

***2-Cavity Auto Gasket  
Molder Eliminates Flash  
and Short Shots***

**MeltFlipper Technology a Major  
Part of Neff-Perkin's Continuous  
Improvement Efforts**

# NEFF-PERKINS ACHIEVES CONTINUOUS IMPROVEMENT SUCCESS WITH MELTFLIPPER

*Products from Beaumont Technologies Inc. Implemented in 2-Cavity Mold to Produce Superior Gaskets*

**B**ecoming typecast is a great fear for many companies. In the plastics industry, where core competencies and reputations are quickly cemented in the collective consciousness of public opinion, Beaumont Technologies, Inc. of Erie, PA (BTI) is challenging efforts to label the company's technologies as those only applicable to high cavitation molds. To show the diversity of their products and services in low cavitation molds, BTI teamed with injection molder Neff-Perkins Company of Austinburg, OH to successfully implement one of BTI's key product and process enhancing technologies within a 2-cavity "automotive, oil pan gasket backbone" mold.

Beaumont Technologies Inc. began as a company by supplying a product called MeltFlipper®, and quickly made a name for themselves in the processing industry owing to the product's ability to optimize the flow of materials into a mold which improves part quality, reduces overall operating and part costs, and provides for wider process windows. The improved cavity-to-cavity material flow and elimination of process and product variations has attracted the attention of companies interested in optimizing their parts production economically without the need for investing in major capital equipment upgrades. Additionally, BTI is well known for providing these solutions to manufacturers who are running injection molds containing 8 cavities or higher. This is how Neff-Perkins Company, a firm that specializes in producing many different types of insert-molded products, became interested in the BTI manufacturing solution "package".

## *Small Solutions, Too*

Although the company is known for solving high cavitation molding issues, in the case of Neff-

Perkins Company, BTI was able to show how truly universal the MeltFlipper solution can be for molding arrangements of all shapes and sizes.

The problem, as described by Haans Petruschke, Plastics Engineer at Neff-Perkins Company, was that certain areas of the cavity would flash and yet other areas experienced no-fill. The gaskets pro-



duced from the 2-cavity parting-line injection mold had plastic flashing through only some of the holes within the part. The holes, approximately 1/8" in diameter, that displayed the problematic flashing were mainly in the area of the part closest to the injection nozzle. Although the gates feeding each cavity were evenly spaced and geometrically bal-

anced, the filling pattern within the part was not balanced at all. Petruschke immediately identified the problem as a result of shear-induced melt viscosity differences that commonly develop as plastic flows through a mold's runner system.

Mr. Petruschke reaffirms, "We had a flash and non-fill problem and knew from the start we could not process around the problem since the root cause was a flow induced imbalance. We did do a series of short shots to confirm the flow induced imbalance and to provide Beaumont with examples to work from." He goes on to say, "Some mold makers try to address flow-induced imbalance problems by changing gate sizes. This is the wrong approach entirely as it can actually make the problems worse. These sort of problems need to be addressed in the runner system itself through the use of MeltFlippers."

Having worked with BTI before with other mold balancing challenges, dating back to the late 1990's, Petruschke recognized that having the company review the mold and install a MeltFlipper system would be the optimum and most economical fix to solve the production problems. Having seen the licensed MeltFlipper technology balance other molds at Neff-Perkins and, rather than seeking a mechanical or machinery based solution, he was sure that BTI could remedy the problem.

#### ***Immediate Results from BTI's Balancing Act***

BTI's Technical Sales Engineer, David Rose, evaluated the melt delivery system and parts from the Neff-Perkins mold at the BTI headquarters in Erie, PA. BTI's evaluation of the melt delivery design confirmed that the mold suffered from shear related material property imbalances within the parts, commonly known as intra-cavity filling imbalances. Rose talked with Neff-Perkins in detail on the flow development leading to the problem within the parts, and determined that MeltFlipper melt-management technologies could be easily applied to the mold to solve the production problem.

Neff-Perkins licensed the MeltFlipper product for the molding process, and began running the gaskets again. "We were off and running immediately," notes Petruschke.

