at Mold In Graphic Systems®? How has the company in less than 25 years gone from working out of a garage to conducting a successful global business? The answer is dedication in new technology for plastics – more importantly, technologies that the plastics industry has asked for and needs. The technologies the company has perfected are ways to embed graphics and enhancement materials directly into any polyolefin resin. Both MIGs and MOMs become an integral part of any rotationally molded polyolefin product. "No other method of labeling or decorating can substantiate the product durability claims that we make



Millennium Mold On Graphics® are easy to apply.

and stand behind at Mold In Graphic Systems®," said Saxman. "We have rotomolded products that were concreted into the ground in the Alaskan Tundra over 14 years ago that still have Mold In Graphic® warning labels that look better now than most post-applied stickers do after a few weeks in the field. Plastics are our only business, and we plan to dedicate ourselves in the future to making even more and better products to serve this industry." Mold In Graphics® and Mold On Graphics® are impervious to all solvents and chemicals including the most caustic and damaging types such as lacquer thinners, acetones, alkalines, and acids. "We've found that other labels simply will not survive these tests.

### Mold In Technologies Also Continue to Improve

In recent years Mold In Graphic Systems® has also vastly improved their application systems of their Mold In Graphics®. "Rotomolders have been asking us to make Mold In Graphics® easier to use since the product was conceived in 1983. Historically, our biggest obstacle was a hot mold. We now have higher melt graphic compositions that allow for easier transference onto much hotter inner mold walls. This breakthrough helps to speed application and keep the rotomolder within their fixed cycle times without cooling the mold," said Saxman. The company has also perfected anti-abrasion coatings that eliminate the potential for chipped or abraded graphics due to heavy resin charges that may degrade the graphic during the initial warm-up time before they mold in. Recent advances in rotomolding machinery technologies have also aided in overcoming these problems.

Ferry Industries, for example, makes multiple-step, computerized rotation controls that totally eliminate the potential for internal erosion of a MIG (if the machine is properly programmed). We believe there is now a recognized need and a growing demand for better graphic systems for rotomolded plastics. Our goal has been, and continues to be, to provide our customers with ways to meet these demands so that rotomolded products continue to improve in perceived quality and added value which will help our industry continue to grow and compete with other processes for new business.

### Surface Enhancer® and Spray Color Coatings

In 1994, Mold In Graphic Systems® introduced their line of Mold In Spray Coatings and Surface Enhancer® for in-mold applications. Surface Enhancer helps rotomolders overcome a variety of material flow problems, such as pitting, bridging or blow holes, by jump starting the flow of their resins. Better material seals around inserts and improved mold-in threaded areas are also common uses for Surface Enhancer.

Mold In Graphic Systems® Generation Two line now introduces an expanded new line of Spray-On Colors and Surface Coatings for polyolefin plastics.



Custom Spray-On Colors—manufactured by New Wave Kayak Products, Inc.



Colorize it with Mold In Graphic Systems® Colors.

“We think we’ll eventually be able to replace the need to paint polyethylene plastic,” said Saxman. “Our permanent coating technologies will enable designers to vastly expand their concepts of how to decorate plastics. Mold In Graphic Systems® will be able to create new opportunities by conquering more common problems that often occur in rotational molding with some of our upcoming products in testing and on the drawing board.” And if the recent past is a good indication, the new graphics and technologies for plastics from MIGS will no doubt keep on coming.

*For more information contact Mold In Graphic Systems® at 999 Highway 89A, Clarkdale, AZ 86324. Telephone: 1-928-634-8838. Fax: 1-928-634-9036. [www.moldingraphics.com](http://www.moldingraphics.com)*