



Case Study:

GEAR SEGMENT

Introduction

Every car motor and drive train is a complex mechanical system of over 1,000 components, yet it come down to a few critical components that ensure proper, accurate, and safe operation. The Micro gear segment is used as the actual mechanical part in an engine that translates the drive by wire command of the driver into the mechanical control system that delivers more, or less, gas into it via a fuel injection system.

If the part breaks, too much gas, or not enough gas will go into the tank. Even with the redundant fail safes designed into the system, this remains a mission and life critical sub-component and hence a vital part in the engine. Demands of this part is absolute- 100% quality with no exceptions.

The product holds special consideration as it combines a high-grade thermoplastic gear segmented plastic over molding with over a hundred dimensions and zero flash expectations. The molding contains a stainless steel metallic insert that gets mounted to the butterfly valve that carries a 6-micron surface finish. Then mechanically attached is a thin gauge copper carrier strip and an array of precious metal wires that are welded, formed, and cut to form a precise electro-mechanical contact. Any single component is highly demanding and requires an absolute mastery of its production. Micro does all of them.



Michael Tucci,
CEO and President

Micro in Action

Micro entered the industry because we could do what our competitors couldn't – make the entire thing in house through our vertically integrated processes, in house tooling and automation center, and singular supply chain.

Our competitors needed 3 separate vendors for material, and 1000 sq. feet available for the purchased automation necessary, just for this one product. We are vertically integrated and so we were able to in-source all the components. Instead of buying an expensive gear mold from a specialty house and having them run high cost production, we built our own gear molds, end of arm insertion automation, and ran the production ourselves. Instead of buying an expensive fine blanked SS insert, we made it out of a progressive die designed and built in house for cost reduction and control. Instead of purchasing an expensive automation machine from the outside, we built our own in 20% of the space that others require. We even built a backup system as the volume rose for a fraction of what the expected cost was on the outside. In the end, we had single point accountability from start to finish.