The MeltFlipper approach solved the flashing and

short-shot issues by evenly distributing the melt, and problem-free gasket carriers were being processed by the Neff-Perkins Company almost instantly after the mold enhancing technology was installed. Finding economical and rapid solutions to molding problems is important to Neff-Perkins Company in maintaining their competitive position as a North American molder. Petruschke states, "The culture of continuous improvement is a way of life at Neff-Perkins, as it is throughout the automotive industry." Adding a post-manufacturing step like trimming flash would have added hand labor to this operation and driven costs up. But, by simply adding MeltFlipper to the molding operation that possible scenario was eliminated and allowed Neff-Perkins to provide their customer an economical solution that yielded high quality products. Petruschke's commitment to Continuous Improvement and Advanced Product Quality Planning (APQP) is evident by his statement, "Even at low production volumes we strive to reduce defects to a minimum, and designing MeltFlipper in the runner fit into this strategy."

Petruschke notes that the working relationship with BTI has been good, and that Neff-Perkins Company is "very satisfied" with the product. The company, in fact, was an early believer and innovated with the process as far back as the late 90's, with very good results. Petruschke was first introduced to John Beaumont, BTI's President, in the 80's and later worked with Beaumont through the Cleveland Advanced Manufacturing Program (CAMP), which had a close relationship with the Plastics Technology Center (PTC) located at Penn State Erie – the Behrend College. Early on, Petruschke recognized the "brilliant piece of work" John did as the MeltFlipper developer to understand and learn how to control and manage melt properties. He has been impressed with how the company addressed flow problems by correcting the root cause of the problem rather than changing gate or runner sizes.

Neff-Perkins' satisfaction is evident in that they have selected MeltFlipper for a new 4-cavity vertical clamp, insert molding project in which each cavity has five different over-molded geometries and each of the geometries is fed by an individual gate. In reality, it is a 20 cavity family mold.

As Petruschke knows, “An improperly designed runner can not only induce imbalances it can also lead to excessive cycle time, scrap, and regrind generation”. So this time, rather than coming to BTI to solve a problem after the mold was built and sampled, during the APQP process Petruschke was proactive in recognizing the runner design was crucial for high levels of part quality. Neff-Perkins has teamed with the moldmaker, CAM Tool and Engineering of Cleveland, OH, from the outset to prevent part defects and engineer the most optimal mold and runner system possible.

The Neff-Perkins Company is an injection, compression, and transfer molder with three facilities totaling more than 150,000 square feet of manufacturing space in Austinburg, Middlefield and Perry, OH. The company offers diaphragms, seals and gaskets, insert molding, actuators, and foam products that serve the automotive OEM, aftermarket, controls, appliance controls, lawn and garden, industrial, and sporting goods marketplaces.

The current product line includes HVAC, engine seals and gaskets, brake system parts, controls, actuators, grommets, health and safety, medical, telecommunications and sporting goods products. The Neff-Perkins Company custom engineers precision molded plastic, rubber, silicone and thermo-plastic rubber products.

### **Conclusion / Company Contact Information**

For more information on melt rotation technology, sold under the trade name of MeltFlipper, or any of BTI's other products and services, contact: Marketing Department, Beaumont Technologies, Inc. 2103 East 33rd Street, Erie, PA 16510-2529. Tel:814-899-6390. Fax:814-899-7117. E-mail: [meltflipper@beaumontinc.com](mailto:meltflipper@beaumontinc.com) Web Site: [www.beaumontinc.com](http://www.beaumontinc.com).

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## **Profits/Business/Your Competitive Edge Slipping Away?**

### **Is it because:**

1. You aren't maximizing your molding capabilities?
2. Scrap and waste are cutting into your profits?
3. Startup is too slow, with mold debugging dragging you down?

### **Maybe it's time to get back to the basics.... using BTI's Technologies and Training Seminars**

- A series of on site-training courses to help your staff understand how to improve the molding process, commission molds faster and know what goes on inside the mold.
- Proven technologies that are guaranteed to help you go from art to part more quickly, and mold higher quality parts at the same time.

### **BTI...Industry's Source for Mold and Process Optimization Technologies and Training**



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