CASE STUDY

A 2012 Award of Distinction winner in the Hand Tools & Recreation category.

Cable-Tie Tool Parts

Process:
Metal injection molding

Secondary Processes:
Four parts required minimal reaming and coining

Density:
7.6 g/cm^3

Materials:
17-4 PH stainless steel

End Use and Function

This cable-tie hand tool assembly consists of six metal injection molding (MIM) parts—pinion, nosepiece, pawl gripper, insertable rack, cutoff cam, and short link. It is used to quickly tighten, precisely tension, and cleanly cut Nylon cable ties in manufacturing environments.

Fabrication

Made to a density of 7.6 g/cm^3, the 17-4 PH stainless steel components are produced to net shape with only four components requiring minor secondary operations such as reaming and coining. The pawl gripper, pinion, and short link are reamed to ensure a tight tolerance hole diameter. The pinion and insertable rack have tightly tolerance gear teeth, while the cutoff cam design includes several tightly tolerance profile dimensions that allowed zero draft.

Results

This part was originally made with investment casting. Upfront design collaboration between customer and manufacturer were critical for part production. Collaboration resulted in:

- an overall reduction in cost and an increase in manufacturability;
- simplified shape complexity resulting in reduced weight;
- enhanced moldability;
- and improved durability.