

# WORKFORCE: Prospera, MMEC, Plastic IM Cluster Team Up

## Customized Training Injects Cost Savings, Skills and Positive Culture

By Deborah Nash, MMEC

Last spring, the [Montana Manufacturing Extension Center](#) (MMEC) and [Prospera Business Network](#) teamed up with leaders of four plastic injection molding firms in the Gallatin Valley to discuss how to leverage a one-time state ACE (Accelerated Entrepreneur Program) grant, managed through Prospera, in a way that would strengthen the cluster and local economy.

The four firms, [Plastic Design and Manufacturing](#) (PDM), [Vista Outdoor](#)\* (formerly ATK BLACKHAWK!), and [Quake Industries](#), all located just off U.S. Interstate-90 in Manhattan, and [West Paw Design](#) in Bozeman, employ over 300 people in the area.



While each company varies in size and product lines, discussions identified a common goal of acquiring training for injection molding technicians and operators of varying skill levels. The primary training needs were team-based problem solving with root cause analysis, machine training, quick changeover, polymer basics and materials processing.

### Simultaneous Trainings

With that information, two simultaneous trainings were arranged, one to address problem identification and problem solving systems, using MMEC, and one to provide a range of technical training for the injection molding machine operators, using an injection molding machine expert from Atlanta.

Manufacturing expert Mark Shyne of MMEC taught team based problem solving with root cause analysis to 21 production staff at the three Manhattan firms over a period of eight weeks. The half-day training included follow up meetings with teams at each company. Shyne helped them develop a problem statement and apply the process they learned for root cause identification and actions that would address the causes.

Umberto Catignani, President of Orbital Plastics Consulting, conducted two five-day Scientific Molder I Certification trainings for 14 machine operators and production staff from PDM and Vista Outdoor. He was recommended by Mike Groff, President of PDM, himself a former plastics consultant in the valley, who was familiar with Catignani's expertise.

The SM1 Certification course is highly customized, in-depth training that covers hand-on machine time and classroom training on fundamentals of polymeric materials, controls, mold fundamentals, hands-on implementation of screw position switchover via scientific molding, estimating clamping force tonnage and sizing the injection unit. Eight participants passed subsequent testing to achieve SM1 Certification. Catignani also taught a four-day Fundamentals of Scientific Molding to a team at West Paw Design.

## Cross Over Value in Paired Trainings

While the trainings were two distinct opportunities, a crossover value was definitely there, Groff said. Plastic injection molding depends on four things, he said, “*People, materials, machines and molds*. If there is

### TEAM BASED PROBLEM SOLVING WITH ROOT CAUSE ANALYSIS

- ◆ A process that is as impartial as possible to identify changes needed to the system. No blame game.
- ◆ Inter-disciplinary, involving experts from the frontline services. Opens dialog across departments.
- ◆ Involves those who most familiar with the situation/equipment.
- ◆ Empowered for change with a process and tools that can be applied again and again.

an issue with one, it can cause issues with others.” Good techniques were taught in the molding certification seminar. The added problem solving and root cause training helps at the next level, when the trained operator runs the machine and the result is not satisfactory.

Both PDM and Vista Outdoor were interviewed for this follow up story and reported that the paired trainings delivered more than cost savings and increased skills. The big takeaway has been a more collaborative culture.

PDM, a contract plastic parts and assemblies manufacturer with seven molding machines, made big strides in reducing scrap and WIP (work in progress). Vista Outdoor focused problem-solving on safety improvements that ended up increasing efficiency too, according to Doug Hein, its Director of Operations. It has 30 injection molding machines.

### A Bit of Detective Work

“During the Team-based Problem Solving training, each company team created charters and problem statements, assigned roles and responsibilities, completed their root cause analysis process, and made tangible progress toward tracking key data and solving the problems identified,” according to a Prospera report on the project. “... By the end of the project with MMEC each company was well on its way to resolving issues and committed to implementing the team-based problem solving methods on an ongoing basis.”

“Many problems that come up have simple origins if you use problem solving techniques to find them, not just in molding but any process,” Groff said. “I had taken an MMEC problem solving class in the past, and I knew Mark would teach us a method to do the needed mental gymnastics.”

PDM has 45 employees and an annual payroll of \$1 million. The crew is very diverse and includes a number of Montana State University graduates.

“Initially we applied team-based problem solving to a ladder foot assembly we manufacture,” Groff said. “That has been our number one product to this day, so it is important to get it right.”

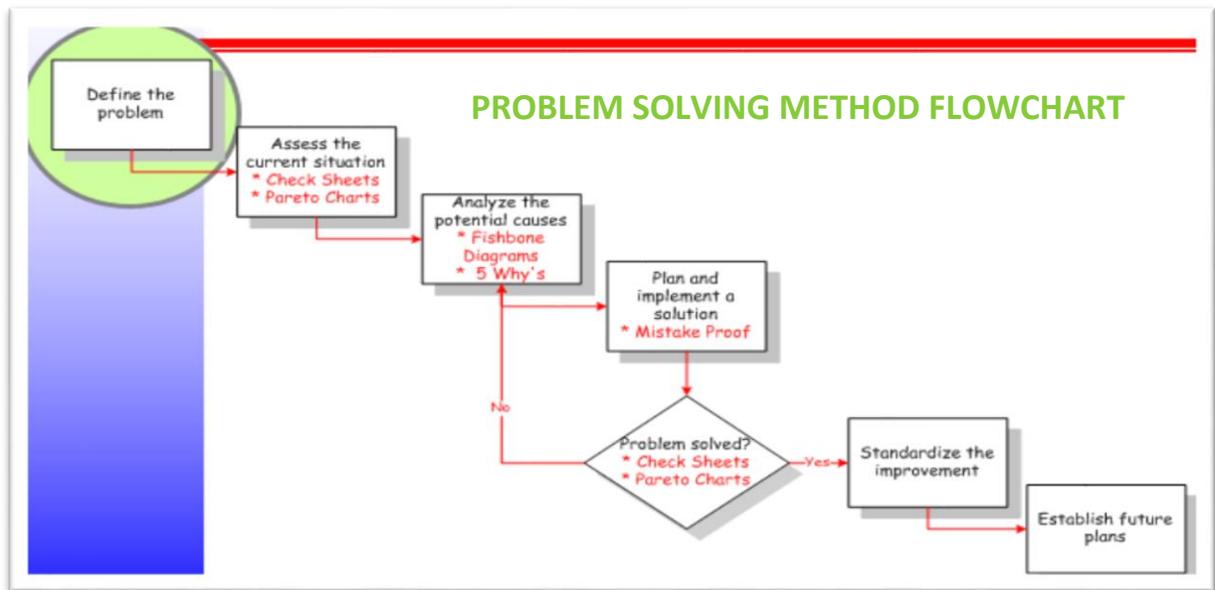
Processes come together involving several colors, two molded parts, and riveting.

