



"If our customers aren't successful, then we aren't successful."



NetShape Technologies, Inc. is a leading expert supplier of highly engineered precision powder metal MIM components used in numerous industrial applications worldwide. A global company, NetShape-MIM continually develops its technological and innovative leadership position within the powder metal (P/M) industry refining its capabilities as a full-service provider.

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Global Experts in Metal Injection Molded Components

全球性粉末金属另部件专家

NetShape Technologies, Inc. Worldwide Operations

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Campbellsburg, IN • Falls creek, PA

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Metal Injection Molding
MIM

*Your reliable engineered solution
to highly complex part requirements*

*Global Experts in Metal Injection
Molded Components*



NETSHAPE
Technologies, Inc. - MIM



The NetShape MIM Difference

What truly sets NetShape-MIM apart is experience—an understanding of not only the technology's many capabilities, but also how to apply them to each customer's specific component needs in order to achieve the expected results. Nobody is better qualified to bring these benefits to your business than NetShape-MIM, a leader in providing industrial component production solutions.

As a Six Sigma company, NetShape-MIM continually searches for opportunities to improve the quality of our services, our operations, and our product performance. We add value to MIM's inherent benefits by carefully controlling all aspects of the process from sourcing and blending metal powders to sintering and finishing.

NetShape-MIM uses all standard MIM alloys and materials augmented by a growing range of custom materials developed specifically for unique applications. We also combine standard molding machinery with multi-cavity dies and sliding side cores, enabling us to support each customer's most complex, high-volume requirements.

Because NetShape-MIM's customer base spans industries as diverse as agriculture, power tools, hydraulic power, and aerospace, we are accustomed to turning complex designs with exacting specifications into reliable, cost-effective components.

Global Experts in Metal Injection Molded Components

Why NetShape MIM?

- Industry leader in engineering unique components for production.
- Fast development of alloys & new materials.
- Environmentally friendly water debind.
- Rapid and economical prototype development system.
- Continuous sintering suited for high volume production.
- Renowned metallurgical experts.
- Flexible processing addresses large and small parts.
- Resources available for the largest production requirements.

MIM



Global Experts in Metal Injection Molded Components

MIM is your engineered solution for small, complex metal components.

Consider The Alternative

- MIM costs less than CNC.
- MIM produces better feature detail than investment casting.
- MIM provides more shape complexity than stampings or screw machining.

Try Our Conversioneering™

Utilizing a comprehensive, engineered, step-by-step process, NetShape-MIM can convert existing manufactured components to either powder metal or metal injection molding technology, often times saving between 10-50% over other processing technologies without compromising performance.

Times change. Technologies change. But there are some things you can always count on for quality, reliability, and value.

For more than 20 years, MIM has been a standard process for manufacturing complex components that meet the diverse and demanding requirements of industries around the world. This

proven powder metallurgy process costs less than CNC, produces better feature detail than investment casting, and offers more shape complexity than stampings or screw machining.

MIM Characteristics

Although MIM can be utilized across a wide range of components, the best applications are typically small in overall size and less than 50 grams in weight. Tolerances are +/- 0.5% for dimensions held to a 1.33 Cpk. Higher tolerances may be achieved through secondary operations.

MIM components are near full density, giving them excellent mechanical, magnetic, corrosion, and hermetic sealing properties. Secondary operations such as plating, heat treating, and machining are easily applied to meet high component tolerance requirements. Visit <http://www.netshapetech.com> for a in-depth interactive MIM process presentation.

NetShape MIM Markets Served

- Hand Tools
- Medical
- Firearms
- Automotive
- Electronics & Telecom
- Defense
- Lock Hardware
- All users of small, intricate, high-temperature alloy parts

The MIM Process

- **Mix** – Blend fine metal powders with proprietary ingredients to create viscous feedstock.
- **Mold** – Form complex shapes using standard injection molding tools and equipment.
- **Debind** – Prepare molded components for high temperature sintering.
- **Sinter** – Subject components to temperatures up to 1600°C to achieve up to 99% densification.
- **Finish** – Add standard engineering detail as needed (e.g., plate, heat treat, black oxide).

