

## Gallatin's Industry Growth, Alliances Shape Foundation for One-stop Custom Molding Shop

### Key Points

- Groundswell of business growth enables leap to full scale manufacturing facility.
- Alliances must be formed with careful consideration of needs, values & goals.
- Alliances can add skill sets, help companies reach goals and prosper.
- Designing a facility layout before the building is constructed optimizes needs/wants.

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PDM President Mike Groff explains how various molds fit the 300- ton Cincinnati Milacron injection molding press.

Mike Groff knows plastics. He also knows the value of strategic alliances. He recently launched a new facet of his company [Plastic Design & Manufacturing](#) (PDM), drawing on his wealth of experience in tooling, materials and value engineering and the relationships he's built over more than 12 years as a consultant for startup businesses involving components or full plastics turnkey production needs in the Gallatin Valley. The company now has a full scale manufacturing facility, offering customers a local source for large and small custom injection-molded plastic products from a spacious new factory in the heart of the Gallatin Valley – Manhattan, Mont.

Prior to coming to the valley, Groff spent 20 years working in his family's custom molding company, Venture Plastics, Inc., in Ohio and El Paso. He credits his father, Ken, for instilling him with strong business principles that have rewarded him with long-term associations that are now bringing his manufacturing vision to fruition:

- Have integrity;
- Treat employees with respect, make them part of the team, then get out of their way (don't micro-manage);
- Focus on customer satisfaction (TLC for existing customers in this economic climate);
- Never, ever be satisfied with where you are and what you have achieved.

"Incorporating that core philosophy has put me on the right path to keep my business strong," Groff said.

An unusual but promising alliance with Quake Industries to co-locate space in the new facility is also working to keep the business strong. The new 22,000 sq. ft. plant opened its doors in early 2010 with the Quake move-in in March. The Montana Manufacturing Extension Center (MMEC) added expertise in designing the plant layout last year before construction began to accommodate the needs of both firms. To manage operations, Groff brought in Ben Stevens from one of the largest plastics supplier in the U.S., GSL PolyOne. Prospera Business Network and several local banks helped with financing. Strategic partnerships with Venture Plastics, tool shops such as Steel Reality Mfg. (Kalispell), Five Star Tooling Ltd. (Shenzen China) and two local design companies AutoPilot and Salient Technologies, as well as others in the plastics industry play a critical role. And both local clientele and national brand customers round out the new PDM venture.

### How It Evolved

For many years, PDM centered its efforts on molds and developed competency for tooling, parts work, and components both locally

and off shore. In the turnkey role, customer's brought in concepts and got the designs finalized, materials specified, and tooling needed to get a company's product into a manufacturing facility, Groff explained.

"Over the years I saw a groundswell of manufacturing coming into the area as well as unmet needs for injection molding," he said. He started on the transformation of PDM in late 2008 to fill a niche for local customers that he said needed bigger machines than they were finding in Montana. "Ten years ago I wouldn't have considered starting a plastic injection molding plant here."

Stevens is pleased to be a part of PDM's vision. He credits Groff with really shedding light on the world of plastics for him when they first met at Quake Industries where Stevens was working while he attended Montana State University. After graduating with a degree in Mechanical Engineering Technology, he partnered in a steel and fabrication company in the Gallatin Valley that is still operating. Then, he went to work for PolyOne, a global supplier of polymers, in McHenry, IL, providing technical support for molding, processes and tool design for two years before being invited to join the PDM staff.

He explained that while injection molding has been around since the 1960s, "it was not until companies in the Gallatin Valley began to really grow and labor costs came into play to stay competitive that supplying custom molding here became an option. Competitive pressures firms became more aware that parts they had been making in metal, aluminum and machined plastic could be effectively made using the molding process."



(Left) A crane hoists a mold to setup for the next production run. (Right) Employee Crystal Rasmussen, foreground, assembles ladder buckets; Carla Drugmand, in background, performs quality inspections on another product.

PDM specializes in small runs that many injection molders are not interested in, Groff said. "That model is very suitable to the needs of the Montana's manufacturers, and now there is world class molding of plastic parts right here in Montana that can be very competitive."

The reason: plastic injection molding is a capital intensive setup, with 75% of the cost of a plastic part in materials. It is not labor intensive. "We can be as competitive here as any shop in China or India while exceeding delivery requirements because we are right here," he said.

After just a few short months, PDM's list of customers stretches across the state and includes contracts with noted brands like Blackhawk! and West Paw Design as well as with long familiar brands like Hoover and Werner Ladder in other parts of the U.S.

### **Value of Strategic Alliances**

Strategic alliances are an attractive model for businesses and vary in complexity. They can help work toward a common goal while not risking individual identity or core strengths. They bring different skill sets to the table as needed, and in a fast changing marketplace can help gain support quickly from trusted resources.