MMEC gave them a new tool to analyze issues such as reject rate in an in-depth way and to work together to tackle problems using a proven process. Several helpful takeaway diagrams from the class still hang in Groff’s office and on the production floor.



Mike Groff, right, talks with Manager of Logistics

“It had a significant impact in our overall operation because we quote very tight margin. For us even a reject rate of 3-4% can be very bad. Getting it down to one, maybe two, percent makes a real difference.



“We appreciate MMEC’s involvement to coalesce interest in the dual training effort,” he said. PDM recently earned ISO 9001 certification, using MMEC as a resource. “With MMEC, PDM is doing very well operationally and is well-received by our customers.”

### PDM Team Collaboration

Color transfer between parts was one problem tackled by the PDM team. It can happen when a light color part is run after a dark color. A solution to eliminate transfer was targeted, and the root cause identified in the mold changeover process. Steps were initiated to keep color separated by standardizing work instructions for grinder cleaning, materials handling, and tool setup/removal. Additional grinders were proposed as a future solution.

In analyzing data over six months, the team also identified the riveting process as a source of rejects. The team investigated ways to mistake proof the anvils and began using all double head riveters. Later, it took problem solving beyond the training assignment using previously collected data to begin a supplier corrective action.



*PDM opened its doors in Manhattan in 2009.*

The outcome of good problem solving techniques has been more than a 50% reduction in scrap and rework, Groff said. PDM also invested in a low cost retrofit for the grinder.

Increased collaboration between PDM employees and departments is noticeable following the team-based training exercise, Shyne said, as production workers have a forum to share direct experience with the equipment and materials for problem resolution. Groff agreed.

## Vista Outdoor Pleased with Training Outcome



Vista Outdoor had two problem solving teams working with MMEC. One group targeted efficiencies for the Knox Stocks line, an aftermarket shock absorbing rifle stock that can be changed out for a better absorption system on recoil.

Since the trainings, we've made tons of improvements and good engagement with the Knox Stocks team," Hein reported. Problem solving related to safety and repetitive motion issues ended up as efficiency improvements, with design changes in the process.

"What has changed the most is people coming forward with ideas on ways to improve," Hein said. "We see real engagement between the production team and the engineering group." That is not always the case in a manufacturing firm where it can be tough to get cross-team improvements in a culture "where production workers are used to just getting through what comes at them every day. They tend to be pretty quiet. We are breaking that curve."

The second team developed a problem statement to look at mold changeover times for various products with a goal to reduce the time, thus increasing productivity. A downturn in the overall outdoor sports market last year and staff cutbacks put the changeover effort on hold.

"The market is coming back, and our main goal is to grow our team and continue to change and improve the culture. The mold changeover is an area we will be getting back to," he said, noting that the company had a pretty good group certifying to the Scientific Molder I level at the conclusion of the operator training. There is a definite interest in a second level of training.

"The big takeaway," he reiterated, "is cultural change.

"MMEC is a great partner for manufacturers here in Montana. You are a great resource, and we appreciate your support."

## Industry Clusters Inject Value

Since becoming Vista Outdoor (see Editor's note), Hein said the firm has significant resources and can be a good resource to others. "It's a great opportunity to collaborate with other local business."

The Manhattan facility intends to manufacture at its current rate as it realigns work shifts for market conditions, he said. In order to meet that challenge during a period of change, it will be pushing some production to neighboring PDM, strengthening the partnership.

MMEC and Prospera remain committed to strengthening cluster development and were able to leverage the ACE grant, as a cost savings to the participating companies. The effort built a core group to attract a machine expert, whose clients include IBM and Honda, and leveraged the power of complementary trainings. The ACE grant covered approximately half of the training costs.



*Manhattan facility ATK BLACKHAWK! ceremony 2012*

**\*Editor's note:** in February 2015 ATK spun off its ATK Sporting Group as a new public company, Vista Outdoor, trading on the New York Stock Exchange under the ticker symbol "VSTO". It is headquartered in Salt Lake City. BLACKHAWK!, in Manhattan, is part of Vista Outdoor, with U.S. manufacturing facilities in North Carolina, Montana and Idaho. Vista Outdoor is a leading global designer, manufacturer and marketer in the growing outdoor sports and recreation markets. The company operates in two segments, Outdoor Products and Shooting Sports; it has more than 30 well-recognized brands including BLACKHAWK!

Read more <http://www.marketwatch.com/story/atk-completes-tax-free-spin-off-of-vista-outdoor-inc-2015-02-09>

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