A more in depth introduction is available on our web site at <http://www.netshapetech.com>.

The Bottom Line: True Customer Value

Is MIM right for your complex component needs? Let NetShape MIM help you find the answers. We have the technical know-how, the production resources, and the industry experience to solve any MIM production challenge.



ALLOY DENSITIES

About the size of your thumb



MIM Rule Of Thumb

- < 50 grams.
- +/- 0.5% tolerances for dimensions held to a 1.33 Cpk.
- Higher tolerances may be achieved with secondary operations.

NetShape MIM Materials

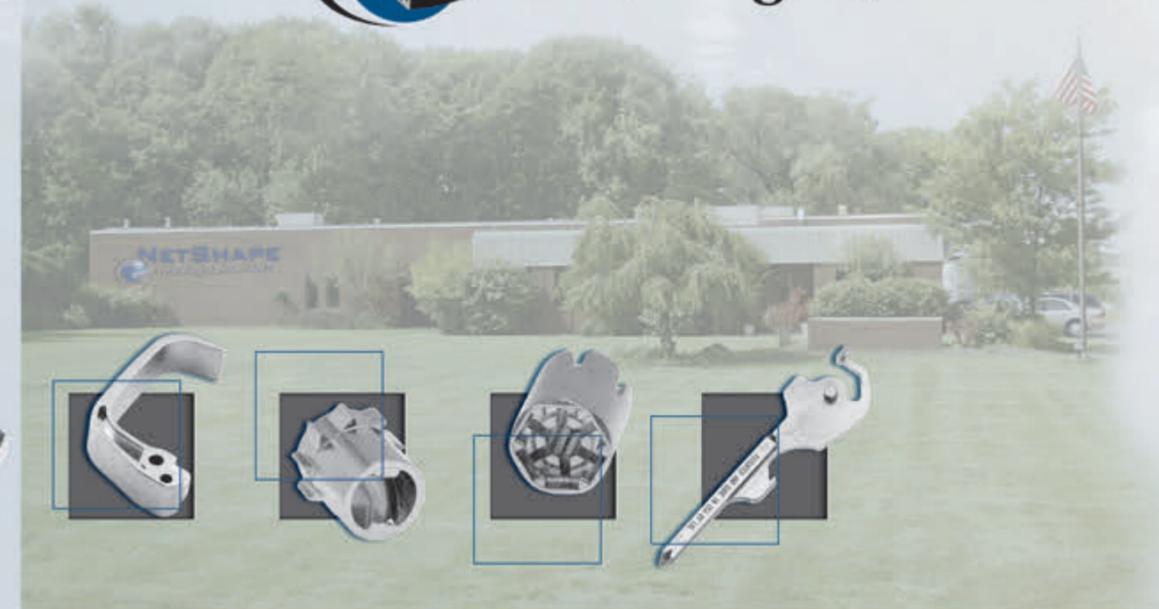
- **Stainless Steels**
 - 316 L, 17-4 PH, 420, 434
- **Low Alloy Steel**
 - 4605, 4105, 2200
- **Controlled Expansion Alloys**
 - Invar, F-15, Alloy 42
- **Superalloys**
 - Inconel® 625, Hastelloy® X
- **Soft Magnetic Alloys**
 - Fe-Si, Fe-Ni, Fe-Co
- **Tungsten Alloys**
- **Copper Alloys**

Custom Alloys Available Upon Request

MIM > A proven, established, reliable technology for more than 20 years.

NetShape > Invested in MIM, committed to excellence, customer driven.

NETSHAPE
Technologies, Inc. – MIM



NETSHAPE TECHNOLOGIES, INC. – MIM MANUFACTURING FACILITY