"Strategic alliances are one more tool in the tool box of business development," Groff said. "They create synergies in business, new leads, and development assistance. They enable me to really evolve my business and leverage relationships; that and good quality employees are a recipe for success."

PDM's history in the valley, coupled with the prowess of his family's businesses, helped create the alliance with resources like local business development corporation Prospera Business Network; two area financial institutions, Big Sky Western Bank and American Bank; and MMEC. The alliances extend to domestic tooling firms like Steel Reality in Kalispell and associate tool making firms in China, [www.fstooling.net](http://www.fstooling.net). They add value to the PDM goal of being a one-stop supplier.

"I also closely rely on local design firms like AutoPilot and Salient Technologies as an integral part of taking a customer drawing from the back of a napkin to a fully functional model," Groff said. "Folks like Big Sky Western Bank also did a great job for us. Prospera Business Network stepped up right off the bat for a business line of credit and some machine capital." He said they worked for five months on securing funds for auxiliary equipment and working capital for startup phase. American Bank helped with start-up capital. MMEC assisted with the facility layout and is currently helping PDM set up a production scheduling model and quality management system to meet the international ISO quality standard.

### **Synergies of Shared Space**

As the PDM team embarked on planning for the new facility, Groff learned that the lease at Quake Industries, a hunting and shooting sports manufacturer in Belgrade, was about to expire and the firm was seeking space that was more conducive to manufacturing in terms of location (its former location was several miles north of I-90 in Belgrade), good shipping docks, etc.

"The idea of sharing building space grew as the business plan developed," Groff said. Shared space under one roof will cut many overhead costs in half. "It was a win-win for both of us," he said. They share the overhead on power, water distribution, conference and break rooms, restrooms, shipping docks, even little things that add up like snowplowing and garbage service. The cost savings are expected to be in the \$3-5K range. "It helps a business become and stay more competitive. Today that's the name of the game."

At a recent Prospera tour of the new facility, people were curious how the relationship can work when both companies do plastic injection molding. Groff explained that it is because they are not competitors but share similar needs such as flow of materials, environmental conditions and utility configurations for running molding machines, cranes for lifting heavy molds for installation on injection machines, shipping and receiving. "Quake has proprietary products and dedicated machines producing the parts they sell. We are a contract manufacturer and our machines must be flexible, set up for quick changeover, and handle a wide variety of plastics."

Expanding into manufacturing hit at a good time, Groff said, catching the beginning of the economic recovery. "But price is still a key factor plus quality and service/delivery; it's a 3-legged stool." It happened as a small groundswell of companies have begun returning to domestic buying instead of going overseas.



Left, PDM and Quake Industries still settling in to new space while (right) Werner Enterprise truck picks up a shipment of goods from a staging area.

Now is an exciting time in the world of plastics. PDM is currently working on a highly specialized new product for a local customer collaborating with Salient Design in Bozeman for the CAD design and an Asian tool maker. "No one we know is doing this type of product anywhere in the world," and using environmentally friendly materials makes it particularly unique, Groff said. Leads like this come from ongoing relationships with businesses and business resources.

### **Functional Space for Two**

Creating a harmonious and functional space for two growing firms under one roof posed challenges. PDM turned to MMEC for expertise in laying out a well-designed space. "Conservatively, I expect a 10-20 percent benefit to my bottom line from the plant layout assistance enabling me to attract new business," Groff said. "The improved production scheduling we're working on will enable us to take on new contracts."

Stevens, PDM's VP of Operations, worked closely with MMEC on the layout for the new facility.

"The whole idea of two businesses doing different things under the same roof -- I just couldn't get my mind around that. I was stressed," Stevens confessed. MMEC Field Engineer Mark Shyne and his UTAP team added expertise, clear communication and a visual plan for moving forward.

"Essentially we handed Mark and his UTAP team a square piece of concrete and asked them to make it into useable space for co-located companies," Stevens said. "I could see the thought process with Mark, the ability to visualize what would happen in each space and create options that would work for us." [UTAP engineers Ryan Krogstad and Kaela Kittredge were involved in the project while working toward degrees from the MSU College of Engineering. Each has since graduated.]

Stevens was pleased to discover that the MMEC team knew what was needed and how it would fit in the space, labeling each component of the design. "They gave us full-size plans [plotted on four-foot-wide D-size paper], with five different variations we could explore. Its value was immense."

He praised Mark for clear communication, saying the he did not hesitate to offer alternatives when their suggested revisions were not the best option, based on how the building is being constructed. "He approached our ideas from a cause and effect view that was very beneficial to understanding."

