HLH PROTOTYPES PROTOTOOL PRODUCTION

FORGING

OVER 30 YEARS

MANUFACTURING PROTOTYPES FOR CUSTOMERS IN MORE THAN 100 COUNTRIES

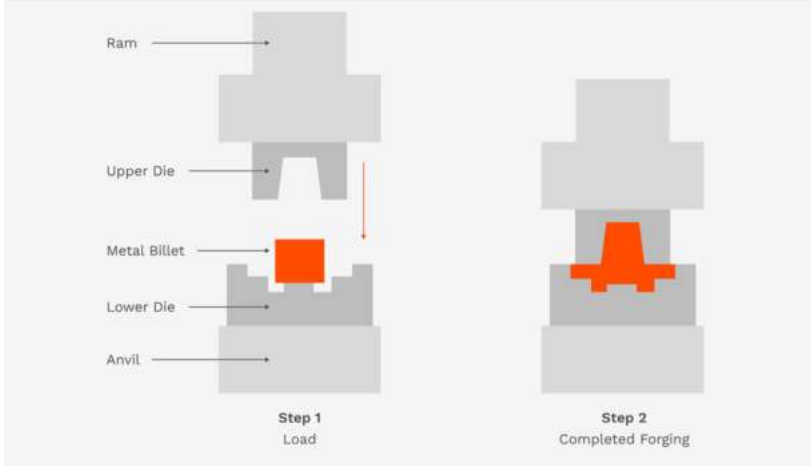
Whatever your prototype or prototyping requirements are we can provide you with inexpensive and rapid results.

WHAT IS FORGING?

Forging is one of the oldest forms of metalworking. It produces parts and components that are stronger than those that are machined or cast. As metal is shaped during the forging process, its internal grain structure deforms to follow the general shape of the part or component.

The hot forging technique yields a wide range of forms, surpassing other forging methods. Additionally, the production of dies for this process is quite inexpensive, making it highly suitable for short production runs and intricate components.

Presses use either mechanical or hydraulic pressure to apply continuous pressure on forging dies. This kind of equipment requires a 50,000 ton driving force to vertically squeeze metal into die cavities with controlled high pressure. Instead of hitting the metal repeatedly to deform it, the metal is slowly pressed into the dies.



Advantages of Hot Forging

Improved malleability: Heating helps to increase the intermolecular spaces between the metal particles. This makes the workpiece more malleable and easier to fabricate into an intricate product.

Reduced strain hardening: Raised temperatures reduce strain or work hardening, a common feature in the cold forging process.

Enhanced properties: During hot forging, the metal is heated and reshaped, which reorganizes its internal grain structure. This process eliminates imperfections, making the material stronger, more durable, and better able to handle stress and impact.

Disadvantages of Hot Forging

Metal surface reaction: High temperatures cause the metal surface to oxidize, which may require extra polishing or descaling.

Dimensional inaccuracy: Due to irregular thermal expansion and contraction, hot forging can make achieving very tight tolerances difficult.

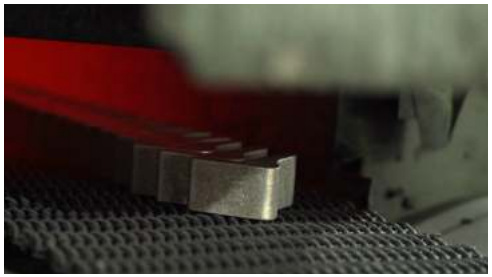
Reduced tool life: This process accelerates the wear of the forging tools and dies, resulting in an increased need for repairs and replacements.

Special equipment and skilled workers: Hot forging setups may require special tools and experienced forgers to manage the process. This raises the capital needed to invest in equipment and personnel.

FORGING PROCESS

Billet/Ingot Preparation

Billets or ingots with varying cross-sections serve as raw materials for the forging process.



Heating the Metal

A blank piece of metal is heated in a furnace or forge until it reaches its plastic deformation temperature.

Deformation

Using presses or hammers, the heated material is forced into a die cavity that matches the desired shape of the component being forged.

