

专业矿机耐磨铸件生产商

PROFESSIONAL MANUFACTURER OF MINING WEAR CASTINGS

临沂天阔铸造有限公司

LINYI TIANKUO CASTING CO., LTD.

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天阔® TIANKUO

双液双金属复合锤头开创者

The pioneer of double-liquid bimetallic composite hammer

耐磨损复合材料铸件国家标准起草单位

Drafting unit of national standard for wear-resistant composite material castings



矿机耐磨铸件产品系列手册

MINING MACHINERY WEAR-RESISTANT CASTINGS PRODUCT MANUAL

临沂天阔铸造有限公司

LINYI TIANKUO CASTING CO., LTD.

设计核对稿件

公司简介
Company Profile



临沂天阔铸造有限公司：深耕耐磨铸件领域30余年，铸就耐磨行业领先实力

【行业引领者·核心产品广受认可】

临沂天阔铸造有限公司创立于2001年，作为中国耐磨损复合材料铸件、耐磨钢铸件、耐磨白口铸铁件、耐磨耐蚀钢铸件、耐磨耐热铸钢五项国家标准制定单位、中国铸造行业“耐磨行业排头兵企业”，始终以技术创新与品质坚守推动行业发展。公司主导的“天阔”牌耐磨铸件系列产品（涵盖双金属复合锤头、耐磨钢锤头、耐磨钢衬板等核心品类），凭借其卓越性能与稳定质量，已成为冶金、建材、电力、矿山等领域的高效耐磨解决方案，在业内广受赞誉——其耐磨寿命较传统产品显著提升，更换频率有效降低，累计服务国内数百家大型企业生产线，赢得客户复购率与推荐率双高的市场信赖，是多家大型企业的长期合作品牌。

【硬核产品力·技术与设备双引擎铸就可靠品质】

天阔耐磨铸件系列产品的性能优势，源于持续研发创新与高端先进装备投入的双轮驱动。依托自主研发的核心技术，结合行业领先的无机粘结剂陶瓷砂壳型精密成型工艺，实现硬度和韧性性能指标的突破；公司投入近亿元建成三条自动化生产线，配备节能钢壳中频熔炼炉、全纤维台车式电阻炉、自动射芯机等先进设备，实现熔炼至成型的数字化精密管控；在水泥熟料破碎、矿石粗磨等工况中，产品单机连续稳定运行时间持续上升，被客户评价为工况适应性良好、耐用性与可靠性突出。

【全流程质控·严苛标准守护品质】

公司构建“原材料-熔炼-成型-成品”全流程检测体系，引进金相显微镜、光谱分析仪、高频红外碳硫仪等进口高端检测设备，对每批次产品进行成分、硬度、韧性等关键指标全检，确保每一件产品成分精准、性能达标。凭借严苛品控，公司通过了ISO9001:2015质量管理体系、ISO14001:2015环境管理体系、ISO45001:2018职业健康安全管理体系三大国际认证，实现质量、环保、安全高标准管控。

【创新驱动·研发投入推动技术升级】

公司由国家科技进步奖获得者、总经理平宪忠领衔核心技术团队，累计获得国家科技进步奖1项、国家机械委科技进步奖1项，有色金属工业科技进步奖1项，山东省科技进步奖2项，国家发明专利7项，实用新型专利29项，突破耐磨材料行业硬度与韧性平衡等技术瓶颈。公司参与建设山东省企业技术中心、临沂市耐磨钢铁铸件新材料工程技术中心，联合沈阳铸造研究所、广州暨南大学等科研院校，构建产学研协同体系，每年研发投入超营收5%，持续推出新型耐磨铸件产品。

【资质认证·实力获多方肯定】

公司获评中国铸造行业“千家重点骨干企业”、国家高新技术企业、省级“专精特新”企业、山东省瞪羚企业，入选首批《铸造企业规范条件》公告企业，是“山东优质品牌”“山东知名品牌”双认证单位。未来，天阔铸造将持续以提升耐磨效能为目标，为全球工业领域提供可靠耐磨解决方案。

Linyi Tiankuo Casting Co., Ltd.
Over 30 Years of Dedicated Care in the Wear-Resistant Casting Industry, Building Industry-Leading Strength

[Industry Leader·Widely Recognized Core Products]
Founded in 2001, Linyi Tiankuo Casting Co., Ltd., As the drafter of five Chinese national standards for wear-resistant composite castings, wear-resistant steel castings, wear-resistant white iron castings, wear & corrosion resistant steel castings and wear & heat resistant steel castings, and a “Pacesetter Enterprise in the Wear-resistant Industry” in China’s foundry sector, we drive industry development with technological innovation and strict quality control. The company’s leading “Tiankuo” brand wear-resistant castings (including core categories such as bimetallic composite hammers, wear-resistant steel hammers, and wear-resistant steel liners) have established themselves as highly effective wear-resistant solutions for the metallurgical, building materials, power generation, and mining industries for their superior performance and consistent quality. They are widely acclaimed within the industry for their significantly improved wear life compared to traditional products, significantly reducing replacement frequency. Serving hundreds of major domestic production lines, they have earned the trust of customers with high repeat purchase and recommendation rates, and have become a long-term partner of numerous major enterprises.