### **Key Features**

Some of the key features in the final layout:

- Staff and employees located in proximity to each other based on "relationships;"
- Facility can be easily expanded as business activity grows;
- High ceilings to accommodate gantry cranes used in changing dies;
- Windows for natural lighting, and a mezzanine level with offices and an observation deck;
- Truck height loading docks (covered), to facilitate easy loading and unloading;
- Facility compliant with the American's with Disabilities Act (ADA compliant).

The project was truly a collaboration, bringing the considerable experience in the industry to the table with established layout design modeling techniques, analytics and systems expertise, according to Shyne. Capturing inputs from both companies through an interview process enabled MMEC to document key objectives and important assumptions about operational and growth needs, and to capture space requirements, activity relationships, and worker needs, wants and any constraints.

"Many assumptions run in the background as a facility design is considered," explained Ryan Krogstad, UTAP, in a project report. "Those assumptions must be itemized for clarity of the project and for consistency in communication with stakeholders, contractors, equipment suppliers and others involved in the design and end facility."

Such factors included future equipment purchases; where front office locations are envisioned; typical order sizes each company will encounter; and unique temperature, humidity and storage needs for processes/equipment, if any. It also covered "wants" that improve work conditions or employee morale. "Needs" were considered must have items, and "Wants" were desires that would be incorporated, based a value rating, budget and other factors. All were categorized for consideration by area, like production, IT/Server area, mechanical room, assembly and other areas, including the break room and restrooms.

### **Core Relationships**

A critical step for the new layout was to determine what activities, areas, functions and major building features existed and how they interact or relate to other areas or functions. Those core relationships were analyzed using a Relationship Matrix, shown in Fig. 1 below, to express the desired relationship strength, or "closeness," between the areas of the shop and offices. Critical relationships surface in this type of analysis, as evidenced by the blue (E) and red (A) squares. The resulting data enabled MMEC to create several viable layouts for more feedback from PDM and Quake. The teams selected the preferred layout and features they wanted from the alternate layouts before a final iteration was approved.

Value	Closeness	No. of Ratings									
A	Absolutely Necessary	3									
E	Especially Important	8									
I	Important	4									
O	Ordinary Closeness OK	8									
U	Unimportant	13									
X	Undesirable	9									
Total		45									

  

		Office G&A	Production Office	Assembly/ 2nd Ops	Molding	Shipping & Receiving	Breakroom	Warehouse	Mechanical	Mold Storage & Die Maintenance	Quality Control
1	Office G&A										
2	Production Office	I									
3	Assembly/ 2nd Ops	O	I								
4	Molding	X	E	A							
5	Shipping & Receiving	U	O	E	E						
6	Breakroom	U	U	O	O						
7	Warehouse	U	U	I	E	A	U				
8	Mechanical	X	X	X	E	X	X	X			
9	Mold Storage & Die Maintenance	U	U	U	E	O	U	O	X		
10	Quality Control	I	E	A	E	O	U	U	X	U	

Fig. 1: Relationship Matrix

The design was set up to allow expanded production molding by adding machines in the existing building (up to 3 molding machines) and then to enable expansion of the facility to the south.

According to Shyne, designing a facility layout before construction is ideal for optimizing needs/wants. When buildings are already constructed, essential interactions between the shop floor and administrative functions, stability of environmental conditions for production areas and other such factors can be compromised, impeding efficiencies, communication and even safety. With new construction, an efficient, well-designed layout can be provided to architects or contractors who then apply their expertise on building standards and costs to bring the facility to fruition in the best way possible.

### Flexibility, Talented Staff Valued

Both Stevens and Groff report that their interaction with MMEC is very valuable. Groff said MMEC's responsiveness is unlike any he's run across from El Paso to Ohio. Stevens noted, "It is the ultimate flexibility with knowledge behind it that we appreciate."

As an example, he said PDM's large machines and auxiliary equipment arrived, "unbeknownst to Mark," on the very day the layout had been finalized but before Mark could come tape outlines for equipment placement on the floor. The tape was intended to help installers place equipment in the right spots. "When Mark learned they were out here, he volunteered to change his schedule and came out on New Year's Eve afternoon to tape off the floor."

Groff said he looks forward to strengthening the relationship with MMEC. He said he is also very fortunate to have a strong customer-oriented team on staff like Stevens in operations and Elizabeth Larson as office manager and bookkeeper, in addition to enthusiastic production employees. PDM currently employs 13 people and runs a five day, 24-hour shift each week. At least twice-monthly meetings are held to let employees know expectations, what's going right and where the company is headed.

One area he still struggles with is availability of a local pool of technically skilled labor to run molding machines as the business grows. "Molding technicians typically have 10 years on the floor experience, developing a keen sense for adjusting the machine parameters for the properties of nylon, PVC, polypropylene etc.," he said. "We want to educate our existing employees to those technical skills, so we don't have to bring talent in from outside the state."