



Inside this issue:

Delphi Makes MeltFlipper Standard in New Cortland Plant	1
Another ANTEC Award for the Melt-Flipper	2
Join Us In Colorado	2
Solutions for Intra-Cavity Imbalances in Low-Cavitation Molds	3
SPE Presentation Rescheduled	4
Looking Ahead: 2002 Trade Show Schedule	4

DELPHI MAKES MELTFLIPPER™ STANDARD IN NEW CORTLAND PLANT

MeltFlipper Added to All Molds of Eight or More Cavities; Reduces Imbalance to Average of 2 Percent

Complex designs, intricate cores, thin walls, small parts – all of injection molding’s toughest challenges are found in the new Cortland, Ohio, plant of Delphi Automotive Systems, Packard Electric Division.

Something very good found in Cortland is the MeltFlipper™, a new technology that rotates melt within an injection molding runner to send material of even temperature, pressure, and viscosity to each cavity to produce parts of equal weight, size and shape. MeltFlipper technology, patented and licensed exclusively

by Beaumont Runner Technologies, perfectly meets the new plant’s emphasis on using the latest injection molding and design technologies to improve efficiencies, lower scrap rates, and reduce overall part cost to Delphi customers.

“A primary objective at our Cortland facility is running with no blocked cavities,” said Eric

“We’ve experienced improved part quality and an increased processing window...the MeltFlipper is a faster, better engineered way to balance our tools.”

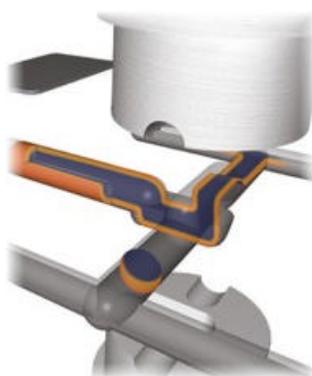
Tomalski, a Delphi Packard Electric senior mold design/analysis engineer. “To achieve this goal, the factors that cause manufacturing to shut off cavities must be minimized

molding process. The MeltFlipper successfully addresses one of the largest factors – defects related to unbalanced cavity filling.”

By adding MeltFlipper technology to Delphi’s tooling standards, “we’re putting the best technology into new molds to get them debugged faster and put them into production sooner,” Tomalski says. “We’ll be putting Melt-Flippers into any mold of eight or more cavities with geometric runners, because we feel it’s a better way to balance molds than was done in the past.”

“When I first used the MeltFlipper as a retrofit, my imbalance went from an average of 17 percent down to 2 percent,” Tomalski says. “From an engineering

(Continued on page 2)





DELPHI MAKES MELTFLIPPER STANDARD

(Continued from page 1)

standpoint, we're always required to balance within a certain tolerance, and the MeltFlipper makes it easier, quicker, and less expensive than trying to balance a mold by changing runner sizes. And because we now have cavities filling at the same time with uniform material, we have a larger process window, which improves productivity and quality."

With the expansion into the Cortland plant, Delphi shows continued leadership in the automotive industry as a supplier of individual compo-

nents and complex assemblies. Delphi's growth is linked to its belief in quality, customer satisfaction, and investment in emerging technologies like the MeltFlipper, which will be an integral part of new business at the Cortland plant. "Our goal is to have molds that meet the latest and greatest standards and technologies, and the MeltFlipper technology is one," says Steven Kelly, a Delphi senior manufacturing process engineer. "We've experienced improved part quality and an increased processing window...the MeltFlipper is a faster, better engineered way to balance our tools."

ANOTHER ANTEC AWARD FOR THE MELTFLIPPER™

This Time for Hot Runner Designs

"Controlling Balanced Molding Through New Hot Runner Manifold Designs," Paper No. 901 won the Society of Plastics Engineer's Mold Making and Mold Design Best Paper Award at ANTEC 2001, Dallas, TX.



Presented by author John Beaumont and co-authored by Kevin Boell, the paper was recognized by SPE for its novel approach to advanced technology that elimi-

ates melt imbalances in hot runner molds. Full level changes have been used at random on high cavitation hot runners in the past and do offer some enhancements; however, the use of full level changes will result in continued imbalances. Beaumont's paper illustrated that partial, controlled level changes harnessing the physics of polymer flow provide what is needed for a complete balance of rheological properties to each cavity.

Beaumont's related work on melt management technology in runner systems previously won the 1998 ANTEC Best Paper Award from the Injection Molding Division of the SPE.

MOLDING HIGH-PRECISION PARTS IN HIGH-CAVITATION MOLDS

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Read John Beaumont's defense of high-cavitation molds in the November issue of Moldmaking Technology Magazine.

JOIN US IN COLORADO

Dave Hoffman, BRT's technical sales manager, will make his case for the MeltFlipper™ at monthly meeting of the Rocky Mountain Section of the SPE on Tuesday, Jan. 8, 2002.

Dave will explain the physics of the MeltFlipper, its applications in cold and hot runners (including stack molds), and present case studies and success stories.

The presentation will be held at Old Neighborhood Restaurant, 7923 Allison Way, Arvada, and is open to anyone interested in learning how to balance problem molds. If you'd like to join Dave in Colorado, contact him at (814) 898-6477, or e-mail meeting host Joel Kiester at joelkiest@aol.com.



