

MeltFlipper® Case Study

Annual Savings = \$133,646 * 38% Improvement in Standard Deviation

"...MeltFlipper technology provided Avaya a cost reduction, a larger process window, and quality improvements."

- Jay Van Roy, Process Engineer, Avaya, Inc.

Customer: **AVAYA**

Case Study: Lower costs through increased cavitation

This case study comes from Avaya Inc., formerly Lucent Technologies. Engineer Jay Van Roy learned about the MeltFlipper® technology at NPE 2000. When he returned to the office, Van Roy decided to put the MeltFlipper to the test in a 16-cavity mold for a complex telecommunications connector. The objective of Van Roy's trial was to Mold high quality parts from a high cavitation mold rather than manufacture multiple low cavitation molds.



Van Roy states "The MeltFlipper technology has completely changed how I look at potential profitability. I became intrigued with the MeltFlipper technology after picking up Beaumont Technologies' literature and demo CD at an NPE. Shortly thereafter, I received an assignment to improve an existing part. The part required 16 cavities in order to meet production demands per year; my typical plan of attack would have been to continue to build multiple lower cavitation tools. But I thought this project was a good candidate for testing BTI's claims - I was excited for an opportunity to both evaluate a new technology and possibly find a cost reduction to benefit Avaya." The concept of multiple low cavitation tools worked well prior to the introduction of the MeltFlipper technology. However, as Avaya indicated with this approach, they experienced higher tooling and part cost, additional required floor space and man-power, additional capital equipment costs (machines, dryers, conveyors, thermolators, etc...), and an additional inherent variation created from multiple molds running in different presses operated by different process technicians.

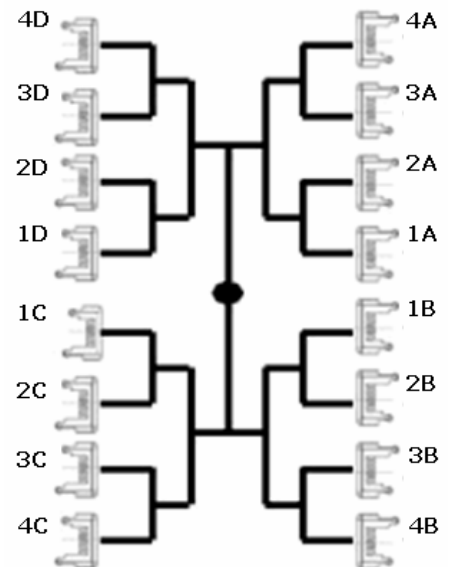


Figure 1: Top- individual telecommunications connector

Bottom - Runner layout with cavity identification according to The 5 Step Process specifications.

The part, a small connector, weighs .13 grams per part, has thin walls, and is approximately one-half inch in size. Van Roy suggested that the tool be constructed so that the MeltFlipper runner system and a naturally balanced runner were interchangeable in the 16-cavity layout (Figure 1).

Avaya first tested the mold with the naturally balanced runner configuration. With this runner configuration, Avaya saw the results they were used to seeing and what prevented them from building high cavitation molds in the past - the inner cavities were filling before the outer cavities (Figure 2). The overall imbalance was 31%. With the tolerances and PPM rates Avaya was required to maintain, Van Roy mentioned it would be impossible to meet the criteria based on the results of the short shot analysis.

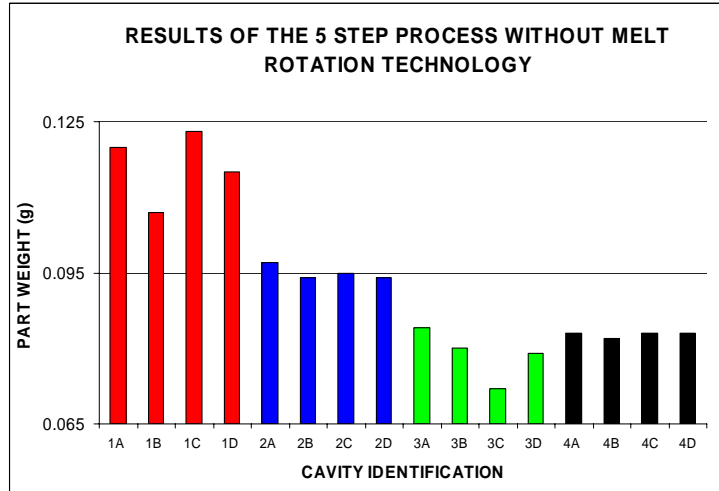


Figure 2: The 5 Step Process results of the "naturally balanced runner system" showing the 31% mold imbalance, graphed by the individual flow numbers 1 through 4.

