



News @ BTI

Beaumont Technologies, Inc.

Volume IV, Issue 3 • September 2004

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See Our CAE Services at PlasticsUSA!



Beaumont Technologies staff will be highlighting our newly expanded computer-aided engineering services at our PlasticsUSA booth in Chicago Sept. 28-30. Look for us in **Booth #2314.**

To complement our existing MeltFlipper melt rotation technologies and the 5 Step Process mold diagnostic software, and to meet industry demand for complete one-stop problem solving, we've beefed up our CAE services. CAE

by BTI™ eliminates the laborious work of perfecting parts through trial and error. CAE by BTI analyzes the optimal number and location of gates, runner design and sizing, and general filling patterns **before** the first part drops. The result is faster mold commissioning, higher quality parts, and decreased time to market.

Stop by our booth and let us show you how pre-engineering your part and mold designs results in fewer headaches and quicker ROI.

CAE you in Chicago!

BTI NOW A MOLDFLOW CERTIFIED CONSULTANT

Only 15 Companies Worldwide Selected for Prestigious Partners Program

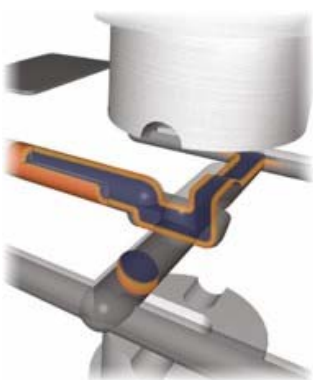
Wayland, Mass.-based Moldflow Corp. has chosen BTI to join its Certified Consulting Partners program.

Moldflow partners with select companies that possess the engineering expertise to complement and deliver Moldflow design simulation services. Program criteria is stringent: Partner companies must be deemed a major user of simulation analysis tools, must commit significant time and resources to Moldflow training, and their employees must pass a rigorous series of certification examinations.

John Twerdok, Moldflow's Director of Strategic Alliances, says that the program was begun in October 2003. "Our goal is to establish a network of high quality partners/consultants, and not just aim for quantity. As a result, our customers can be confident that they

have access to services from dedicated experts who have been formally trained in the use of Moldflow software technology."

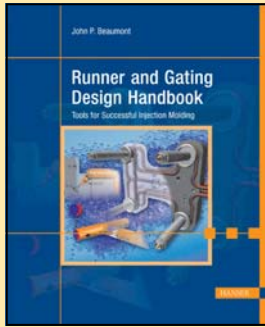
"We've always felt our in-mold melt control and balancing technologies complemented the various products offered by Moldflow," adds John Beaumont, BTI president. "Moldflow's molding simulation technology, combined with BTI's patented MeltFlipper and other related technologies, provide a unique synergy. By combining the technologies, BTI can offer our customers a turn-around runner system design complete with gate location options and a scientifically designed runner system that is guaranteed to be balanced."





NEW BOOK

Beaumont's Runner and Gating Design Handbook Released



Runner and Gating Design Handbook: Tools for Successful Injection Molding, is now available from Hanser Gardner Publications.

The book is intended to be a

comprehensive resource for design and troubleshooting techniques for hot and cold runner systems.

Runner and Gating Design Handbook offers practical insight on cold and hot runner design, with a special emphasis on cost-saving and practical end-product improvement techniques that injection molders can profit from. The book is intended to help engineers determine optimal runner design, when to use specific runner types,

and how to isolate molding problems generated from the gate and runner from other molding issues. Full color 3D graphics, illustrations, photographs, charts, checklists and troubleshooting guides are included.

Hanser Gardner is offering a 15% discount on book orders placed before Oct. 15, a \$22.50 savings. Order by calling 800-950-8977 or online at www.hansergardner.com.

CASE STUDY

Twinshot and MeltFlipper—a Beautiful Combination for Motor City Plastics

Motor City Plastics, a custom molder in Dundee, Mich., needed to make a cosmetic case overcap with clear skin and a color core for a leading beauty products manufacturer. The 16-cavity mold continually produced unacceptable parts that had both flash and heavy sink marks.

Chris Yochim, a plastics engineer at Motor City, is a graduate of Penn State Erie's plastics engineering technology program. He was familiar with BTI's reputation for solving molding problems "from within" – rather than blaming the mold, the machine, or the materials, the problem needed to be diagnosed inside the mold.



Yochim and Motor City needed to be able to incorporate Twinshot co-injection technology from Spirex Corp. because of the skin and core cosmetic requirements.

Yochim sent BTI sample parts and runners. A quick look at the runner layout revealed a geometric problem—one primary runner was found to be longer than the other, causing part of the problem. However, shear imbalance also created an imbalance in skin versus core material from cavity to cavity. MeltFlipper technology and runner redesign was employed to eliminate the shear filling imbalances and to make the primary runner lengths equal, eliminating the flashing and heavy sink marks typically seen within the same shot prior to MeltFlipper technology. The mold also was debugged using BTI's 5 Step Process software.

