



MPP Mission Statement

To create value by delighting our customers and enhancing the capabilities of the entire company.

FREE PM DESIGN SEMINARS

MPP offers free PM Design Seminars, conducted at your facility.

Design Seminar topics include:

- The PM Process
- Design Factors
- Tool Design
- Material Selection
- Optional Finishing
- Application Factors
- Comparisons to Other Metalworking Processes

To arrange an in-house seminar at your facility, call Melinda Hightower at 800-783-2420, or call one of the MPP Sales Managers listed below.

Divisions

MPP Anaheim

Anaheim, CA 800.767.9706
Herb Reyes, Sales Manager, 714.970.5500
Mark Sowerbutts, Plant Manager

MPP Canada

Blenheim, Ontario 519.676.8161
Rick Armstrong, Sales Manager, 519.676.8161
Phil Goodwin, Plant Manager

MPP Ford Road

St. Marys, PA 888.359.9992
George Shturtz, Sales Manager, 814.781.5101
Paul Vavala, Plant Manager

MPP Mexico

Querétaro, Mexico 011.52.442.217.05.03
Fernando Arnaiz, Sales and Plant Manager

MPP Ridgway

Ridgway, PA 888.809.6671
Tony Zimmerman, Sales Manager, 740.342.4512
John Mosco, Director of U.S. Operations

MPP Washington Street

St. Marys, PA 888.741.2352
Steve Patrick, Sales Manager, 814.834.5408
Dave Ryan, Plant Manager

MPP Regional Sales Managers

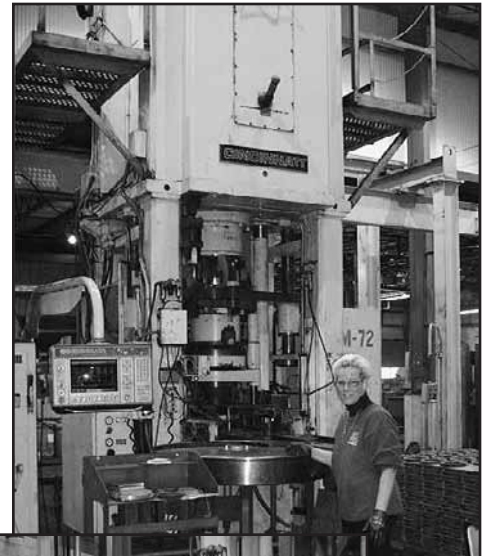
Gary Fulton, 828.441.1138
Vince Licari, 248.363.4065
John Moczalla, 815.675.0151

MPP Divisions Add Press Capacity, Robotics, Other Capabilities

Washington Street Division Achieves Results From 5S Program

MPP divisions from Pennsylvania to California were busy during the last several months of 2006 and early 2007, adding equipment and systems, including press capacity, advanced robotics, and other enhancements.

MPP's Ford Road Division has added a computer-controlled, multi-platen, 880-ton Cincinnati Compacting Press to its pressing capability. This sophisticated press allows the production of complex, multi-level PM components at high production rates. A series of moving platens facilitates the production of parts with multiple independent upper and lower levels. This can help reduce tooling complexity and help control tooling costs. The press also has features such as a powered die set exchange system that reduce set-up time and help reduce press downtime. Larger hydraulic cylinders provide greater force for controlling critical functions such as powder transfer and pressing motion control, which translate into greater control over part density distribution. All these features, when combined with precise computer control and process monitoring, allow Ford Road to improve customer response time while producing more complex parts than ever before.



This computer-controlled 880-ton press will allow Ford Road to improve customer response time while producing more complex parts.



MPP's Anaheim and Washington Street Divisions have added robotics for part handling, turning, drilling, and inspection.

Equipment additions were not limited to the Ford Road Division, as the Anaheim Division also added robotics for turning, drilling, and inspection, as well as equipment for induction brazing and high-temperature soldering, thus adding to its already outstanding capability in the area of PM joining/fastening. And, MPP's Washington Street Division has enhanced its robotic part handling capabilities, thus reducing manual handling and accidental damage, increasing productivity and controlling costs.

Washington Street has also been active with its implementation of its 5S Program. 5S stands for: Sort, Set in Order, Shine, Standardize, and Sustain. According to Jesse Azzato, Engineering Manager at Washington Street (and local "Champion" for 5S), these five principles are sometimes referred to as the five pillars upon which Kaizen is built.

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PM GEARS

MPP produces PM gears for a wide variety of applications.



ECCENTRIC GEAR

Also used in a jigsaw application, this eccentric gear component is made from pre-alloyed steel, which meets the high strength and torque requirements of this application.



RING GEARS

This sinter-hardened ring gear is part of a planetary gear system used in premium power hand tools. It replaced a heat-treated part, reducing the noise generated by gear teeth that had undergone distortion in the heat-treating process.



PLANETARY GEAR ASSEMBLY

Designed specifically for PM, this planetary gear assembly is used in automatic sliding commercial door operators. It uses eight PM components in five part configurations and meets high strength and performance standards.

