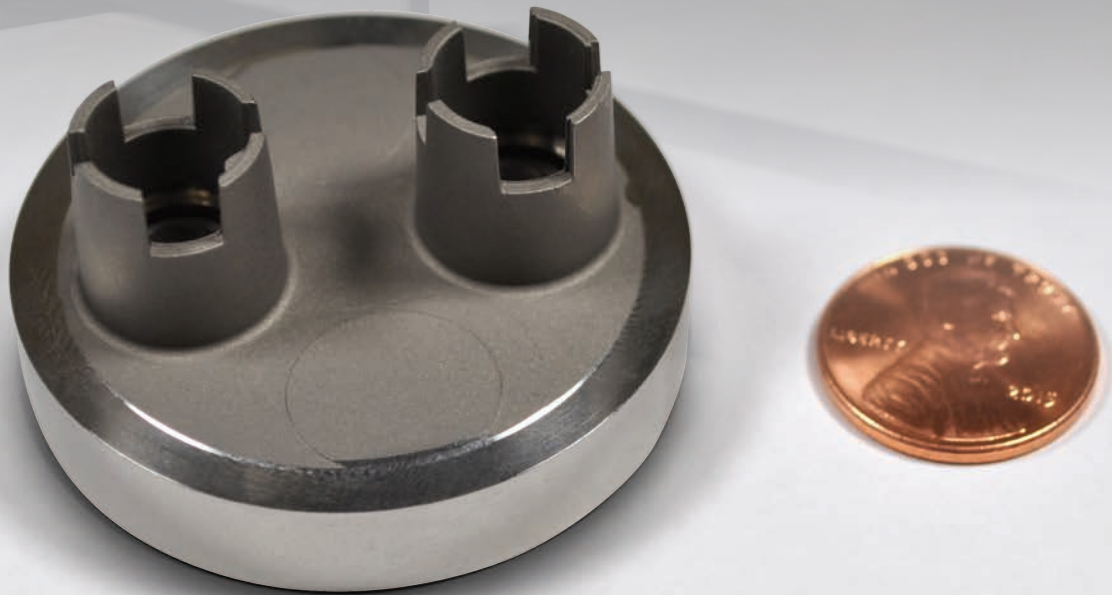




MIM HEADER



PROBLEM

The U.S. Department of Defense asked PTI to apply Metal Injection Molding (MIM) to improve an existing manufacturing process where three individually-machined metal components were laser-welded together for the production of an electronic missile housing. This assembly required a hermetic glass-to-metal seal, which demanded excellent control over dimensional tolerances, especially concentricity. Moreover, the assembly was required to be manufactured without conventional welding, which was responsible for a high percentage of component failures.

SOLUTION

Utilizing the BASF Catamold 316L MIM feedstock and PTI's exacting manufacturing process, the resulting component was manufactured near net shape, and the three components were consolidated into one, negating the need for robotic laser welding. PTI provided the client a significantly more consistent manufacturing process that eliminated multiple machining steps, delivered cost savings over the original fabrication process, enabled components to be repeatedly manufactured to close tolerances, and reduced assembly complexity. When presented with the success of the BASF process, the client asked for even more geometric functionality to be added to the tool, which resulted in a design and tooling iteration that delivered even greater cost savings and manufacturing efficiency.



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PTI (formerly Polymer Technologies Inc.) is an integrated precision injection molder of advanced polymers, metals (MIM), and ceramics (CIM) supporting the Aerospace, Medical, Defense, and Industrial sectors for over 30 years.