MATRIX TOOL INC.
ADVANCED MOLDING AND TOOLING

CASE STUDIES

The Project:

Consumer Application, Metal Injection Molded (MIM) Component

Design and construction of a 2 cavity watch casing mold to produce a metal injection molded component.

The Overview:

The end customer, a large multinational watch manufacturer, was interested in applying injection molding technology to mass produce a metal watch casing that was currently being machined in Germany.

The Challenge:

The machining of the watch casing was extremely cost prohibitive due to labor intense manufacturing. In addition, the lead-time to manufacture each unit was excessive. In order to reduce production costs and manufacturing time, our customer set their sights on evaluating the feasibility of producing the watch casing as a metal injection molded (MIM) component. Our customer needed the assistance of a precision tool shop that not only had MIM experience, but one that could address the unique challenges associated with the project. The main challenges involved complex part geometry, including an undercut/reverse taper feature that historically required a second machining operation, and design FEMA concerns related to gating as no visible gating on the finished part was acceptable.

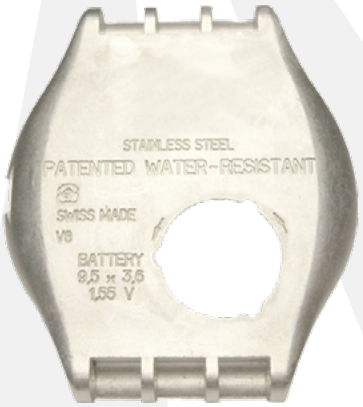

Fig 1: MIM Watch Cover

The Solution:

Utilizing Matrix Tool's engineering and tooling resources, a detailed design review was held with customer personnel to define the unique requirements of the mold design and build project. To address the complex part geometry and undercut/taper features, we utilized our CAD technology and precision electrode construction capabilities to create complex free form electrodes. We then utilized precision CNC EDM machining technology to produce and mold steel that matched print dimensions. The gating concerns were addressed through the design of a unique gate internal to the slide mechanism that forms the band-latch area on the watch casing. This allowed for gating in a non-visible location, which exceeded the customer's expectations and created a cosmetically appealing production part.


Fig 2: MIM Watch Cover

The Benefits:

Matrix Tool helped the customer achieve a dimensionally accurate, aesthetically attractive, high quality production part using the metal injection molding process. This allowed the customer to replace the labor intense machining processes with efficient mass production of the component via molding technology. Ultimately, this allowed our customer to significantly reduce both lead-time and manufacturing costs, without sacrificing the integrity of the finished metal part.

Contact Matrix Tool today to let us help solve your most difficult manufacturing challenges!

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

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