

COMPANY INTRODUCTION

1. History

- * In 2007, Zhuzhou ZZ Import and Export Co., Ltd. (ZZ HARDMETAL) was established: Focus on the export of tungsten carbide products.
- * In 2011, the Brazilian Branch (ZZ Comércio Importação e Exportação Ltda.) was established: To provide Brazilian customers with faster and better service.
- * In 2014, Zhuzhou Old Craftsman Precision Alloy Co., Ltd. was established: Focus on producing tungsten carbide blank, brazing carbide, custom carbide product. Gather excellent talents, brand-new equipment, and integrate craftsman spirit into products! At the same year, we began the production test of the carbide brazing.
- * In 2015, HIP furnace was adopted to production, the carbide blanks quality highly improved.
- * In 2018, build new working shop, involved a large number of advanced equipment, A complete production line from ball mixing-pressing-sintering-machining-brazing finished, , to provide one stop purchase service for tungsten carbide products and tungsten carbide brazed products.
- * In 2022, solar roof installed, to be an environmental factory.

2. Goal and Culture



Since 2014, Zhuzhou Old Craftsman Precision Alloy Co., Ltd was founded. We are professional on carbide blanks, precision machining parts and carbide brazed products. We produce the carbide products with 100% virgin material and all products are HIP sintered. We guarantee the quality from each process. We only like to bring the qualified products and best service to all of our customers. As carbide products manufacturer, we are very proud of our culture: altruism, mindfulness, empty cup.

Altruism ——we focus on improving ourselves skill and technique. By serving customers we fulfill ourselves.

Mindfulness ——we have righteous thoughts and keep positive actions. We never stop our foot on the research and development on the carbide brazing products. We would like more and more customers replace the high energy consumption materials with our products, to save the cost and protect the environment.

Empty cup —— Knowledge is infinite, we eager to learn, we know development can only be achieved through learning.

3. Factory and Equipment:

Zhuzhou Old Craftsman Precision Alloy Co., Ltd, a professional tungsten carbide manufacturer combined with R& D, production, sales, technical services. Adhering to the spirit of "Craftsman", develop the advanced products through the sublimation of cemented carbide traditional crafts and the exploration of modern cutting-edge technology.

As a one-stop solution provider of carbide products and vacuum brazed wear part. We control the quality from the source of material, adapting 100% high quality virgin powder for all the products. Market demand-oriented, the company takes technology and innovation as the driving force, and devotes itself to high-quality products and sincere customer service, thus to enhance its core competitiveness. Factory area of 4,000 square meters, with all kinds of facilities of powder-mixing, pressing, semi-machining, sintering, machining and brazing process. All production processes are controlled by ERP and MES system according to ISO9001:2015.

1)Tilting wet mill:



Size	Quantity
300L	2
200L	4
100L	2

We have four tilting wet mills; can mix 14.4Ton powder every month.

2)Pressing machines:



Size	Quantity
6 Ton	2
16 Ton	2
25 Ton	3
100 Ton	2
200 Ton	1
500 Ton	1

Most above machines are automatic ones, having high output. Take 200Ton automatic pressing machine as examples, it can press 500-1000Kg per day.

3) Sintering



The advanced computer-controlled HIP furnaces are applied to provide more pressure during the sintering process in order to get denser structure.

4) Machining Machines



*Used for semi-machining of the carbide blocks





Name	Quantity
CNC machining center	5
Program controlled surface grinder	3
Universal tool grinder	1
Electric discharge machines (EDM)	3
CNC Engraving and Milling Machine	1
Small grinder for surface and universal	2
Vacuum welding furnace	3

5) Brazing Equipment

Name	Quantity
Vacuum Brazing furnace	4
High-Frequency brazing	2
Middle- Frequency brazing	1

6) Testing Equipment



We have the full inspection equipment. Each batch of products has the inspection of density, hardness, bending strength, cobalt magnet, magnetic force, Metallography
Except above machines, we also have some other small ones, for example, the ultrasonic cleaner, manual cutter, etc.



