CASE STUDY

A 2012 Grand Prize Award Winner in the Electronic/Electrical category.

Coil Housing

Process:
Conventional powder metallurgy

Secondary Processes:
Resin impregnation and zinc plating

Density:
6.8–6.8 g/cm^3

End Use and Function
This part is a soft magnetic powder metallurgy (PM) alloy coil housing used in a magnetic door closer for emergency/fire protection applications.

Fabrication
Formed as a single shape to a density of 6.8 to 6.9 g/cm^3, the new PM design replaced a three-piece assembly. Critical design features include the locations of drafts, radii, and chamfers, as well as redefining tolerances for a near-net-shape part. Secondary operations include resin impregnation and zinc plating.

Extensive product design engineering was required to convert the three piece assembly into a single powder metallurgy friendly configuration.

Results
- The one-piece design provided a 21.5% cost savings over the previous assembly.
- Conversion of a three-piece component into a single piece
- Machining scrap reduced