CASE STUDY

A 2016 Award of Distinction winner in the Hand Tools & Recreation category.

Trigger

Process:
Metal injection molding

Material:
MIM-4605 low-alloy

Density:
7.50 g/cc^3

Hardness:
49 HRC

End Use and Function
The trigger goes into an adjustable trigger system on a pump-action shotgun. The complex part geometry was a challenge overcome, but the use of metal injection molding (MIM) proved to be the best answer.

Fabrication
The MIM-4605 low-alloy steel component interacts with mating components on five different areas of the part. The extremely complex part geometry, which features multiple thickness changes and slots, required precise tooling to address sufficient machine stock for effective secondary operations. Molding of the part due to its geometry introduced mold flow problems that were solved using changes to machine stock design and effective utilization of secondary machining operations. The part density is 7.50 g/cc^3 and hardness is 49 HRC.

Results
This MIM trigger delivers savings of around 50% over the machined version it replaced. Additionally, machining this part creates an excessive amount of waste, whereas creation via MIM is negligible.