Density inspecting



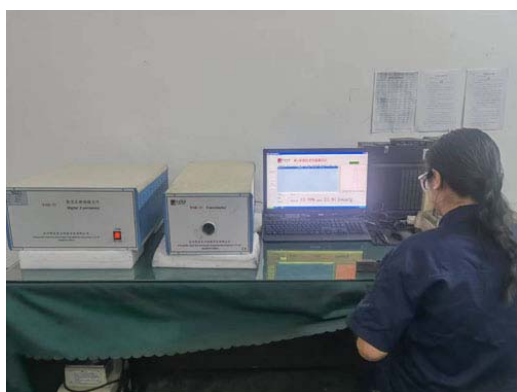
Hardness Inspecting



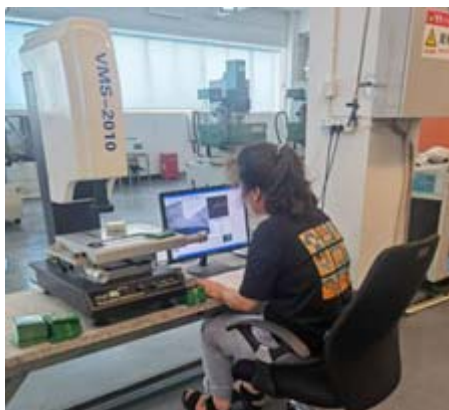
Metallography Inspecting



Bending Strength Inspection



Cobalt Magnetism Inspecting



Vision Measurement



Ultrasonic testing



Production Calibration Ruler

4. Main Products:

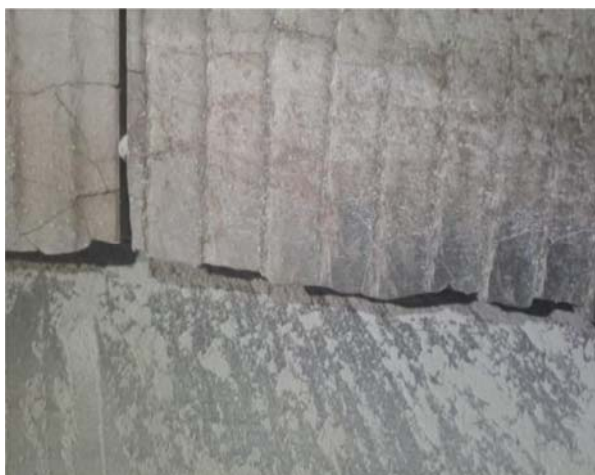


Liners for transfer Chute



Liners for HPGR Feed Chute





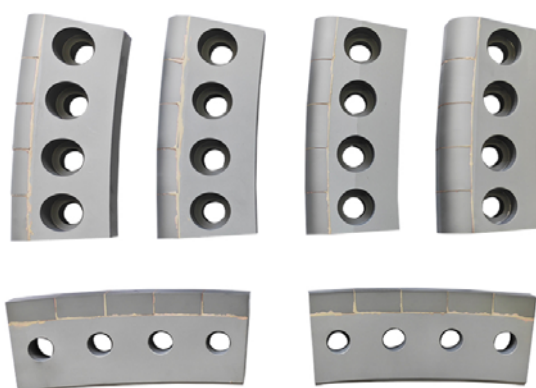
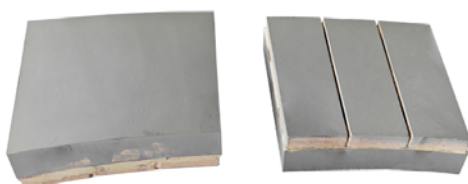
Liners for Conveyor Shirt