MPP Divisions & Personnel Achieve Certifications Employees Also Active in Plant Communities

MPP's divisions and personnel were very active in the latter part of 2006, achieving plant-wide certifications as well as achieving individual milestones. In November, 2006, the Anaheim Division achieved ISO/TS 16949:2002 certification. ISO/TS 16949 is a globally recognized automotive sector requirement that specifies the quality system requirements for the design, development, production, installation, and servicing of products in the automotive supply chain. The benefits of ISO/TS 16949:2002 include improved product and process quality, process-based audits focusing on customer satisfaction, and global acceptance of the standard.



Anaheim Division personnel and MPP CEO Ben James (far right) pose with their new ISO/TS 16949 banner.

John Mosco has been promoted to the position of Director of U.S. Operations. In addition to the three Pennsylvania plants, Mosco assumed responsibility for MPP Anaheim. Mark Sowerbutts, Anaheim Plant Manager, reports to Mosco. Anaheim's Wally Yang, Dan Gibboney, Jeff Detsch, and Mark Sowerbutts have all achieved their PMT 1 certifications.

In November, employees from MPP Washington Street and MPP Ford Road competed to see which division could donate the most food to a local food bank. Ford Road collected 330 pounds, while Washington Street collected 315. Also, Washington Street recently held an auction to raise money for the Make-A-Wish Foundation and the Letters From Home Program. Funds raised were matched by Metal Powder Products Company. Congratulations to all!

MPP's Dr. Chaman Lall Edits Stainless Steel Publication for MPIF

MPP Vice President of Technology Dr. Chaman Lall recently served as editor of the publication "The Science of Stainless Steels Produced by Powder Metallurgy", which has been released in a searchable CD format by the MPIF (Metal Powder Industries Federation). It is a compilation of recent technical literature on the powder metallurgy of stainless steels. The 481-page publication includes articles by more than 70 authors and covers topics such as the fundamentals of stainless steel metallurgy, and PM processing and properties of a variety of stainless steels (ferritic, austenitic, duplex and dual-phase, and stainless steels by Metal Injection Molding), as well as soft magnetic applications



The CD is available for order on the MPIF web site (www.mpiif.org).

The Next Level

Improving in 2007 Over a Great 2006

As you have read elsewhere in this newsletter, 2006 was a year marked by the enhancement of our plant capabilities, accomplishments by our technical and other personnel, and innovations and investments across the entire company. And, in spite of softness in the manufacturing industry, we had a good year – due in large measure to our efforts to broaden our business base. Those efforts will continue in 2007, as we pursue our "Focused Horizons" business strategy, and meet the challenges of higher raw material and energy price pressure running through our industry. Here's to continued growth in 2007!



Ben James, President, MPP



PM GEARS

PM Makes Additional Inroads in Gear Market

Densification Processes Helps Drive Growth

In recent years, gears produced by PM have significantly closed the gap that once existed between PM and wrought gears. According to George Shturtz, Sales Manager at MPP's Ford Road Division, "They're not your father's PM gears anymore."

PM gears now achieve ultimate tensile strengths of 190,000 psi (or better) and, through the use of additional processes such as gear rolling, can also achieve AGMA ratings of Q10. In gear rolling, a near net-shape PM gear is rolled with an optimized master gear to the point where the resulting PM gear attains an accuracy that is comparable to that of the master gear. Other factors affecting PM gear quality include the more accurate molds that are possible with techniques such as wire EDM, and the use of higher-tonnage and more sophisticated presses such as the 880-ton, computer-controlled press recently installed at Ford Road.

Specifiers of gears often refer to NVH (Noise-Vibration-Harshness) as something that they want to eliminate –or at least minimize– in the gears they purchase. Surface densification is a process that can help minimize NVH and, generally, improve the quality and performance of PM gears.

MPP has a significant advantage over traditional "press and sinter" PM gear manufacturers because of its innovative, proprietary PCF (Precision Cold Forming) process. PCF is a combination of several technologies that can produce PM gears that match the performance of cut wrought gears. In a series of accelerated life, test track, and other tests, PCF-produced PM gears exceeded test goals and with minimal wear and provided better fatigue properties than wrought gears.

As the quest for stronger and more accurate PM gears continues, MPP will continue to be one of the leaders.

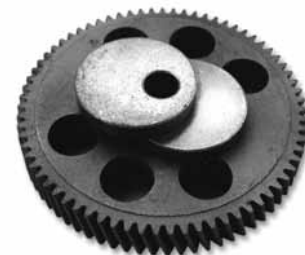


PM gears such as the ones in this assembly can perform as well as cut steel gears.



