

MeltFlipper® MAX™ Case Study

"MeltFlipper MAX technology will have saved us over \$40,000...provided a less than 1% reject rate; 6.5% efficiency increase; and no more customer complaints.

- Jim Raisbeck, Springs Window Fashions

Customer: SPRINGS WINDOW FASHIONS
the Best Experience Company 

Case Study: Improving cosmetics in a 4-cavity mold using multi-axis melt rotation technology.

MIDDLETON, WI (DATE) – While a small cosmetic flaw in a virtually hidden part of a window blind may not bother a typical customer of this product, to Springs Window Fashions of Middleton, WI, it was totally unacceptable. And then, when they did find a solution by going "outside the norm" following several tries to tweak the mold and the process, they were further rewarded when technology that enabled them to mold a perfect part also saved them time and money.

Such was the case with Springs Window Fashions, the industry's #2 manufacturer and marketer of quality Bali, Graber and Nanik blinds, shades and drapery hardware and other well-known names for which they privately label. Springs engages in a "Best Experience" corporate culture, which requires that quality, service and associate engagement matter as much as product. This made finding a solution to this problem mandatory. But it wasn't until they read about and attended a free seminar by Beaumont Technologies (BTI) in Erie, PA, that they discovered there were other ways to solve nagging production problems other than tweaking the mold or process. Further, molding personnel at Springs Window Fashions quickly learned that measurable and ongoing cost savings are another benefit seen from their investment in BTI's technologies.

The part? Cord tilt housings made out of Nylon 6/6, of which only a portion of the part is visible on the final assembled product. However, cosmetic defects caused by trapped air during molding were noticeable by internal and external customers (Figure 1 Top and Figure 2 Top). As a result of this problem, a 5% reject rate added unforeseen costs to producing the part along with the need to spend about 2 hours a day cleaning the mold to produce parts "as defect-free as possible".

"We also had to slow down the injection speed on our 230 ton Van Dorn press," recalls Jim Raisbeck, Senior Plastics Engineer at the Middleton manufacturing plant. "This was necessary to allow as much air as possible to escape. And the additional cleaning time resulted in



Figure 1: Top - Cosmetic blemishes on the top surface with conventional runner system.

Bottom – Smoother top surface with MeltFlipper MAX runner system.

a production loss of nearly 6.5% per day, or a shortfall of about 972 parts per day." Raisbeck admits it was one of those ongoing production problems that he and the company just wanted to resolve without making expensive changes to the mold such as moving the gate or completely rebuilding the mold. They added flow channels to the part to see if they could change the filling of the part and thus eliminate the air entrapment. He also said they increased the parting line venting around the problem area to the point where it was very easy to flash the mold. But this, and other tweaking of the mold and/or process to eliminate the defects, still didn't achieve the desired results.

MeltFlipper® MAX™ Technology Provides a Beautiful Solution

Going back into his memory bank, Raisbeck recalls having read about a new melt process technology and became intrigued enough to sign up for one of the many free seminars hosted by Beaumont Technologies, Inc. - the developers of various melt-management solutions. BTI by this time had just launched the next generation of their technology – MeltFlipper® MAX™ - to provide a higher level of polymer control by creating shear symmetry in multiple axes of a melt channel. First developed to solve imbalances in hot runner stack molds, this new, patented technology had been proven to offer more uniform shear distribution in both traditional hot or cold runner systems.

When using this technology, highly sheared laminates can be placed in the middle of the melt stream without the aid of static mixers, or symmetry can also be re-created along the outside of the runner, depending on the problem being solved (Figure 3). The MAX system has proven to eliminate issues associated with core-deflection, weld-lines, part warp and color uniformity as well (Figure 1 Bottom and Figure 2 Bottom).

Notes Raisbeck, "The ability of the MeltFlipper® MAX™ to enhance and change the flow inside the cavity and provide a more homogeneous melt condition for the cord tilt housings solved our cosmetic defect challenge. With MAX, we did not have to change part geometry or move the gate location.

"Since we acquired the BTI process for this program," continues Raisbeck, "we only need to clean the mold at the start of each shift, a normal procedure. This takes at most 20-30 minutes per day. Now our reject rate is less than 1%; but the best news of all is we get no more complaints about cosmetic defects from our customers. We can also inject the part a little faster without any detrimental effects. The incorporation of the MeltFlipper MAX technology will save us, in addition to a myriad of other headaches, more than \$40,000 throughout the life of this product. As a result of these cost savings, we are in the process of incorporating the technology into other ongoing and new projects."

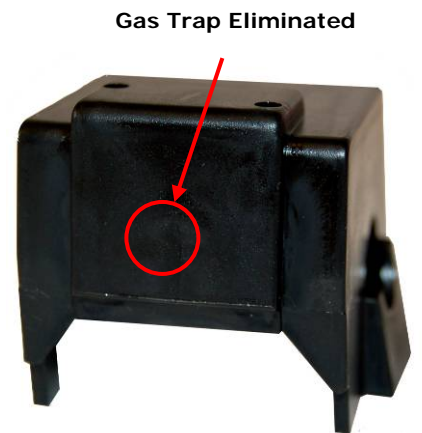
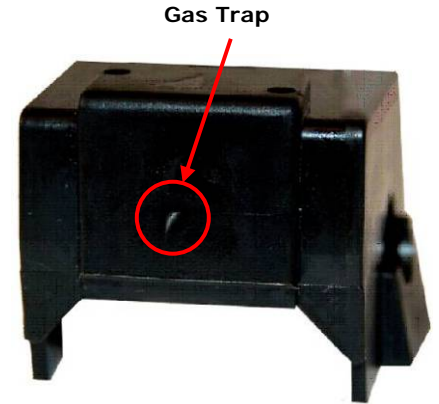


Figure 2: Top – Gas trap caused by conventional filling pattern.
Bottom – Gas trap eliminated with MeltFlipper MAX enhanced filling pattern.



Figure 3: Runner system for the 4 cavity cord tilt housing