[Core Product Strength·Technology and Equipment Dual Engines for Reliable Quality]
The performance advantages of Tiankuo’s wear-resistant casting series stem from the dual driving forces of continuous R&D and innovation, coupled with investment in high-end, advanced equipment. Leveraging independently developed core technologies, combined with industry-leading inorganic binder ceramic sand-shell precision molding technology, these products achieve breakthroughs in hardness and toughness performance. The company invested nearly 100 million yuan in three automated production lines, equipped with energy-saving steel-shell medium-frequency melting furnaces, all-fiber trolley-type resistance furnaces, and automatic core-shooting machines, enabling digital precision control from melting to forming. In applications such as cement clinker crushing and ore coarse grinding, the continuous stable operation time of individual units continues to increase, earning customer praise for their excellent adaptability, durability, and reliability.

[Full-Process Quality Control·Strict Standards Protect Quality]
The company has established a comprehensive inspection system covering the entire process from raw materials to melting, molding, and finished products. Imported high-end testing equipment, including metallographic microscopes, spectrometers, and high-frequency infrared carbon-sulfur analyzers, thoroughly inspects each batch of products for key indicators such as composition, hardness, and toughness, ensuring that every product’s composition is accurate and performance meets standards. Thanks to its stringent quality control, the company has obtained ISO9001:2015 quality management system, ISO14001:2015 environmental management system, and ISO45001:2018 occupational health and safety management system certifications, ensuring high standards of quality, environmental protection, and safety.

[Innovation-Driven·R&D Investment Promotes Technological Upgrades]
Led by General Manager Ping Xianzhong, a recipient of the National Science and Technology Progress Award, the company’s core technical team has received one National Science and Technology Progress Award and three provincial and ministerial-level science and technology progress awards, achieving breakthroughs in technical bottlenecks such as balancing hardness and toughness in the wear-resistant materials industry. The company has participated in the development of the Shandong Provincial Enterprise Technology Center and the Linyi City Wear-Resistant Steel Casting New Materials Engineering Technology Center. It has also partnered with research institutions such as the Shenyang Foundry Research Institute and Jinan University in Guangzhou to establish a collaborative industry-university-research system. Annual R&D investment exceeds 5% of revenue, and the company continues to launch new wear-resistant casting products.

[Qualification Certifications·Strength Recognized by Multiple Sectors]
The company has been recognized as one of China’s “Thousand Key Backbone Enterprises” in the foundry industry, a National High-Tech Enterprise, a provincial “Specialized, Precision, and Innovative” Enterprise, and a Shandong Province Gazelle Enterprise. It was selected as one of the first companies to be announced under the “Standardized Conditions for Foundry Enterprises” and holds dual certifications as a “Shandong Quality Brand” and “Shandong Well-Known Brand.” Tiankuo Casting will continue to strive to improve wear-resistant performance and provide reliable wear-resistant solutions to the global industrial sector.

天阔总经理简介
General Manager Profile



平宪忠
Ping Xianzhong

高级工程师，耐磨件国家标准起草委员会成员，获国家科技进步奖一项，国家机械委科技进步一项，山东省科技进步奖两项，有色金属工业科技进步奖一项，国家发明专利七项，实用新型专利二十九项。

现为中国机械工程学会磨损失效分析及预防委员会委员、中国金属学会特殊钢分会委员、中国耐磨铸件协会理事、全国铸造标准化技术委员会SAC/TC54/SC8委员、暨南大学先进耐磨蚀及功能材料研究院和高性能金属耐磨材料技术国家地方联合工程研究中心客座研究员。

2017年被中铸协评为优秀企业家。2018年，经国家标准化管理委员会《2018年第6号公告》批准，成为全国铸造标准化技术委员会第一届耐磨与铸件分技术委员会(SAC/TC54/SC8)委员。2024年获从业“铸造耐磨材料及耐磨件”行业40年荣誉证书。

Senior Engineer, Member of the Drafting Committee for National Standards of Wear-resistant Parts. He has received one National Science and Technology Progress Award, one Science and Technology Progress Award of the National Machinery Industry Commission, two Shandong Provincial Science and Technology Progress Awards, one Science and Technology Progress Award of the Non-ferrous Metals Industry, seven national invention patents and twenty-nine utility model patents.

He is currently a member of the Wear Failure Analysis and Prevention Committee of the Chinese Mechanical Engineering Society, a member of the Special Steel Branch of the Chinese Society for Metals, a director of the China Wear-Resistant Casting Association, and a visiting researcher at the Institute of Advanced Wear-Resistant and Functional Materials of Jinan University and the National and Local Joint Engineering Research Center for High-Performance Metal Wear-Resistant Materials Technology.