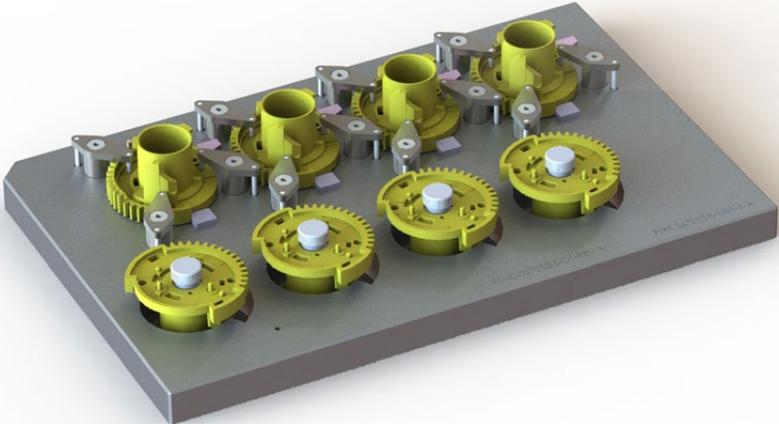
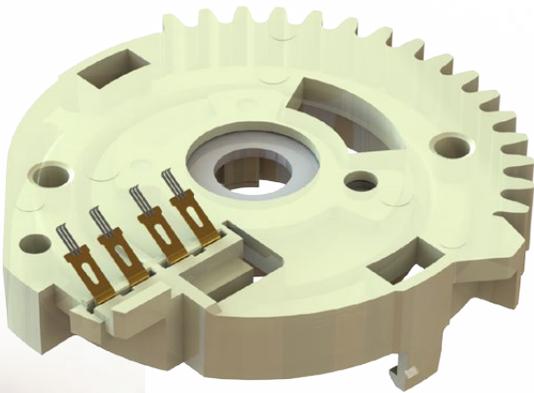
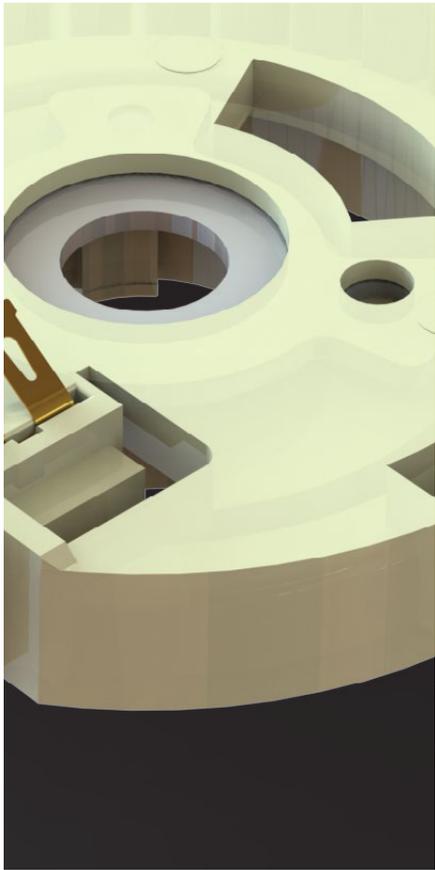
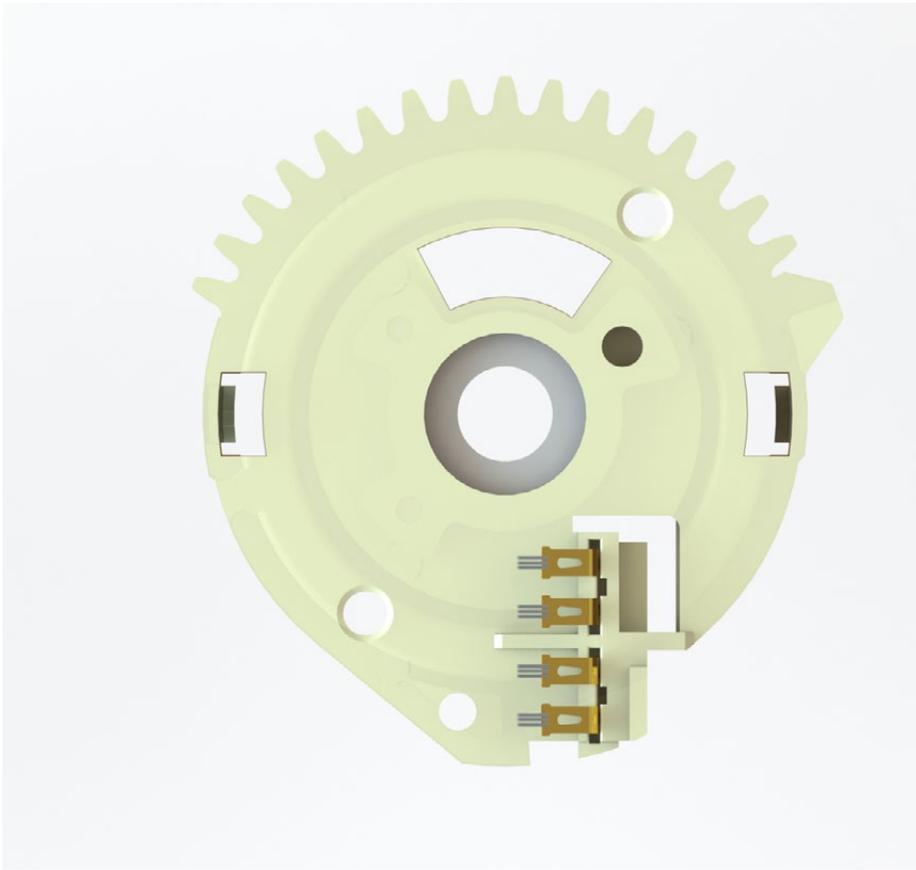
The outcome

Subsequently, we reduced the footprint of the machine required to make the part by 75% and the cost also by 75%, making it more economically viable for the customer to invest in us. The end-product looked the same as our competitor and we maintained single to zero PPM product delivery performance. How we made it however was very different and the physical footprint reduction was a big win for the team. With reduced cost and faster turnaround times, the client still uses us today to run that part.



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Contact us today

Every innovated solution is backed by the uncompromising pursuit of excellence at every phase of our manufacturing process.

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