MeltFlipper® Case Study

Case Study: Moldes Mendoza

Case Description: Core shift problems resolved

Moldes Mendoza had an order for a low-volume part, a plastic medical syringe molded from clear polypropylene in a four-cavity injection mold (Figure 1). Although the mold was geometrically balanced, air entrapment and core shift were such a problem that no useable parts could be created. The parts were exhibiting a 0.014" core shift that in turn created air traps on the sides of the parts.

Figure 1: Polypropylene syringe housing

Antonio Mendoza, company director, had learned about MeltFlipper® technologies from one of his clients, Emerson Electric. Mendoza said that when he was unable to effectively artificially balance the runners in the syringe mold, he realized that the cause of the problem was not mechanical, but rather uneven material properties entering into the gates of each cavity within the mold.

Mendoza sent sample parts to Beaumont Technologies for analysis. BTI's first step was to recommend a change to the mold's runner design by moving the location of the puller pins. The pins were located within the main flow stream of the runner, creating flow restrictions and pressure drops within the runner system. BTI's engineers recommended moving the pins out of the main flow path of the runner to avoid pressure drop concerns.

BTI then analyzed the runner further and found out that the runner sizes and gates had been modified. Knowing that steel modifications are a bad approach to solving imbalance and processing issues, BTI worked with Moldes Mendoza to identify where the differences were and to ensure the runners and gates were machined to uniform sizes.

The final step in solving the core shift problem was to implement the MeltFlipper technology into the runner system. Even though the mold had a geometrically balanced runner thought to be "naturally balanced," BTI's analysis led it to conclude that each gate was being fed with different material properties, which creates uneven filling and pressures within the cavities of the mold.

"After inserting the MeltFlipper technology in the mold, we immediately saw a tremendous improvement in core shift," says Antonio Mendoza. "The parts went from having a 0.014" core shift to only a 0.002" shift, BTI's engineers and the MeltFlipper technology completely solved the problem. We are now getting four useable parts every shot.

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