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# January 2011

## Personnel Changes -

Kerry Smith has been appointed the new Engineering Coordinator for Industrial Molds Group. Smith has been with the company for 20 years, serving in various positions including most recently as Account Manager.

Joe Hansen will be handling Smith's accounts until Industrial Molds Group can bring another Key Accounts person on board.

Greg Osborn will remain in his position as Key Accounts person.

## Customer Survey Coming To Your Inbox Soon!

Industrial Molds Group will be sending out a Customer Satisfaction Survey in about two weeks.

## Reshoring Efforts - Manufacturing Is Coming Back to the U.S.

Reshoring - bringing manufacturing back to the U.S. from offshore - is something we in the plastics and moldmaking industries are starting to hear a lot about. The Reshoring Initiative, founded by Harry Moser, who spent 22 years as president of Charmilles Technologies Corp., now GF Agie Charmilles, is one of these recent efforts to get the attention of U.S. OEMs and government, to help bring manufacturing back to the United States from overseas.

While some OEMs still ask Industrial Molds to explore Asian sources for tooling, telling us that the molds are "the same" as those Industrial Molds builds, we know first-hand that's not true. Recently, we had a customer bring us Chinese-made mold in which the core had broken. The core had been spec'd to be made of P-20, yet after only four months in the molding press running production requirements, it broke.

The first thing we did was to send a sample of the core to Atrona Test Labs Inc. to be evaluated with an optical emission spectrometer to perform the chemistry in accordance with ASTM E415. The result was that the sample was found to be similar to SAE 4140 low alloy steel. Testing also showed that the core material had a slightly elevated silicon level and a slightly lower

We feel that the New Year is a good time to get input from all of our customers as to our performance over the past year. We want you to be honest with us - in fact we really *hope* you'll be honest with us - as you rate our performance in various areas. This is critical to our company mission of being a supplier of excellence in the molds we design and build for our customers. Let us know how you rate us. Provide input you feel we need. If we're doing a good job, let us know. But if you feel there's something we could be doing better, let us know that as well. We want to be the best!

molybdenum level. Those numbers are consistent with 4140.

The Rockwell hardness was 24 RC, not quite as hard as P-20. Std. P-20 runs 28-32 RC. "Besides getting the price advantage of about 18%, the 4140 machines faster and the polishing will be easier," notes Tim Peterson, vice president of Industrial Molds Group. "All the things that go into making this mold were faster. So the customer got this mold for a cheaper price."

However, what did the customer lose in this deal? "The customer loses longevity," says Peterson. "We're currently working on getting certifications from customers to prove the tool steel is what they say it is." Sometimes they'll say "it's Chinese P-20" - which somehow is supposed to be the same as U.S. P-20. But let's face it, rarely is a mold built in Asia the exact equivalent of a mold from Industrial Molds. We know they do things differently in China but P-20 should be just what it's supposed to be no matter who supplies the mold.

Progressive Components, our mold components supplier, had problems at one time with the Chinese stealing its intellectual property. In some cases, the components were even etched and placed in a box with Progressive's name and logo on it. When the components were cycle tested, they were inferior and failed at a very early point, according to the President of Progressive Components. Progressive does not sell their components manufactured in China to companies in the U.S. because it might ruin their reputation.

"If we started doing what the Chinese do to be competitive - using less hard tool steel, skimping on components and other things - we'd be more competitive too," Peterson adds. "There's a double standard for mold suppliers at some OEMs. We're held to a higher standard of mold build than the Chinese. If we'd built a mold in which a core broke four months into high volume production, we'd never hear the end of it."

Currently there's about a 10-15% differential in pricing between Industrial Molds' quotes and quotes from China. "I don't think that using Chinese tooling

sources is that good of a deal for U.S. mold makers or molders. Often, OEMs will push these substandard molds off on U.S. molders, then wonder why their part prices are higher - why they can't get the cycle times they thought they could get, or the tool life is shorter," Peterson explains.