Stamping and trimming

Any excess material, known as flash, is trimmed away, and the part may undergo additional machining or heat treatment processes to achieve the desired specifications.

Finishing

The component may require finishing operations, such as machining, trimming and surface treatment, before it is fit for use.
Polishing, Plating, Machining, Anodizing, shot, sand blasting, zinc plated, oxide, galvanized etc.

QC

Final inspection of the forged parts, including dimensional checks, visual inspection, and other NDT methods, to ensure they meet all quality requirements.

What Metals That Can Be Forged

Material Model	Tensile Strength/mpa	Yield Strength/MPa	Elongation / %	Suitable for process and characteristics
7075 aluminum alloy	455-530	385-470	6-8	Hot forging, used in aerospace, tanks and other fields
2014 aluminum alloy	440-470	380	6	Hot forging, used in automobiles, high-speed rail and other fields
6063 aluminum alloy	245-275	195-220	10-12	Cold forging or hot forging, 3C products and other fields
6061 aluminum alloy	290-320	250-280	9-10	Cold forging or hot forging, electric vehicles and bicycles, etc.
6082 aluminum alloy	315-340	280-300	8-10	Hot forging, automobiles, motorcycles and other fields

Industrial Applications of Hot Forging

Hot-forged products are often used in the automotive, agricultural, aerospace, and construction industries where strength and endurance are essential.

HLH PROTOTYPES

Medical Treatment - Drive Gears

Service: Forge+CNC

Material : 7075 Aluminum Alloy

Surface Finish : Sandblasting, Polishing

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Mountaineering buckle

Service: Forge+CNC

Material : 7075 Aluminum Alloy

Surface Finish : Sand Blast, Anodize

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Scooter - Parts

Service: Forge+CNC

Material : 6061 Aluminum Alloy

Surface Finish : Sand Blast, Black Anodize、polishing

Industrial Applications of Hot Forging

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Bow and arrow

Service: Forge+CNC

Material : 6061 Aluminum Alloy

Surface Finish : Sand Blast, Black Anodize、polishing

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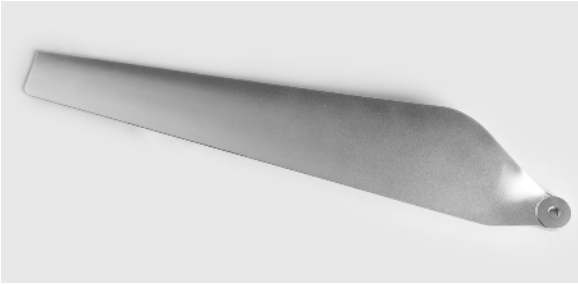
Bicycle Shoulder Cover

Service: Forge+CNC

Material : 6061 Aluminum Alloy

Surface Finish : Sand Blast, Black Anodize



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UAV Blade

Service: Forge+CNC

Material : 7075 Aluminum Alloy

Surface Finish : Sand Blast, Anodize

Industrial Applications of Hot Forging

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Battery tray

Service: Forge+CNC

Material : 6061 Aluminum Alloy

Surface Finish : Polish

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Front pedal frame connector

Service: Forge+CNC

Material : 6061-T6 Aluminum Alloy

Surface Finish : Sand Blast, Polish

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Outdoor Supplies

Service: Forge+CNC

Material : 6061 Aluminum Alloy

Surface Finish : Sand Blast, Polish

Industrial Applications of Hot Forging

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Motorcycle Handle

Service: Forge+CNC

Material : 6061 Aluminum Alloy

Surface Finish : Polish, Sand blasting,Hard anode

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Mountaineering buckle

Service: Forge+CNC

Material : 7A04 Aluminum Alloy

Surface Finish : Polish, Anodize, Sand Blast

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Car - knuckle fork

Service: Forge+CNC

Material : 2024 Aluminum Alloy

Surface Finish : Polish

Starting A Metal Forging Project

OVER 30 YEARS

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If you're interested in producing custom metal parts or components and think that metal forging may be the best option for you, don't hesitate to give HLH a call. Our experienced support team members will go through your project requirements with you, help you determine the best course of action, and provide you with a free quote for your project. Contact us today to schedule a consultation.

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