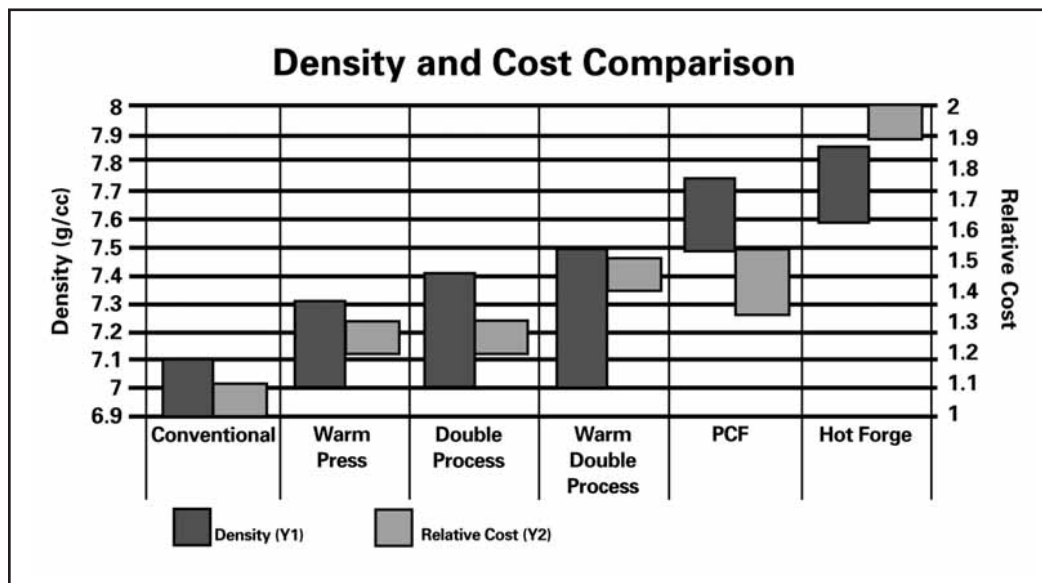
SPUR GEAR

This seventeen-tooth PM spur gear was developed to replace a cut steel gear in a high-performance garden tractor application. It is more economical and exhibits better fatigue strength than the cut gear it replaced. It was produced using MPP's proprietary PCF (Precision Cold Forming) process.



HELICAL GEAR

Designed for a leading manufacturer of dual-action electric hedge trimmers, this gear and cam assembly transfers the rotary motion of the motor into the reciprocating action of the trimmer blades. The copper-infiltrated 71-tooth PM gear has a 26 diametrical pitch and a helical angle of 15°.



Using PM processes such as our PCF (Precision Cold Forming), much denser gears can be cost-effectively produced.

Plants Add Capabilities

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Although other MPP divisions (MPP Ridgway and Ford Road, among others) have had success with 5S, Washington Street has had the most 5S activity thus far, with weeklong 5S events in the Quality Lab, Iron Molding Area, BTU Line, Aluminum Raw Material Inspection, and the Tumbling Area. During these events, cross-functional teams will descend upon a designated area, removing all waste and/or unneeded items, relaying out the area for increased productivity, cleaning and painting, writing standardized procedures, and then setting up guidelines for the area that are designed to prevent it from reverting back to its pre-5S condition.

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We welcome your comments and suggestions. Please send us the names of others who should receive this newsletter.

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MPP OFFERS FREE PM DESIGN SEMINARS

Because of the importance of end-user understanding of the basics of powder metallurgy, MPP offers free, in-house PM Design Seminars. These seminars are suggested for design engineers, purchasing and quality assurance personnel, and other specifiers of materials and components. Attendees receive the MPIF Design Solutions Guide and other valuable materials. MPP also provides lunch.

In the Design Seminar, you'll learn:

- How to save 30% - 80% compared to casting, extrusion, forging, stamping, machining, and other processes
- The basics of PM technology
- How to design for PM, including tooling design, material selection, and application factors
- How to specify PM materials
- What's new in PM
- And much, much more!

To arrange an in-house seminar at your facility, call Melinda Hightower at 800-783-2420, or call one of the MPP Sales Managers listed on Page 1.

Call 1.800.783.2420 for a free copy of our Capability Brochure

We're about to change your perspective on gear cost & performance.

Increasingly, gear designers and product engineers are capitalizing on the flexibility and economic advantages of powder metallurgy for gear applications. PM gears are found in autos, outdoor power equipment, power hand tools, appliances, office machinery, and many other applications. The PM process is capable of producing close tolerance gears with strengths of up to 1240 MPa at economical prices in volume quantities.

In comparison to the traditional gear manufacturing process, the PM process offers several advantages, particularly the elimination of machining and scrap losses. Internal configurations (splines, keys, keyways) can also be formed simultaneously with the gear profile during manufacture. PM allows the manufacture of complex-shaped parts from a variety of alloys.



This seventeen-tooth PM spur gear used in a high-performance garden tractor application was developed to replace a cut steel gear. It is more economical and exhibits better fatigue strength than the cut gear.



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Visit our web site at www.metalpowderproducts.com for more examples of MPP's know-how in manufacturing components for a wide variety of lawn & garden, heavy-duty equipment, architectural hardware, power tool, automotive, and fluid power applications.