

## CASE STUDY



A 2016 Award of Distinction winner in the Electronic/Electrical category.

### Mirror Cover, Base & Middle

**Process:**  
Metal injection molding

**Material:**  
MIM-316L stainless steel

**Density:**  
7.65 g/cc<sup>3</sup>

**Tensile Strength:**  
480 MPa

**Hardness:**  
100 HRB max

**Yield Strength:**  
150 MPa

### End Use and Function

The award was given for three parts—a mirror cover, a base, and a middle—that assembled into an infrared gas sensor for methane and carbon dioxide detection that has extremely low power consumption.

### Fabrication

Molded from MIM-316L stainless steel, this new application is designed specifically for the metal injection molding (MIM) process. All parts are four cavity tools with complex matchings. These are medium-complexity parts that have an esthetic requirement on a few reflective surfaces. The part density is 7.65 g/cc<sup>3</sup>, ultimate tensile strength 480 MPa, elongation 45%, yield strength 150 MPa, and hardness of 100 HRB max.

### Results

While possible to create this part using a different process, the holes, ribs, pips, and thickness would be difficult to efficiently reproduce.

Using MIM to create this part resulted in an estimated cost savings of 20%.



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