Drag liners for Transfer Conveyor

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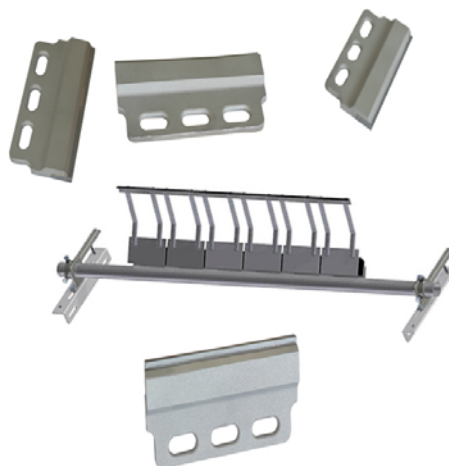


HPGR Flange and Edge block

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Conveyor Belt Scrapers

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Rock Drilling Tools - DTH Drilling

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Head shape: planar, concave, convex
Cutter type: dome cutter, parabolic cutter, bullet cutter, sharp cutter

No.	Diameter (mm)	Button profile	Gauge button	Front buttons	Button angle	No. of Flushing holes Dia. (no.*mm)
LD45A-Φ115	Φ115	Dome cutters	7Φ16	6*Φ14	38°	2*Φ18
LD45A-Φ140	Φ140		8*Φ16	7*Φ14		2*Φ20
LD55A-Φ152	Φ152		8*Φ18	8*Φ15		2*Φ20
LD65A-Φ165	Φ165		8*Φ18	8*Φ16		2*Φ22
LD65A-Φ178	Φ178		8*Φ18	6*Φ16		2*Φ26
LD65A-Φ190	Φ190		10*Φ18	8*Φ16		2*Φ26
LD85A-Φ203	Φ203		10*Φ18	8*Φ16		2*Φ30
LD85A-Φ245	Φ245		12*Φ19	12*Φ16		2*Φ30



The center sinking type drilling bit is mainly used to deal with special geology such as loose soil, hard rock, and underground water content.

Bit shank	Hole size (mm)	Pressure Mpa	Speed (r/min)	Shape	Spline	Button type
RE004	112-127	1.2-2.5	30-60	Center sinking type	8	Dome cutters
RE542	113-130	1.2-2.5				
PR52	130-146	1.5-3.0				
PR54R	135-150	1.5-3.0				

Diamond composite dome cutter bits in the gravel field, footage of more than 1200meters, real image wear status

Use cases

Our product is applied to a gravel field, drilling into granite formations. The average footage of the hard alloy DTH hammer is 100-150 meters, and the average footage of the composite cutter DTH hammer is 1200 meters, which is 5-10 times that of the hard alloy DTH hammer.

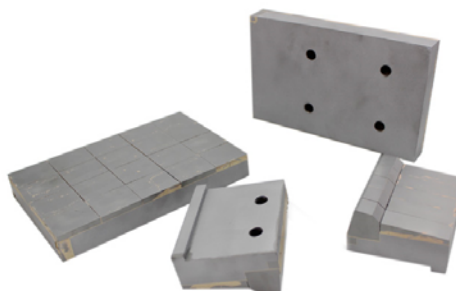
The efficiency is improved by 30%-40% compared to the tungsten carbide, and the comprehensive cost-effectiveness advantage is outstanding. On the same drill bit, the LD series and ordinary series have cutters arranged, and it can be seen that the ordinary series has cutters chipping and break-age, resulting in less wear and tear; The LD series has no cutter breakage and obvious wear.



