2006 PM DESIGN EXCELLENCE AWARDS COMPETITION WINNERS

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Winners in the 2006 Powder Metallurgy Design Excellence Awards competition were recognized for outstanding powder metallurgy (PM) parts used in automotive engines and transmissions, lawn mowers, locks, tools, generators, and mobile phones. Sponsored by the Metal Powder Industries Federation (MPIF), the competition showcases PM's cost savings, design benefits, precision, and special properties that outperform competitive materials and processes by a wide margin. This year's competition shifts the emphasis to end-market awards, replacing the materials categories of previous competitions.

ALUMINUM CAMSHAFT BEARING CAP WINS AUTOMOTIVE ENGINE GRAND PRIZE

A PM aluminum camshaft bearing cap, Figure 2, made by Metal Powder Products Company's Washington Street Div., St. Marys, Pennsylvania, for General Motors Powertrain, Pontiac, Michigan, won the Grand Prize in the automotive engine category. Designed originally for PM, the caps—two of which go into each engine—are used in GM's new high-feature V6 engine, operating in various GM brands, including the Cadillac CTS, SRX, and CTX;, Buick LaCrosse and Rendezvous; and Saab 9-3. It is the first dual overhead cam engine using a single cap across both camshafts. The cap maintains the camshaft position, radially and axially, while providing integral oil channels for cam lubrication and hydraulic control of the variable cam timing (VCT) system.

Made to a net shape, the multiple level part has a tensile strength of 117 MPa (17,000 psi) and a hardness range of 85–90 HRH. Choosing PM over an alternative manufacturing process, such as die casting, provided an estimated 50 percent cost saving by eliminating pre-assembly machining steps. The PM caps require only one line-boring step during installation.

Figure 1. *Grand Prize winners*

Figure 2. *Aluminum camshaft bearing cap*

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