

1984 P/M PART-OF-THE-YEAR
DESIGN COMPETITION WINNERS

Peter K. Johnson

Metal Powder Industries Federation

Winners of the 1984 P/M Part-of-the Year Design Competition illustrate P/M's growth into new markets such as computers, wind turbines, oil/gas well drilling equipment and high performance cars. They also point out that P/M is displacing ductile iron, investment cast and machined parts because of its cost savings, special properties and reliability under demanding conditions.

The competition is sponsored by the Metal Powder Industries Federation. Eighty entries were submitted by 36 companies from six countries. The winning parts were announced during the 1984 International Powder Metallurgy Conference & Exhibition in Toronto, Canada.

Ford Air Conditioning Part Wins Ferrous Grand Prize

A P/M nickel-steel swashplate used in a six-cylinder auto air conditioning compressor won the grand prize in the ferrous category of the competition (Figure 1). Previously a ductile iron casting, the P/M swashplate eliminated four machining operations and allowed a 50% increase in heat treating productivity. The part is made by the Powder Metal Products division of Imperial Clevite, Inc., Salem, Indiana, for the Climate Control division, Ford Motor Company, Dearborn, Michigan.

The part is fabricated to a minimum density range of 6.4 g/cm^3 . It has a heat treated tensile strength of 82,000 psi (565 N/mm^2) and must withstand an axial load of 29,000 lbs. (13,166 kg).

The unique shape required special tooling. Important design criteria are the overall height, length and centrality of the hub to the wear