



MPP Mission Statement

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

FREE PUBLIC P/M DESIGN SEMINARS

Denver, CO – September 16
Raleigh, NC – September 23
Milwaukee, WI – October 7
San Antonio, TX – November 4
Cincinnati, OH – November 11

For additional seminar dates, or to sign up for a seminar on-line, visit our website at www.metalpowder.com or contact Inge Bohnet at 1.800.783.2420 or one of the following sales managers:

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Rick Armstrong, Operations Manager

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St. Marys, PA 1.888.359.9992
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MPP Ridgway

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Nick Gismondi, Plant Manager

MPP Washington Street

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John Mosco, Plant Manager

MPP Opens New Technology Center

New Facility Combines Research and Application Assistance

As many readers already know, MPP recently moved “up the road” a few miles, from Carmel to nearby Westfield, Indiana. The primary reason behind the move was to provide a location that could accommodate both MPP’s administrative headquarters offices and its new R & D facility – the MPP Technology Center.

As one of the P/M industry’s technical leaders, MPP has maintained a technical center (located within one of MPP’s six plants) for many years, but its primary focus was to provide metallurgical support to the various operating divisions. With the opening of the MPP Technology Center dedicated to R & D, this role has been greatly expanded to include:

- Material development, including the development of new alloys and composites
- Testing of unconventional compaction techniques such as Precision Cold Forming
- Development of new sintering techniques
- Prototyping
- Development of proprietary products and processes

The MPP Technology Center is managed by Dr. Chaman Lall, MPP Vice President for Applications Development. Assisting Dr. Lall in the day-to-day operation of the Center is Director of Technology Howard Ferguson, a veteran of 25 years in the P/M industry. According to Ferguson, a key part of the Center’s R & D mission is the development of new higher strength alloys, particularly in P/M aluminum. The Center has a sintering furnace that is specifically devoted to aluminum, as well as “clean rooms” for the discrete handling of aluminum and ferrous powders, to prevent any contamination.

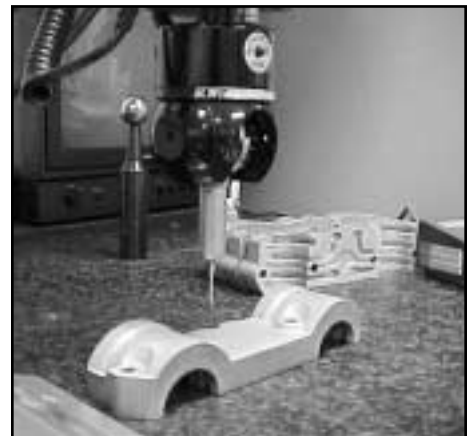
(continued on page 3)



A sample is tested for tensile strength on the tensile testing machine in the MPP Technology Center.



The Technology Center uses digital microphotography to analyze the microstructure of various P/M materials.



The Technology Center uses a computer controlled coordinate measuring machine to check the dimensions of an automotive cam cap made of P/M aluminum.



MPP CANADA PARTS

MPP Canada produces a wide variety of parts for the transportation market, including automotive and motorcycle powertrain parts, as shown below.



CRANK SPROCKET

This two-level crank sprocket is used for a double chain in a motorcycle application. The sprocket is machined while in the "green" (unsintered) state and is then sinter-hardened after machining. In the final application, it mates with the cam sprocket pictured below.



CAM SPROCKET

This cam sprocket is also machined, but in this case, machining is done after the part is sintered.



CAM & CRANK ASSEMBLY

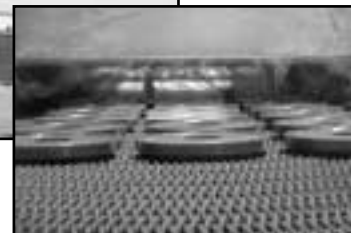
As shown here, the 50-tooth cam sprocket mates with the 25-tooth crank sprocket.

