CASE STUDY

A 2012 Award of Distinction winner in the Hardware & Appliances category.

PM Rack

Process:
Conventional powder metallurgy

Yield Strength:
43,000 psi minimum

Tensile Strength:
55,000 tsi

Hardness:
65 HRB

End Use and Function
This powder metallurgy (PM) component is a complex seven-level rack used in an industrial washing machine. The rack, along with the mating gear, is what agitates the drum in the washing machine.

Fabrication
Made to a density of 6.8 g/cm^3, the component has sectional density that is kept equal within 0.08 g/cm^3. The part has a minimum yield strength of 43,000 psi and typical 55,000 psi tensile strength. The process control required a high level of tool geometry control along with minimum weight and sectional density variation at compact and a consistent sinter temperature profile.

Results
Originally a die cast part that needed extensive machining, the conversation of this part to powder metallurgy resulted in:

- A 38% cost reduction
- Enhanced precision