Next, Avaya pulled the traditional runner system and replaced it with the MeltFlipper runner system, which dramatically reduced the overall imbalance to 4% on the first shot (Figure 3). Van Roy states, "To my surprise the visual balance was completely obvious. After plotting my data, it was clear that the MeltFlipper technology would provide Avaya with many benefits. What I am particularly interested in is cost reduction, a larger processing window, and quality improvement. With the MeltFlipper, I was able to use one 16-cavity mold, and enjoy a 28 percent variability improvement."

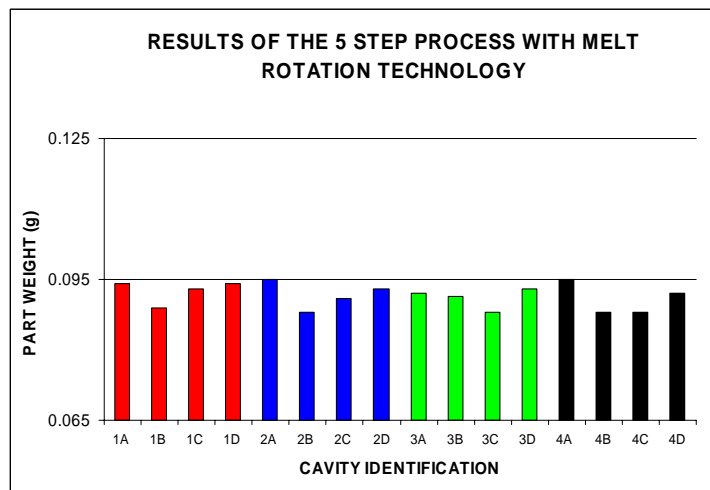


Figure 3: The 5 Step Process results of the MeltFlipper technology runner system showing only a 4% mold imbalance, graphed by the individual flow numbers 1 through 4.

Avaya also had the mold retrofitted with pressure transducers on one of the inside and outside cavities. By comparing the pressure traces, it was demonstrated that the MeltFlipper runner system provided a much more consistent pressure trace from inside to outside cavities. The overall pressure was reduced along with a significant reduction in the standard deviation throughout the run (Figures 4-6).

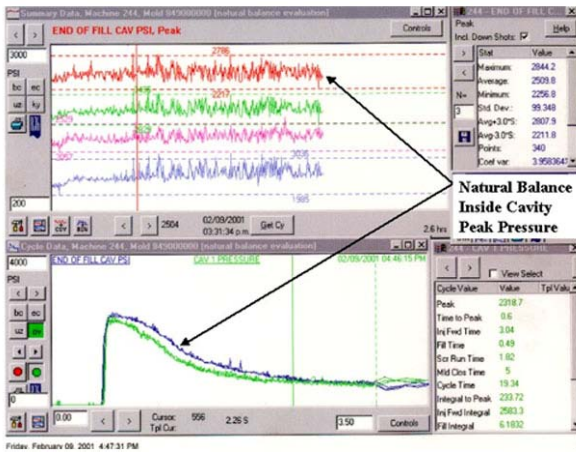


Figure 4: Pressure Trace without MeltFlipper Technology

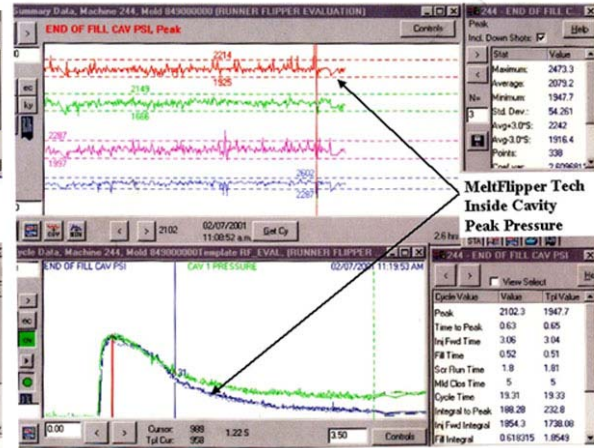


Figure 5: Pressure Trace with MeltFlipper Technology

16 Cavity Production Tool Avaya, Inc., RJG Data	Peak Pressure / Std Dev		
	Inside Cavity	Outside Cavity	% Difference
Natural Balance	2509.8 / 99.348	2321.6 / 84.795	7.5% / 14.65%
MeltFlipper Technology	2079.2 / 54.261	2150.6 / 57.848	3.3% / 6.2%
	17.2% / 45.4%	7.4% / 31.8%	

Figure 6: Top- Pressure trace of the inside and outside cavities without the MeltFlipper technology. Middle- Pressure trace of the inside and outside cavities with the MeltFlipper technology. Bottom - Summary chart of the peak pressures and standard deviations of the "naturally balanced runner system" versus the MeltFlipper runner system.