Canada Division Has Strengthened MPP Position in Key Markets

MPP's Canadian division, known as MPP Canada, has provided not only additional geographic coverage, but has also strengthened MPP's position in several of its key markets. These include fluid power, lawn & garden, and in particular, the automotive powertrain market. MPP Canada, a QS 9000 registered facility located in Blenheim, Ontario, manufactures a variety of components for automotive engines and transmissions, including clutch hubs, cam and crank sprockets, and a variety of components for exhaust gas recirculation systems (please see the photos in the margins of this page and the facing page).



MPP's Canada Division (above) produces several automotive parts such as this worm gear (right) used in an SUV application.



According to Bill Heath, MPP Vice President of Marketing, "In the 12 months since we acquired the facility, MPP Canada has proven to be an excellent fit for our strategy of producing value-added components through the application of sophisticated secondary finishing techniques. While most parts are formed to net shape and necessitate little secondary machining, there are some components that require the additional complexity that our grinding, milling, boring, honing and other operations can provide."

MPP Mexico Division Wins Three Quality Awards

MPP Mexico, located in Querétaro, Mexico, has received quality awards from customers Delphi, Gabriel, and Crown Equipment. MPP Mexico manufactures steering gear components for Delphi, shock absorber parts for Gabriel, and forklift pinions for Crown. This is the second consecutive year that the division has received Gabriel's Reliable Supplier Award.

MPP Announces Partnership with AMPAL, Inc.

MPP has announced a partnership with AMPAL, Inc., to develop new P/M aluminum powders and processes, and to further improve the performance of aluminum in powder metallurgy applications. As part of this partnership, Dr. Shuhai Huo will relocate from the University of Queensland, in Australia, where he currently participates in an AMPAL-sponsored research program, to the new MPP Technology Center in Westfield, Indiana. Dr. Huo will work under the direction of Dr. Chaman Lall, MPP Vice President for Applications Development. AMPAL is an internationally recognized leader in powder production and aluminum powder research and development.

The Next Level Putting Technology First

As you read on the front page of this newsletter, we have combined our administrative headquarters offices with a brand new Technology Center in a single facility in Westfield, Indiana. The combination of the Technology Center and the administrative offices into a single location allows us to bring our senior technical, sales, and manufacturing management into daily working contact with our R & D activities. This facility will not only improve our responsiveness to customers' technical requests, it will allow us to accomplish some specific goals, such as the expansion of our work in the use of P/M aluminum.



A. Elliott Archer, President & CEO

Our new facility allows us to follow through on a statement that I made in a speech to the Metal Powder Industries Federation last year. At that time, I said that the future of the powder metallurgy industry lies in the performance of true R & D. With this move into our new facility, we are putting those words into action.

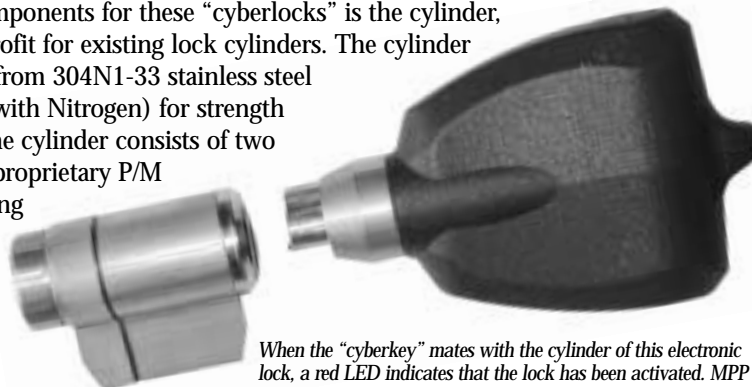


MPP CANADA PARTS

MPP Produces Critical Components for Intelligent Locks

While lock hardware has always been a major market for MPP, the terrorist attacks of September 11, 2001 have produced a new era of security requirements and created a new generation of enhanced security systems, providing additional growth opportunities for MPP. One of these is the category of "intelligent" locks that combine hardware with electronics. These locks have imbedded memory chips, which record and report data on exactly who accessed the entry point and at what time the event occurred. One of the fastest-growing sectors within the intelligent lock market is large retail, industrial, and in particular, rental vehicles that could be filled with explosives and used for terrorist attacks.