Peterson believes that molds coming from offshore are certainly not good for U.S. OEMs and not good for U.S. manufacturing in general. "We need to retain our intellectual property, maintain the skilled work force that we've developed," he says. "Washington wants to know where the jobs are and how to create jobs. It's all of us working together to bring work back to the U.S. - to support the Reshoring Initiative's efforts -- to create more jobs in the U.S."

The Reshoring Initiative's Web site ([www.resshoreNow.org](http://www.resshoreNow.org)) provides much useful information, data and other tools for OEMs to calculate their cost of ownership for offshoring work to an LLCC (Low Labor-Cost Country).

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## **10 Good Reasons to 'Reshore' Your Manufacturing:**

10. It saves you money on your molds in the long run because you can be assured of the best design and the use of optimum mold materials and components to produce longer life for your molds.
9. You don't have to be afraid of losing your intellectual property to another company. The theft of your mold drawings often results in the mold company building one mold for you, and one mold for themselves - this is especially true for consumer products.
8. Your shipping costs will be a lot less - no container cargo ships needed.
7. Your shipping time will be a lot less - a supplier within the 48 contiguous states can ship faster and cheaper than a moldmaker/molder in China.
6. You don't need a huge amount of inventory sitting in your warehouse due to the long shipping lead times. Your bottom line looks better!
5. You won't have a long supply chain that stretches half-way around the world. As one OEM once said, "If I have bad parts on my dock in the U.S., I probably have bad parts on a ship and more bad parts being molded in China."
4. You're assured U.S. quality in molds and molded parts without fear of recalls of your

product(s) due to plastic components that break during use and causing harm or painted using lead-based paint.

3. You can visit your supplier(s) often in the U.S. without spending thousands on air fare, hotels or being out of your office for extended periods of time.
2. You're helping to strengthen U.S. manufacturing and hence, the U.S. economy.
1. **You're providing badly needed jobs for U.S. workers!**

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## Engineering Corner - Cool IT!

Cooling is critical in molds. Its purpose is to dissipate the heat in the molded part quickly and uniformly so that the part has less warpage or stress. Proper cooling not only leads to uniform cooling for good quality parts, it is necessary to obtain optimum production time. According to the Web site of DSM Engineered Plastics, "Adequate mold temperature control is essential for consistent molding. The layout of the cooling circuit warrants close attention especially if you consider that cooling typically accounts for two-thirds of a products' cycle time." Molds built with inadequate water lines typically have longer cycle times, and more problems with part quality.

The type of plastic used also makes a difference in the amount of cooling required. According to DSM's Web site, "semi-crystalline thermoplastics need to cool down at optimal crystallization rate. Parts with widely varying wall thicknesses are likely to deform because of local differences in the degree of crystallization. Additionally, the required cooling time increases rapidly with wall thickness.

Greg Osborn, Account Manager for Industrial Molds, notes that the cooling lines in a mold depend on what the actions are in the mold. A mold containing a lot of actions can limit the amount of cooling that you can get into small areas in the tool. That's where a technique known as "Conformal Cooling" is beneficial.

Conformal Cooling involves putting water lines near the shape of the part rather than just straight through the blocks. With some parts, such as parts with curves or other complex geometry, running water lines straight through the blocks means that the section of the part closest to the water lines will cool faster than the section of the part farther away from the water lines. This uneven cooling will result in warpage and stress in the part.

Turbulent flow is also essential to good cooling. "In general, cooling systems will be roughly drilled or milled to enhance turbulent flow of the water and provide better heat exchange," noted DSM's Web site. "Turbulent flow achieves 3-5 times as much heat transfer as does non-turbulent flow. Cooling channels should be placed close to the mold cavity surface with equal center distances in between. The mechanical strength of the mold steel should be considered when designing the cooling system."

[[www.dsm.com/en\\_US/html/dep/moldcooling.htm](http://www.dsm.com/en_US/html/dep/moldcooling.htm)]

Measuring turbulent flow is time consuming, but necessary in determining proper cooling conditions. This is done by putting a flow meter on every circuit and checking the gallons per minute in each circuit, then calculate the Reynolds number, something very few molders do.

Let Industrial Molds help you design a mold that will provide you with the cooling channels needed to optimize your molding process and produce high-quality parts shot-after-shot.



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