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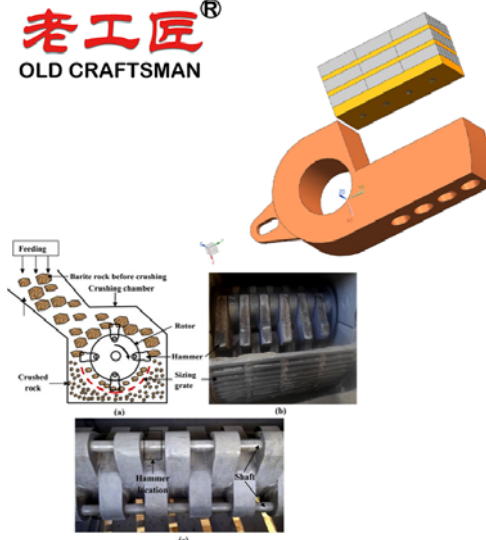
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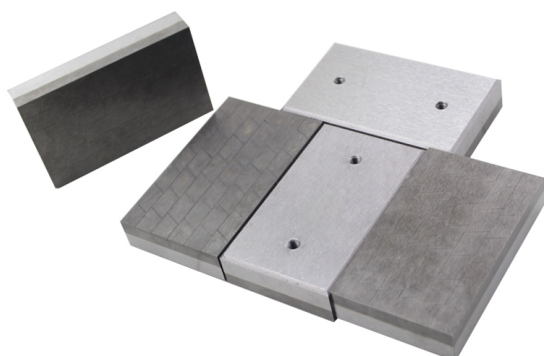


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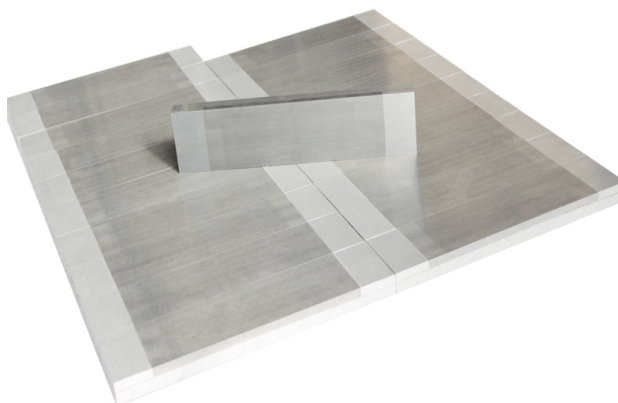


Hammers and spare parts for crusher

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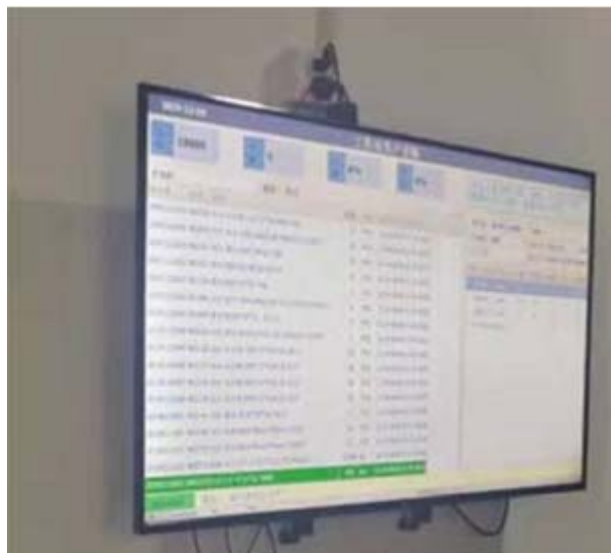
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Parts of Other Carbide Brazed Products

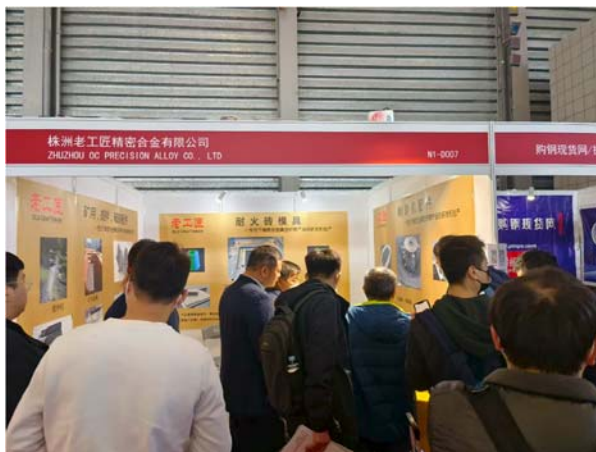
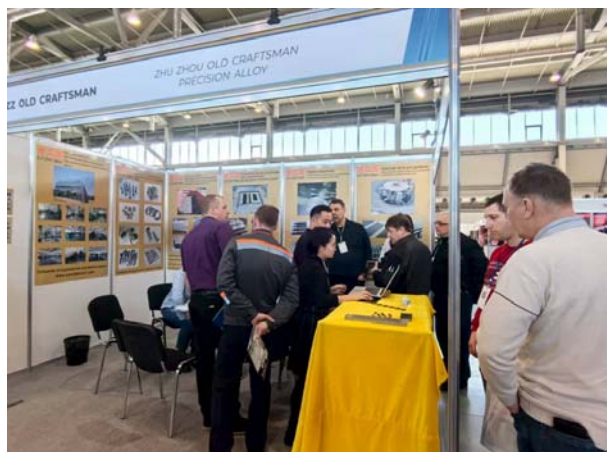
5. System