TECH TIP AVAILABLE

Solutions for Intra-Cavity Imbalances in Low-Cavitation Molds

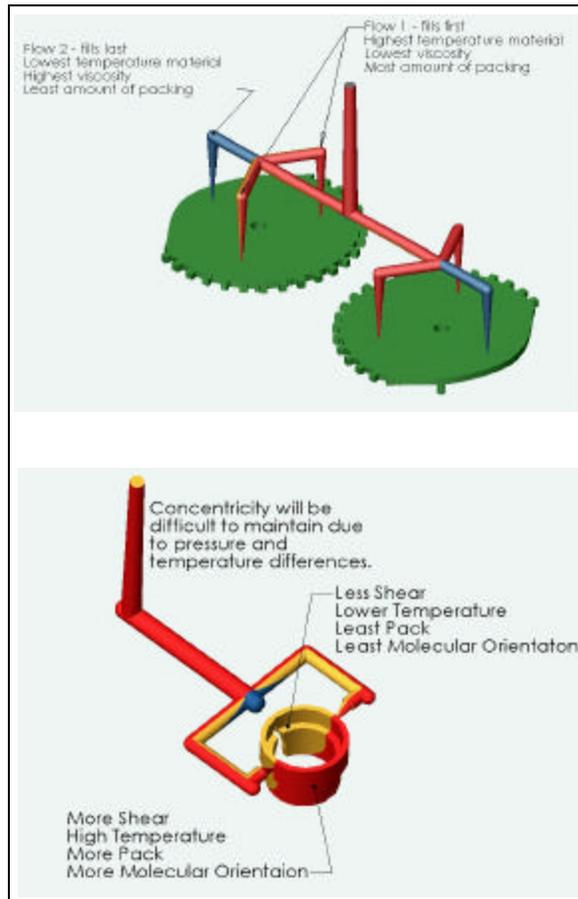
Like injection molding companies world-wide, BRT is becoming sensitized to imbalances within even single, two- and four-cavity tools. Tight tolerance parts that exhibit concentricity problems, weight variations within the cavity, warping issues, and the like are classic examples; frequently these parts are gears, impellers, rotary fans, connectors and bearings.

To help explain these imbalance scenarios and offer solutions to their challenges, BRT has developed a Tech Brief titled **Intra-Cavity Filling Imbalances**. A portion of this Tech Brief is shown here, and the entire document may be viewed online. BRT will issue the Tech Brief via e-mail initially to companies that have expressed interest in this specific application. For a copy of this Tech Brief, please contact BRT or visit www.meltflipper.com to view and download the file.

INTRA-CAVITY FILLING IMBALANCES

Intra-cavity, shear-induced filling imbalances present serious manufacturing difficulties for injection molded products. These imbalances create dimensional and weight variations across the part and, until now, have been

difficult to diagnose because most commercially available filling simulation software does not detect shear-induced variation within the runner systems that feed the parts.



Intra-cavity imbalances may be present in simple runner systems, such as single cavity molds with two or more gates, and two-cavity molds with one or more gates. Although the runner system geometry may appear simple, the physics of polymer flow compromise the filling pattern within the cavity, causing specific portions of the cav-

ity to fill with material at different temperatures and viscosities. This leads to significant differences in pack pressures across the part. These side-to-side variations in material and cavity density result in non-uniform shrinkages across the part during the cooling phase of the cycle.

By applying an understanding of the characteristics of polymer flow, the intra-cavity filling imbalances are easy to predict and remedy. BRT's engineers quickly can diagnose your runner layouts and recommend the proper MeltFlipper technology to solve product quality issues caused by shear-induced imbalances.

**Watch for November's issue of
The Moldmaker's Journal
featuring an article on the
MeltFlipper titled
"MeltFlipper™ Rotates the
Melt...Provides the Balance"**



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Revolutionizing Runner Designs for Injection Molding



WE'RE ON THE WEB:
WWW.MELTFLIPPER.COM

Beaumont Runner Technologies, Inc. is the exclusive licensor of the MeltFlipper™ technology developed by John Beaumont, an associate professor of plastics engineering technology at Penn State Erie. The company is dedicated to revolutionizing melt delivery systems and design practices for both hot and cold runners in the plastics industry. With further R&D and an in-depth understanding of plastic flow characteristics, BRT continues to grow and has now expanded its capabilities and services beyond the development of the MeltFlipper. The BRT staff offers full engineering support to MeltFlipper licensees in the various plastics industries.

The **MeltFlipper** is a patented technology that repositions the shear-induced variations in hot or cold runner melt delivery systems to create uniform filling and material properties in all cavities of a multi-cavity tool. By repositioning the melt to provide for a natural symmetry, the MeltFlipper eliminates shear-induced variations in temperature, viscosity, and material properties within inner and outer mold cavities. In addition to creating identical filling in high-cavitation molds, the MeltFlipper offers improved quality and Cpk, reduced part costs and scrap, and a wider processing window. The MeltFlipper is a low risk investment due to its customer satisfaction GUARANTEE to solve mold filling imbalances or BRT will refund your licensing costs.

SPE PRESENTATION RESCHEDULED

Beaumont Runner Technologies will still present "The MeltFlipper™: The Next Generation of Runner Designs" at the rescheduled SPE Topical Conference EMERGING TECHNOLOGIES FOR THE NEW MILLENNIUM.

The conference will now be December 10 and 11 at the IMI/CNRC Building Boucherville, Quebec, Canada. The presentation will be held on Tuesday, December 11th at 10:15 a.m.

LOOKING AHEAD

We're Packing Our Bags for 2002 Trade

BRT plans to exhibit at the following trade shows next spring. Please visit us at:

PLASTEC WEST 2002 - Booth 856

When: Feb 5-7, 2002

Where: Anaheim Convention Center, Anaheim, CA

MOLDMAKING EXPO 2002 - Booth 614

When: April 23-25, 2002

Where: Donald E. Stephens Convention Center, Rosemont, IL

PLASTEC EAST 2002 - Booth 1043

When: June 4-6, 2002

Where: Jacob K. Javits Convention Center, New York, NY