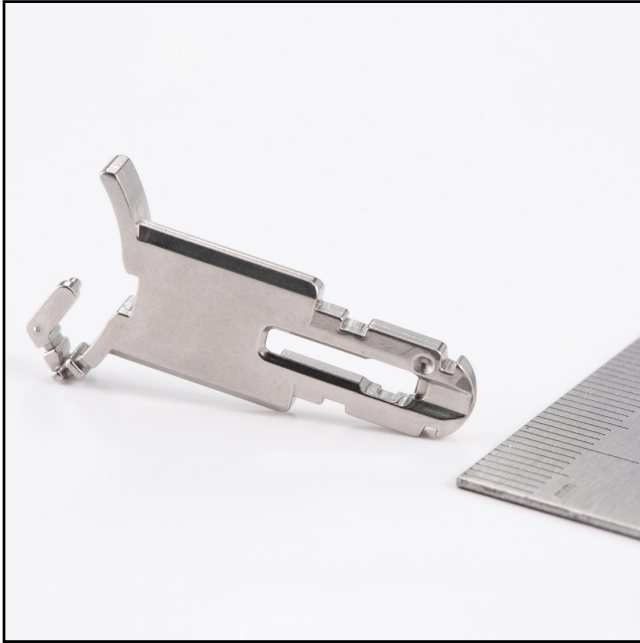


CASE STUDY



A 2021 Award of Distinction Winner in the Hardware/Appliances category for metal injection molded PM components

Key Blade

Process:
Metal injection molding (MIM)

Material:
MIM-17-4 PH stainless steel

Density:
7.4 g/cm³

Appearance:
Impeccable surface finish

End Use and Function

This key blade is used in security locking mechanisms and IT identification systems.

Fabrication

The part was produced in a single cavity mold. Sintering required a custom staging design to minimize deformation of delicate geometries critical to part functionality. Precise control of a post-sintering tumbling process was necessary to reduce deformation and prevent the removal of minute contact features at the terminal end of the component. The part requires two coining steps to ensure twelve critical dimensions meet customer requirements. Due to the nature of the part, it was imperative to achieve good stainless and mechanical properties, while also maintaining an impeccable surface finish.

Results

MIM technology was selected due to the abundance of critical and tight tolerances from a complex geometry and high-volume nature of the program. The focus was the fitment of the mating part and the aesthetic appearance of the primary visual surface. Several key geometries on the part would be challenging, if not impossible, to produce with any other manufacturing method.



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