After the addition of MeltFlipper technology, "a short shot study proved that the mold was almost perfectly balanced and we commissioned the mold nearly as fast," Yochim says. "We began molding parts without flash and sink marks, and all parts had a similar percentage of skin versus core material. More than 1,200 parts were produced with five different ABS samples in less than four hours."



CASE STUDY

Mold Qualification Software Finds Hidden Steel Variation

A molder in the southwestern U.S. had a 16-cavity mold with a geometrically balanced runner system that was producing parts with filling and dimensional variations. In short shot tests a large amount of variation is seen (Figure 1). Using traditional imbalance calculations, the maximum imbalance was determined to be 50.8% between cavities.

The 5 Step Process, proprietary software developed by BTI to diagnose imbalances and isolate their sources, was used to analyze the same data. With it, the customer was able to separate the flow groups and gather a great deal of additional imbalance information as related to both steel and shear variations (Figure 2). The shear imbalance was calculated to be 31.6% maximum, and the steel variations ranged from 19% to 37% within the flow groups. MeltFlipper was implemented to solve the shear-induced imbalances, but it would not fix the mold's steel imbalances.

The molder needed to determine the sources of the steel imbalances and address them directly. After analyzing the data, it was noticed that the cavities in the A and D quadrants were heavier in

all flow groups. By applying the 5 Step Process to a diagram of the runner layout, it was realized that cavities A and D for all flow groups are on the left side of the sprue. Therefore, a steel variation in this area of the mold must be the cause of the imbalance.

The variation was ultimately found to be within the diameter of the primary runners. A variation of 0.006" (0.152mm) was seen from the right side of the sprue to the left side of the sprue. The larger primary runner was on the left side of the sprue, which correlates with the data produced by the 5 Step Process. The larger diameter meant less of a pressure drop and an easier flow path for the plastic as shown by Figure 3, where r is the radius of the runner.

Previous methods of mold imbalance evaluation would not have provided the information, insight, and quick assessment needed to easily identify the steel imbalance in this mold. This is what makes the 5 Step Process a valuable tool for use during mold commissioning, before extensive - and expensive - resources are expended.

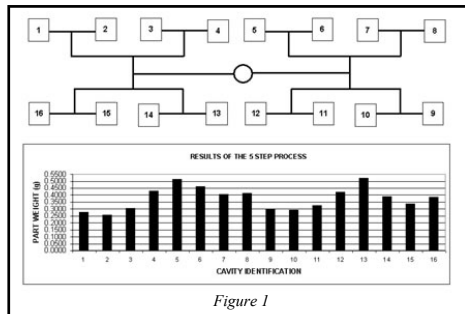


Figure 1

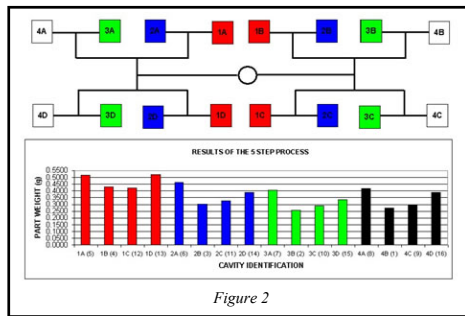


Figure 2

$$\Delta P = \frac{8Q\eta l}{\pi r^4}$$

Figure 3

NEW ENGINEER HIRED

Company Growth Leads to Staff Expansion



Christopher L. Welsh

BTI has hired a new engineer to help meet demand for our products and services.

Christopher L. Welsh's responsibilities will include MeltFlipper design and development and flow analysis for our new CAE by BTI service. Chris has both formal

engineering education from Penn State Erie's plastics engineering technology program and hands-on industrial experience in mold design, processing start-up, and mold flow analysis. Chris is a native of Sheffield, Pa., and is active in SPE.

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**Revolutionizing Runner Designs
for Injection Molding**

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

Beaumont Technologies, Inc. (BTI), the exclusive licensor of MeltFlipper® melt rotation technologies, is the plastics industry's source for mold and process optimization products and services. MeltFlipper technologies are 100% GUARANTEED to solve your problematic filling imbalances to ultimately achieve reduced scrap rates, faster cycle times, quicker time to market, and increased process efficiencies.

BTI is dedicated to take the plastics industry to the "next level" through an understanding that part quality and process stability start within the melt delivery system. BTI's advanced design practices for hot and cold runners have increased the quality and productivity of manufacturing companies worldwide. Because of our commitment to continuous R&D and quick response to industry needs, BTI has expanded its capabilities and services beyond the development of MeltFlipper technologies.

Our core products (**MeltFlipper®**, **5 Step Process™**, and **CAE by BTI™**) are successfully being used to help produce parts to Six Sigma quality standards in a vast array of industry segments. Contact BTI today and give us the opportunity to help your company become more profitable through our mold and process optimization tools - with **NO NEW CAPITAL EQUIPMENT REQUIRED!**

Please visit www.meltflipper.com for more information.