We use ERP and MES to control the production procedure, arranging production according to ISO 9001:2015 standard strictly, to ensure customer can get the same quality product from different batches. As a national high-tech enterprise, the company has more than 20 invention patents and utility model patents.



6. Our Service

1. Advantages of Grade design: our company has professional enigneers who have worked in the carbide production field for more than 20 years. They are experienced in the performance of different carbide product. We can recommend carbide grades according to the usage in different working environment to ensure full play to the performance of the carbide spare part.
2. Advantages of grade innovation: our company has full sets of equipment for innovate new carbide grade for customized usage. Standard grades can meet most of the usage, but if need to have better play on the uage, innovation is very important. The grades are designed according to customers usage on site usually have obviously better performace.
3. The advantages of the shape design: the company has professional engineer on the CNC center machining. We can semi-machining the products which are not easy to be pressed by mold directly. No mold cost, no MOQ requirement, to save production cost and guarantee the time limit for customers.
4. Production management advantages: adapting MES and ERP system to control each production process. Do the testing of density, Cobalt magnetism, magnetic force, hardness, bending strength from raw material, powder mixed, pressing blanks, after sintering, to packing to ensure each batch of products are qualified. And quality for same grade different batch is uniform.
5. After-sales service and product quality assurance: We have a passionate sales team. ZZ OLD CRAFTSMAN product has exported to more than 100 countries and regions in Europe, America, Australian, Southeast Asia, South Asia, South Africa and Africa. No matter what kind of quality problem on flatness, roughness, sizes or any other problems, we take them back without no excuse if it is our company problem, all returning fees paid by our company



7. Our Goals

As a company that has invested millions of dollars and spent 12 years in vacuum brazing R&D, our goal is to eliminate downtime caused by frequent wear component replacements for our customers and relieve workers from continuous, high-load work in harsh environments, contributing to a greener and more environmentally friendly workplace. Customer feedback indicates that our carbide wear plates have a service life 20 times that of high-chromium wear plates of equivalent thickness. Field feedback indicates that high-chromium wear plates have a service life of 15 days, while carbide wear plates have a service life of 10 months. This means that customers can avoid 22 downtimes annually, and workers can avoid 22 wear plate replacements in harsh environments. This not only directly reduces costs but also significantly increases productivity through reduced downtime.

To this end, our company has established a comprehensive production line for carbide brazing products, beginning with the ball milling of tungsten carbide powder, followed by pressing, semi-finishing, sintering, processing, vacuum brazing, and final machining. Strict quality inspection standards are applied to each process to ensure consistent quality from samples to small batches and large-scale production. We currently have four vacuum brazing furnaces. If all were used to braze 300 x 300 mm wear plates, we could braze approximately 600 plates per month. We plan to increase the number of brazing furnaces to 10, reaching a monthly production capacity of 1,500 300 x 300 mm wear plates.

We accept custom orders for various shapes. Based on customers' on-site requirements, we collaborate with customers to develop the appropriate carbide grade for their application. We then produce samples for testing and refinement until we achieve the optimal price-performance ratio.

Our design and engineering teams are always at your service!