One of the more critical components for these "cyberlocks" is the cylinder, which is sold as a 100% retrofit for existing lock cylinders. The cylinder sleeve is produced by MPP from 304N1-33 stainless steel (304 stainless steel alloyed with Nitrogen) for strength and corrosion resistance. The cylinder consists of two parts that were joined by a proprietary P/M joining technique, eliminating a drilling and tapping operation and reducing overall part count. The 2-part design accommodates the creation of an internal pocket profile that is critical to the design of the lock. The two sections are held to a tolerance of +/- .003. MPP's traditional competence in the manufacture of very small, complex geometry lock parts is enhanced by its ability to meet the magnetic requirements of this new generation of electronic locks.



When the "cyberkey" mates with the cylinder of this electronic lock, a red LED indicates that the lock has been activated. MPP produces the outer sleeve of the cylinder for the "cyberlock" from two parts connected by a proprietary P/M joining technique.



A/C COMPRESSOR COMPONENT

This copper-infiltrated steel component is part of the drive for an automotive air conditioner compressor.



CLUTCH COMPONENT

This component for an automotive clutch assembly is heat-treated after production. It features 24-tooth gearing on the internal diameter of the hub.

New Technology Center (continued from page 1)

In addition to the aluminum processing furnace, the Technology Center boasts a number of other sintering furnaces and presses. These are combined with a machine shop equipped to give MPP a full-service pilot plant for the production of certain new parts. One of the sintering furnaces is a high temperature furnace, which is a prerequisite for MPP's work on soft magnetic materials and stainless steels.

The pressing and sintering equipment is complemented by a state-of-the-art Instrument Laboratory, where an impressive array of instruments includes stereo microphotography for microstructure analysis, carbon/oxygen/nitrogen analyzers, microhardness testing equipment, coordinate measuring machine, equipment to measure tensile and impact strength, and proprietary equipment to evaluate wear resistance on bearing materials.



Carbon, oxygen, and nitrogen analysis is performed in the Instrument Lab of the Technology Center.

Another focus at the Center is the improvement of P/M gears. Normally, the traditional "press and sinter" method of P/M gear production cannot produce the same level of gears as precision grinding, so the MPP Technology Center is currently working on a proprietary process to improve P/M gears from their current AGMA 8 levels to AGMA 10 or 11. The process also improves surface densification.

With all the emphasis on material and process R & D, an uninformed observer might assume that the MPP Technology Center is operating as some kind of a powder metallurgy "think tank." Not so, says Ferguson. "Our primary mission is to use applied R & D to support our plants and our customers. In the final analysis, if it doesn't benefit a customer, why do it?"

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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 P/M DESIGN SEMINARS

Because of the importance of end-user understanding of the basics of powder metallurgy, MPP offers free P/M design seminars. These seminars are suggested for design engineers, purchasing personnel, and other specifiers of materials and components. Attendees will learn P/M design fundamentals, and will receive copies of the MPIF P/M Design Solutions Guide, MPP's P/M Design Ideas Kit, and other helpful materials. Lunch and materials are free of charge.

We also offer in-house seminars in your facilities. Seminars are limited in size, so register early.

PUBLIC SEMINARS

- Denver, CO – September 16
- Raleigh, NC – September 23
- Milwaukee, WI – October 7
- San Antonio, TX – November 4
- Cincinnati, OH – November 11

For additional upcoming seminars visit our web site at www.metalpowder.com

IN-HOUSE SEMINARS

To arrange an in-house seminar at your plant or office, call 1-800-783-2420 or call one of the sales managers listed on page one.

Call 1-800-783-2420 for a free copy of our Capability Brochure

At Metal Powder Products, we're on the cutting edge.

Both cutting edges to be exact. A leading manufacturer of dual-action electric hedge trimmers commissioned MPP to design and produce this original P/M gear and cam assembly. And because this assembly requires no machining or finishing, it reduced their production costs and improved their bottom line.

This is the kind of innovation you can expect when you employ more Certified Powder Metallurgy Technologists than any other P/M company in the U.S.

If you've got an application that demands innovative, cost-effective solutions like this one, call us...we're on the cutting edge.

Call for a free copy of our Capability Brochure, 1.800.783.2420 or visit us on the web at www.metalpowder.com



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.

Visit our web site at www.metalpowder.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.



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