



Tune up

for top performance

Höganäs high precision Fe-Cu-C toolbox
for improved operational excellence

Höganäs 

A boost for your PM business

There are two fundamental ways to improve profit: reducing costs or increasing sales. We believe we can help you do both. We have been at the forefront of PM technology for more than 70 years, and our high-precision toolbox for customizing Fe-Cu-C mixes is a proof of our constant search for better solutions. Discover how it can take your business performance to the next level.

Take your PM production to a higher level

Maximizing profit in PM production is mainly about optimizing the output by achieving consistently tighter tolerances and minimizing machining work and scrap levels. Our high-precision toolbox for customizing Fe-Cu-C mixes enables you to get a powder composition that perfectly meets the physical and mechanical demands of your specific application. Providing benefits such as significantly improved dimensional stability and copper distribution, it secures the highest possible raw material utilization and takes your PM production to previously unseen levels.



The high
precision
toolbox

Inspire
industry to
make more
with less

Höganäs is the global leader in innovating new PM materials and applications and driving the market for PM solutions. Our goal is to expand the market for metal powder technology by finding new applications through improved performance and technological advancement. We do that through close cooperation and partnerships, thorough understanding of application needs and design aspects, and by adding process development and powder material innovations to the equation.

What are your main goals?

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Create complex parts
with high demands

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Increase production volume
with existing equipment

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Reduce cost for scrap

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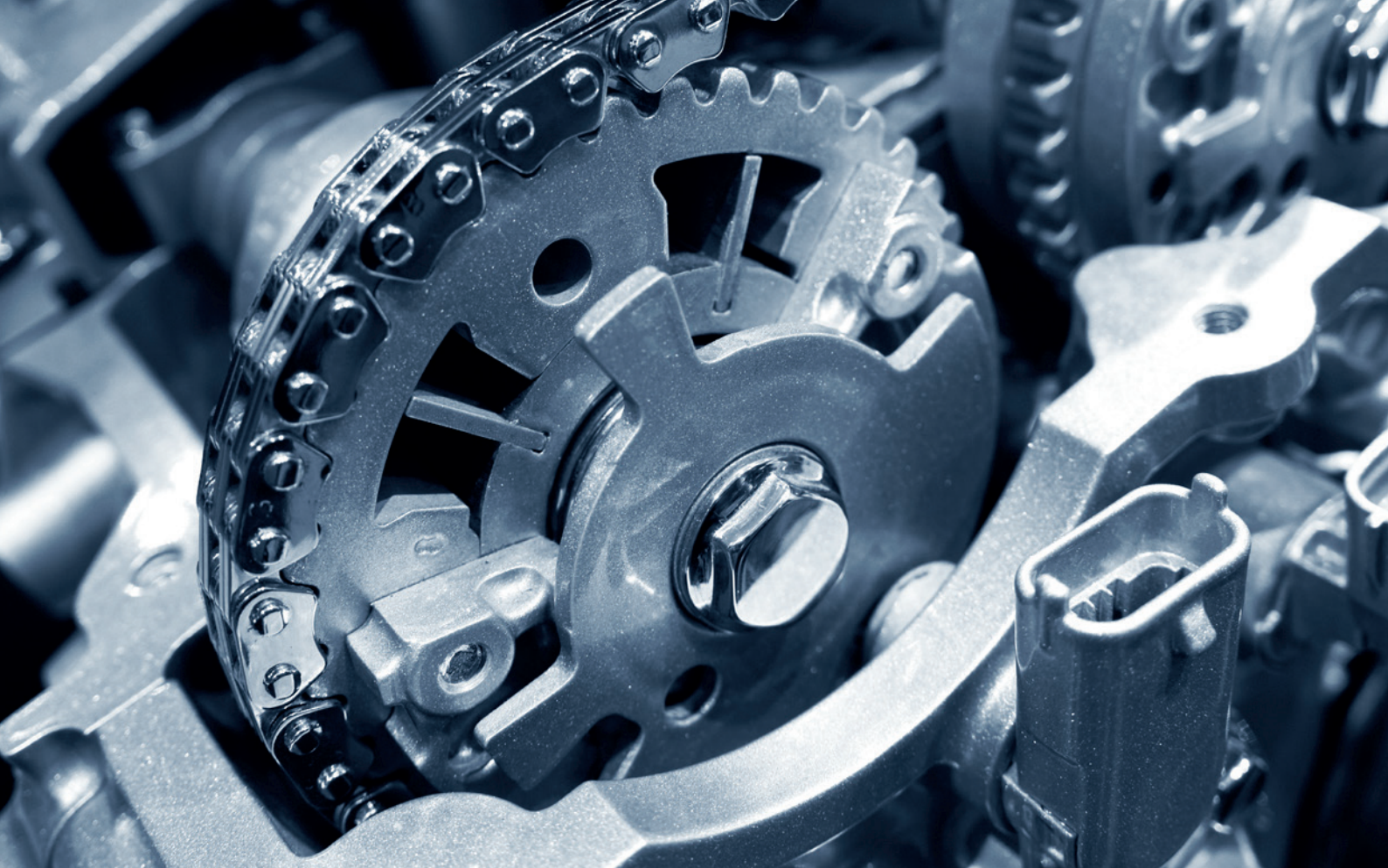
Improve component quality

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Achieve better sustainability

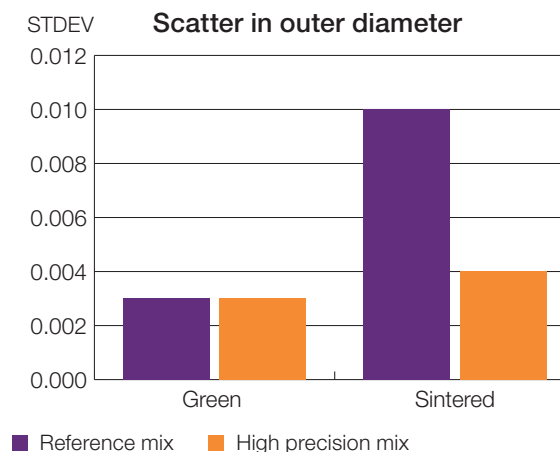
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Increase profitability

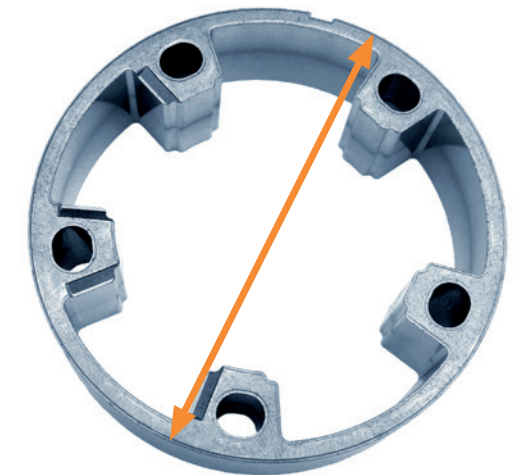


Create complex parts with high demands

Imagine being able to create components that would be impossible or too costly to produce any other way, such as new, advanced VVT parts or carriers. With Höganäs' high precision toolbox for tailored Fe-Cu-C mixes you can manufacture more complex geometries with net shaped features sometimes unattainable through other metal forming processes. In addition, you can produce parts more economically while ensuring superior surface finish and other metallurgical properties.



Significantly improved dimensional stability will lead to reduced processing costs.



Density is one key to success

The number one parameter for improved product properties is high and even density within and between sintered components. As density is increased, almost all properties, including hardness, strength, fatigue life, ductility and toughness are improved.

Höganäs' high precision toolbox offers enhanced filling characteristics and a superior distribution of the alloying elements thus ensuring high density, excellent part-to-part uniformity and good dimensional stability. State-of-the-art lubrications systems facilitate the forming and ejection of complex parts, minimize the risk for green crack initiation, reduce tool wear and improve surface finish.

Meet the highest demands

At Höganäs, we firmly believe that powder metallurgy has the potential to shape the future of industrial manufacturing and its products. Our high precision toolbox is being used for production of complex components such as VVT parts, sprockets and carriers. Are you facing demanding precision and performance requirements? Let us help you design the right powder composition for your application and reap the benefits.



"We've been able to reach results that not only meet, but widely surpass my expectations! Dimensional stability has been improved by at least 40%."

Simon Tan | Pilot Center Supervisor | Höganäs in China

Increase production volume with existing equipment

The main challenge of the PM industry is to be able to combine higher output with lower cost of production. Often, equipment is not used anywhere near its true capacity. Some of the biggest losses are planned stops due to setups and adjustments, reduced equipment speed and unplanned stops due to breakdowns. Höganäs' high precision toolbox lets you tap in to the hidden potential of your production.



Access untapped potential

Höganäs high precision toolbox is based on press-ready powder mixes produced in large-scale batches with excellent batch-to-batch consistency. This minimizes the need for readjusting the press when changing a powder batch, improving your overall equipment effectiveness.

Faster and more homogenous filling of the die will allow you to increase production speed without compromising on quality. Tests have shown that it is possible to increase the component output from the press with up to 20%. Consistent, fast flowability is also the key to reducing weight scatter, which means a reduction in green scrap.

Less and faster machining saves money

As our high precision toolbox greatly improves dimensional consistency, you can reduce both the amount of material and machining needed. The toolbox also includes unique machinability enhancers that increase cutting tool life and allow for faster machining.

Let us help you tailor the powder composition to the requirements of your specific application and discover how to run your production faster and with fewer stops.



“Our lubricant systems giving high green strength significantly facilitate machining prior to sintering, which results in considerable reduction of machining costs.”

Åsa Ahlin | Manager Organic Material | Höganäs in Sweden

Reduce cost for scrap

For many manufacturers, a certain amount of scrap is considered an inevitability. It is something that just happens as a natural consequence of the manufacturing process. While some scrap is inevitable, you shouldn't put up with more wasted time and money than needed. Höganäs' high precision toolbox helps you increase the quality of your output batch and reduce scrap as much as possible.

Secure uniform density

Scrap in powder metal processing is primarily caused by failures and malfunctions during die filling, compaction, ejection or sintering. Uneven filling of powder in die cavity may for example lead to non-uniform density and larger dimensional scatter while inadequate green strength results in green crack formation during ejection and further handling.

Improved filling lets you not only achieve better density distribution but also reduces the weight scatter and thereby the amount of green scrap. Every percent less scrap means substantial savings with a direct benefit on your bottom line.

Tailor your mix for optimum performance

State-of-the-art lubrication systems facilitate the forming and ejection of complex parts, improving surface finish and reducing green scrap. By carefully choosing the right powder mix composition, we can also help you reduce the risk for inducing green cracks during part clamping.

Höganäs' high precision toolbox allows production of parts with very close tolerances and a minimum of scrap. Featuring advanced powder bonding technologies and improved Cu distribution, the mixes not only improve the dimensional control after sintering but also decrease the distortions and crack formation after heat treatment.



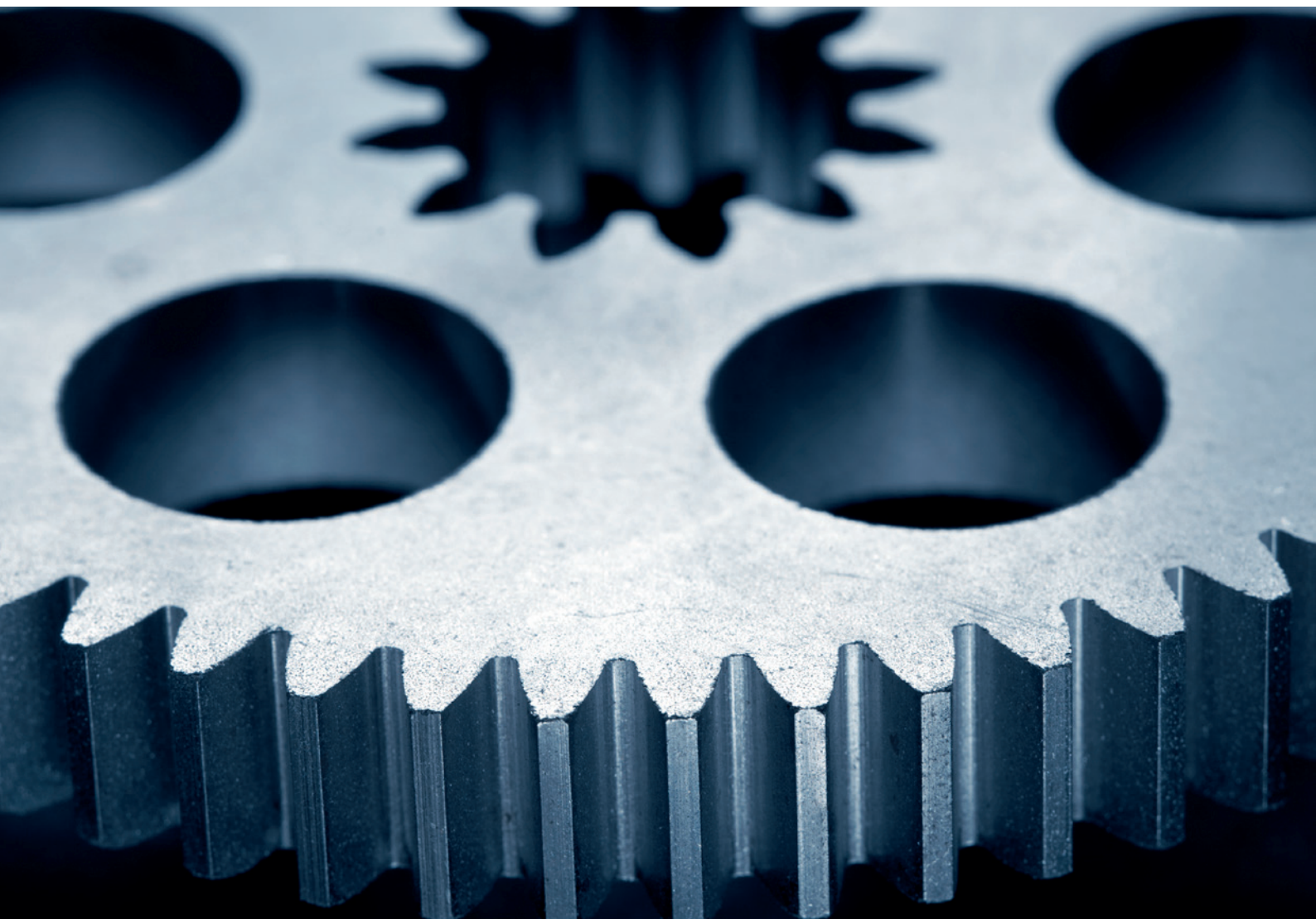
“We work closely with our product and process development so that we can provide our customers with mixes that improve density and reduce weight scatter. Every percent less scrap matters.”

*Fredrik Görtz | Area Manager Customer mixes
Höganäs in Sweden*



Improve component quality

The general trend toward tighter tolerances for sintered components means a stronger focus on improved density and density distribution. Höganäs' high precision toolbox features improved Cu distribution and smaller pore size, which in turn allows for high density structures with good dimensional control. As porosity and pore size decreases all strength properties are improved, especially fatigue properties of the sintered or heat treated component.

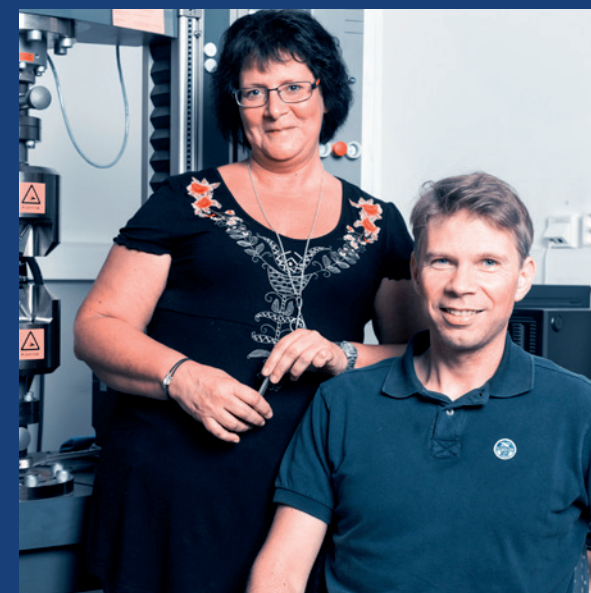
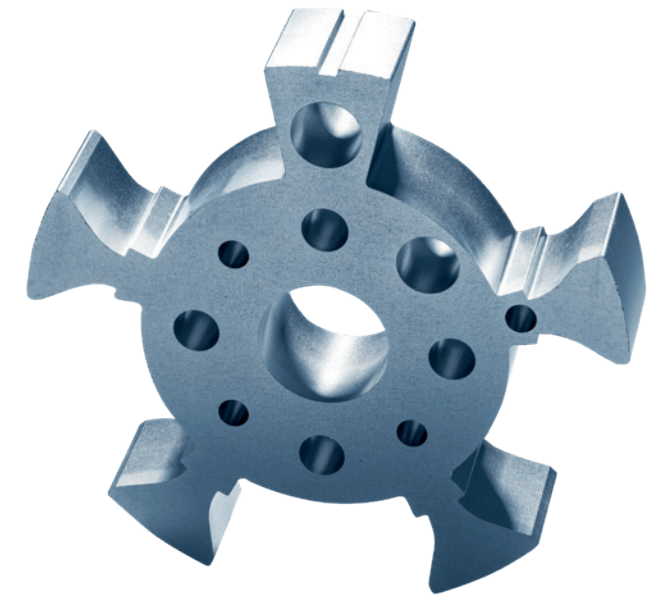


Less distortion, no blistering

Designed to give a superior density and Cu distribution, our generation Fe-Cu-C powder mixes reduce the dimensional scatter after sintering. After heat treatment, distortion and blistering are significantly reduced or even eliminated.

Spotless finish

Our high precision toolbox also features non-hydroscopic machining enhancers, which offer high resistance to corrosion and reduced burr formation. Specially developed lubricants further reduce the risk of defects and provide a superior, spotless surface that minimizes post-processing costs.



“Elongation, tensile strength and fatigue strength have all improved thanks to the decrease in porosity we’ve been able to achieve with the high precision toolbox.”

*Karin Ljung and Peter Ohlsson | Lab technicians
Höganäs in Sweden*

Achieve better sustainability

PM is a recognised green technology as it conserves both energy and materials. The net shape feature of the PM process eliminates the waste associated with conventional machining that can result in as much as 40 percent of materials being machined away and discarded. Our high precision toolbox is yet another step towards delivering sustainable value, well in line with Höganäs’ concern for the environment.



Make more, scrap less

Höganäs high precision toolbox for customizing Fe-Cu-C mixes greatly improves dimensional stability. The results are a more consistent quality, very high material utilization, reduced need for machining and minimized scrap levels. Nearly 100% of the starting materials reach the finished product. As yields of both green and sintered components are increased, energy use per kilogram finished part is reduced.

Our toolbox also fully eliminates zinc emissions to the atmosphere. The lubricants used in our Fe-Cu-C mixes are free of metallic stearates, and lead to less furnace depositions, which in turn reduces the need for maintenance.



“We have always focused on using environmentally efficient technologies and reducing energy use in our processes. The high precision toolbox now also makes it possible for our customers to reduce their material and energy consumption.”

*Gustav Eek | Environmental and Energy Engineer
Höganäs in Sweden*

Increase profitability

PM is a highly cost effective method of producing complex parts at, or close to, final dimensions. It wins the competition based on its higher material utilization, reduced number of processing steps and lower energy consumption. In an ideal case, it makes it possible to form advanced geometrical shapes and hold close dimensional tolerance control, which greatly reduces the need for machining.



Improved powder flow and filling



Improved dimensional stability



Facilitated machining



Facilitated green handling



Improved density and strength



Reduced impact on the environment



Lowest total cost
Increased profit



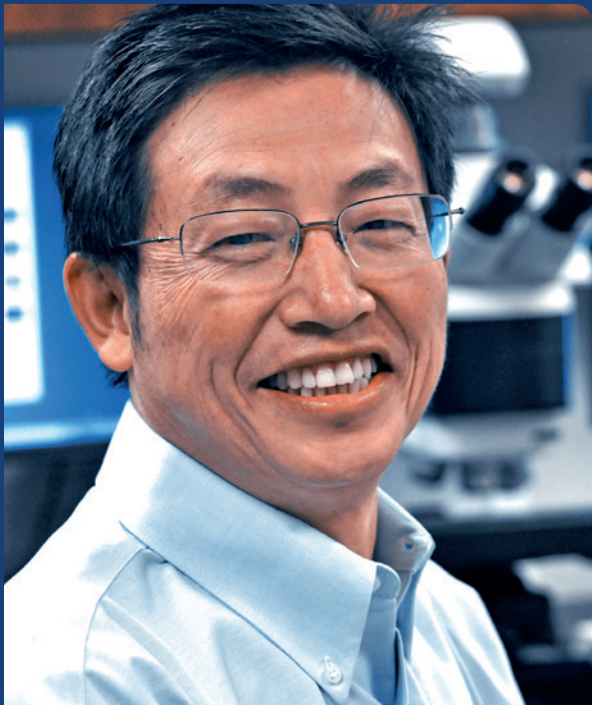
Trust the leader

Höganäs is the world leader in metal powder technology. Our high precision toolbox for customizing Fe-Cu-C mixes is a proof of our constant search for solutions that will take PM to the next level.

Here's how it can help you improve your operation for higher-quality parts, reduced costs and greater profits.

- Create complex parts that would otherwise be impossible to produce
- Reduce production costs by using press-ready mixes
- Achieve the highest possible material utilization and minimize cost for scrap
- Greatly increase cutting tool life with the right machinability enhancers
- Gain superior control over component microstructure to ensure high and consistent product quality
- Manufacture products closer to net shape and minimize the need for machining
- Increase production volume with existing equipment thanks to better powder flowability, improved batch to batch consistency and faster compaction
- Minimize energy use per kg of finished part
- Improve the sustainability of your business and reduce your impact on the environment

Want to know what's in it for you? Contact your Höganäs representative to find out.



“What if I told you we can make your tools last twice as long as today?”

Bo Hu | Manager Product Development | Höganäs in the US

Inspire industry to make more with less

Höganäs' vision is to inspire industry to make more with less. Metal powder technology provides endless opportunities; not only does it enable our customers to reduce their material and energy consumption, but it also helps them use new and better techniques that make final products more efficient and less expensive. In short, metal powders are a resource-efficient alternative, suitable for many industries – that's one of our contributions to a more sustainable world.



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