



The Project:

Consumer Product

Evaluate, convert and debug an existing 16 cavity vent bushing tool to a similar but dissimilar component for overall program savings (due to cavity expansion and a material change). This vent bushing serves as the safety device in the end product that had only been previously produced on multiple 8 cavity tools. Due to the critical nature of the bushing, the tool and process needed to reproduce a part capable of holding critical-to-function dimensions within 25% of the total tolerance (re: ± 0.002 ") with 1.80 minimum Cpk.

The Overview:

Customer requested Matrix Tool provide a feasibility assessment report regarding converting an existing tool that produced a similar but dissimilar product. To complicate the conversion process, a material change was also requested. If successful, Matrix Tool was to immediately build an inventory bank of production to allow for a seamless transition regarding the material change. Lastly, Matrix Tool was also to convert multiple existing tools of varying cavitation once proven.

The Challenge:

The challenge of this project was to meet the dimensional requirements of the given product, given the existing tool design/conditions as well as property and shrinkage differences between the current



Fig 1: Full Servo Robot / 32 Cavity End of Arm Tool (EOAT)

(modified ETFE fluoropolymer) and requested materials (PPS alloy). The end product is also subjected to an annealing process which meant Matrix Tool would not only need to provide pre- and post-SPC dimensional data per shipment but also take this into

account during the steel conversion process. In addition, appropriate servo robot end of arm tooling (EOAT) would need to be implemented to ensure all cavities are removed from the back half of the tool during the ejection sequence via a vacuum system.



Fig 2: Vent Bushings

The Solution:

An existing tool was transferred to our facility for a trial sample to define the project's practicality. After the initial sample was completed, a cross functional team met and reviewed the overall tooling and molding concerns. A feasibility report and a detailed tooling conversion quotation were then provided to the customer. Upon customer approval, all tooling modifications were completed in-house and the converted tool was able to be sampled within a 3 week timeframe. After several iterative debug and servo-robot end of arm tooling samples were completed, a part was produced that met our customer's end goals. The inventory bank was then built, and the material change transition was seamless. Matrix Tool was then asked to convert all remaining existing tools to be able to meet the new material requirements with cavitations ranging for 16 to 32 cavities. Given the success of the project, Matrix Tool was awarded the long-term production on the most complex tool, a 32 cavity mold that incorporated robotics and converted end of arm tooling.

The Benefits:

The end customer was able to achieve a significant price reduction on an existing product without affecting customer timelines or demands. This 32 cavity, high production application was a good fit for Matrix Tool as it utilized personnel from all departments – engineering, tooling and plastics.

Whether a large or small project, Matrix Tool can meet and exceed your expectations!

For a quotation or additional information, contact Matrix Tool Inc: