

Fabricating Custom Components

Aerospace and Defense
Applications



HELANDER
PRECISION METAL COMPONENTS

Fabricating Custom Components for Aerospace and Defense Applications

At Helander Precision Metal Components, we specialize in forming hollow metal parts in a variety of shapes and sizes. Our niche includes the metal spinning and hydroforming of parts and components for a broad range of sectors, including aerospace and defense.

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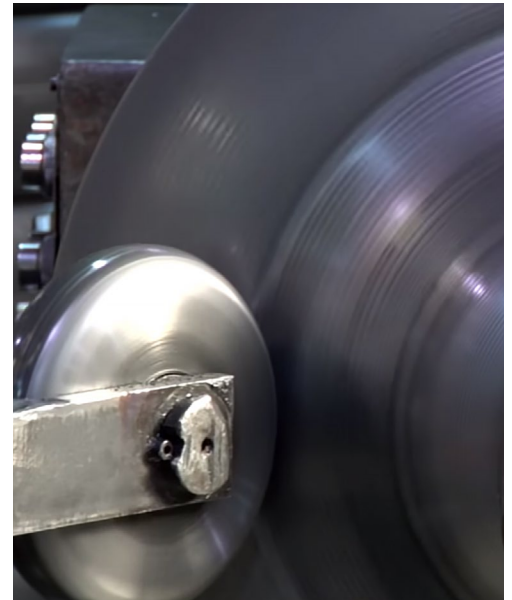
Our state-of-the-art fabrication equipment, highly trained staff, and advanced facilities allow us to consistently mass produce high-quality items with repeatable accuracy and precision, meeting the strict standards of each industry.

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Components for the Aerospace & Defense Industries

Few industries place greater emphasis on durability and reliability than the defense and aerospace industries. Metal components in commercial and military aircraft need to be able to withstand extreme pressures and temperatures. Additionally, these components must be manufactured to the highest quality within tight tolerances to achieve and maintain the extremely low failure rates required by these industries.

Helander Precision Metal Components uses state-of-the-art machinery and techniques to attain manufacturing tolerances within 0.003 inches, adhering to the stringent standards of the aerospace and defense industry. Due to the strength and durability requirements of aircraft design, we regularly work with high-grade metal alloys, such as 321 stainless steel, titanium, and 7075, 6061, and 5052 aluminum with thicknesses between 0.018 inches to 2.00 inches.



The aerospace and defense industries are also known for their intricate and complex parts. Our hydroforming and metal spinning processes are capable of fabricating difficult-to-produce components that are impossible to achieve using conventional metal stamping methods. Our hydroforming facility is capable of handling a wide variety of products with dimensions up to 20 inches in diameter and 10 inches in height.

Hydroforming is one of the most efficient ways to manufacture products for the aerospace industry. For instance, the Boeing 787 Dreamliners consist of several parts such as frames, joggles, loading system parts, and brackets that can easily be created using this metal forming process.

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Metal spinning can also be used to fabricate several types of hollow shapes, such as spheres, cones, cylinders, and parabolic shapes. These shapes are often found in military and aerospace applications, including aircraft housing units, personal protective gear, and potable water storage tanks.

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To complement our hydroforming and metal spinning services, we also offer a variety of metal inert gas (MIG), tungsten inert gas (TIG), soldering, and automated seam welding services, allowing us to precisely weld components with repeatable accuracy while maintaining tight tolerances.

Custom vs. Standard

We utilize a combination of hydroforming and metal spinning to produce custom parts and components of the highest quality to meet or exceed our customer's specifications and expectations. Our processes offer numerous advantages over conventional metal stamping.

Standard

First, the tooling in standard metal stamping lacks flexibility. This means that once the tooling has been created for a specific part, it can only be used for that application. Any changes that need to be incorporated into the product design would require the construction of an entirely new die and tooling, thereby increasing cost and production time.



Traditional stamping also requires more tooling assemblies. The tooling in metal stamping consists of two parts: a core half and a cavity half. This results in higher upfront tooling costs, making short production runs (less than 1000 pieces) particularly expensive.

The other issue with having more tooling parts is the increased lead times. Additional tooling production means increased production time and, by extension, increased manufacturing cost. Further adding to the overall cost is the amount of material wastage produced by metal stamping. The metal sheet overlap required by the stamping process can result in material wastages of up to 20%, depending on the application.

Furthermore, conventional metal stamping is incapable of producing the surface finishes required for sanitary parts and applications. Metal stamped products are often plagued by defects such oil canning, dog-earring, twisting/warping, and surface contamination.

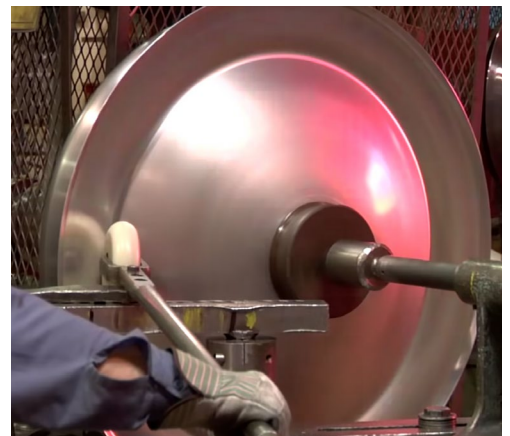
Custom

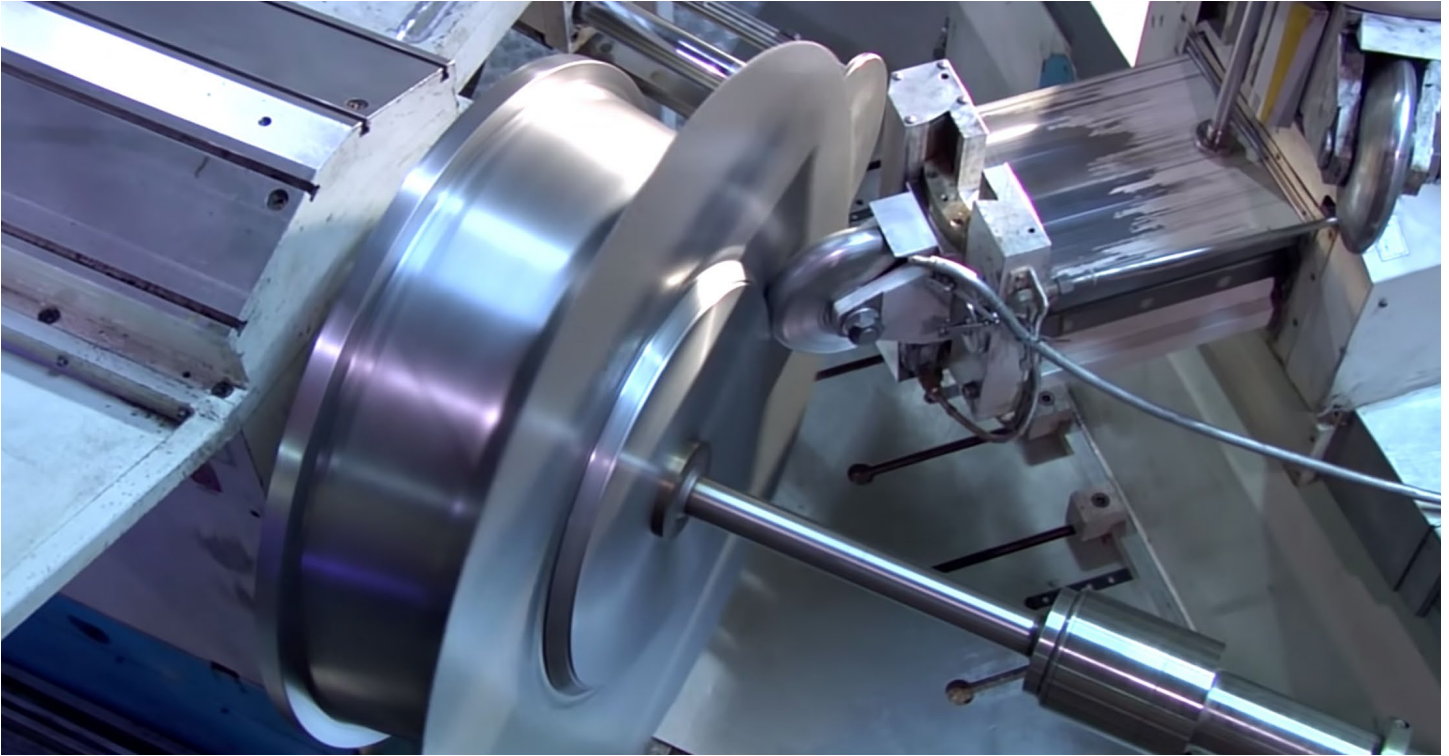
One of the main benefits of hydroforming and metal spinning is the reduced demand for custom tooling. Both methods require a single tool which reduces the project lead time and overall costs associated with tooling design and manufacture. Singular tooling also allows for more flexibility with regards to design adjustments. Tooling changes can be completed in days with minimum impact to the project schedule.

Further cost savings can also be obtained from reduced material wastage. In contrast to metal stamping, which requires material overlap, blanks for hydroforming and metal spinning can be precut to the desired dimensions before forming operations are performed. Wastage from these processes typically ranges from 0% to 10% maximum.

Metal spinning, in particular, is renowned for its low-cost manufacturing process. CNC controlled, power-assisted manual forming can create components from a single piece of sheet metal using inexpensive tooling with little to no wastage.

Another benefit of hydroforming is the quality of the final product. Hydroformed products benefit from enhanced strength properties due to strain hardening. Strain hardening also helps reduce a defect generally associated with metal stamping known as spring back. Hydroforming also produces parts with superior surface finishes, making them ideal for sanitary applications.





Benefits of Working with Helander Precision Metal Components

For over 80 years, we have provided small businesses and corporations with custom hydroformed and metal spun products. During this time, we have established ourselves as a leader in metal forming and fabrication services for a range of high-demand industries.

Our qualified and highly skilled team of engineers and technical experts can custom fabricate the most complex components to meet or exceed even the most demanding industry standards. Our strict quality management systems also ensure that all products that leave our facility are consistently manufactured to the highest quality.

In addition to reviewing the technical specifications of your project, our team will also advise on the business aspect. We will work closely with you, maintaining constant lines of communication throughout each phase of your product's development—from conception to completion. This way, we ensure that the final product meets your unique specification.

If you would like to learn more about our custom hydroformed or metal spun components for aerospace and defense applications, [contact us](#) or [request a quote](#).

Learn More

Superior Quality. Advanced Machinery. Highly Skilled Technicians.

All of that and more encompass the name of Helander Metal Spinning Company.

For over 80 years, Helander has been a major partner to a variety of Fortune 500 companies and small businesses, providing them with metal forming and fabricating services.

Our long history of production excellence has been built by continually adhering to our customer's rigid specifications. Quality is – and has always been – our emphasis.

Our niche is forming cylindrically shaped parts ranging from 1.00" diameter to 72" in all types of metals and production quantities. Helander's core business competencies are metal spinning and sheet hydroforming (deep drawing).

We work with the aerospace industry, high-end furniture manufacturers, Tier 2 and 3 automotive companies, the medical sector, and agricultural industries. Our emphasis is on providing our commercial, aerospace and defense customers with superior service, no matter the industry. We focus our efforts on customer service, prompt deliveries, and efficient performance.

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