In 2017, he was named an Outstanding Entrepreneur by the China Foundry Association. In 2018, he was approved by the National Standardization Administration of China (Announcement No. 6 of 2018) to become a member of the First Wear-Resistant and Castings Sub-Technical Committee (SAC/TC54/SC8) of the National Foundry Standardization Technical Committee. In 2024, he was awarded an honorary certificate for 40 years of experience in the “Casting Wear-Resistant Materials and Wear-Resistant Parts” industry.

公司荣誉
Company Honors

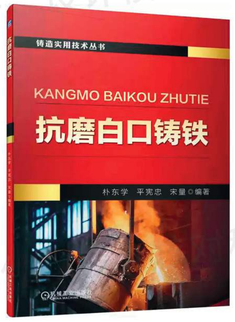
ISO14001-2015 ISO45001-2018 ISO9001-2015



Official Chinese Paper at the 55th International Foundry Congress



Monograph: Wear-Resistant White Cast Iron



High-Tech Enterprise



China's Foundry Industry Leading Enterprise



Advantageous Specialized, Refined, Differential, and Innovative Enterprise in China's Foundry Industry



Shandong Provincial Gazelle Enterprise



Shandong Famous Brand

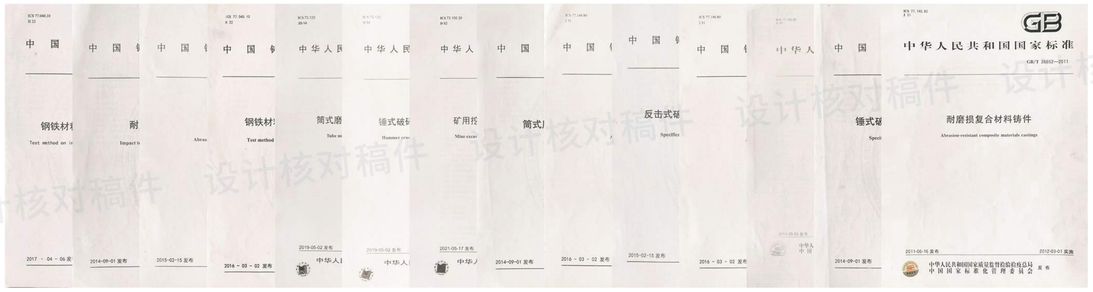


Shandong Provincial Recognized Enterprise Technology Center



专利及参制标准
Patent And Reference Standards

参与制定5项国家标准和12项行业标准
Participated in the formulation of 5 National Standards and 12 Industry Standards



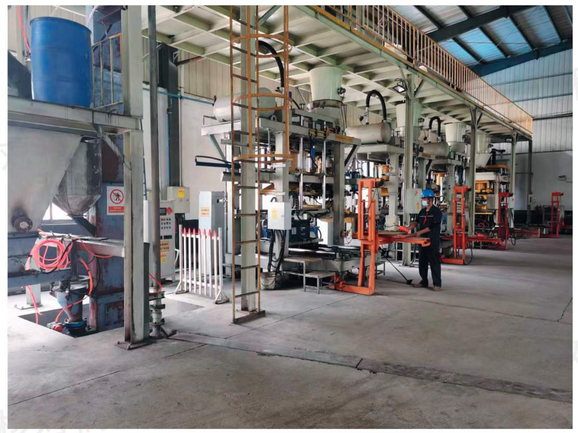
7项发明专利
7Certificate of Invention Patent



29项实用新型专利
29Certificate of Utility Model Patent



设备及质量控制
Equipment and Quality Control



自动化压壳流水线
Automated Shell Molding Assembly Line



自动化砂处理流水线
Automated Sand Treatment Assembly Line



自动化浇铸生产线
Automated Casting Production Line



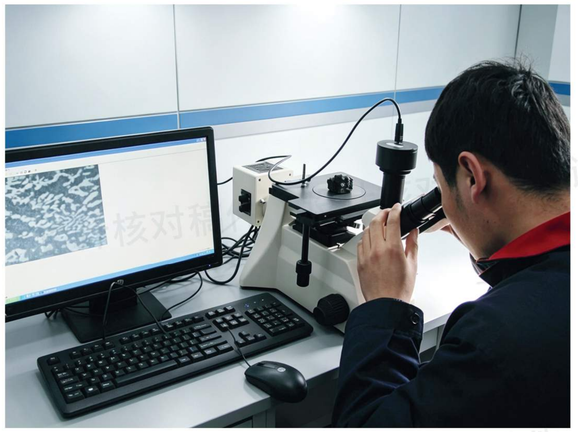
红外碳硫分析
Infrared Carbon And Sulphur Analysis



自动化浇铸生产线
Automated Casting Production Line



自动化造型流水线
Automated Modeling Production Line



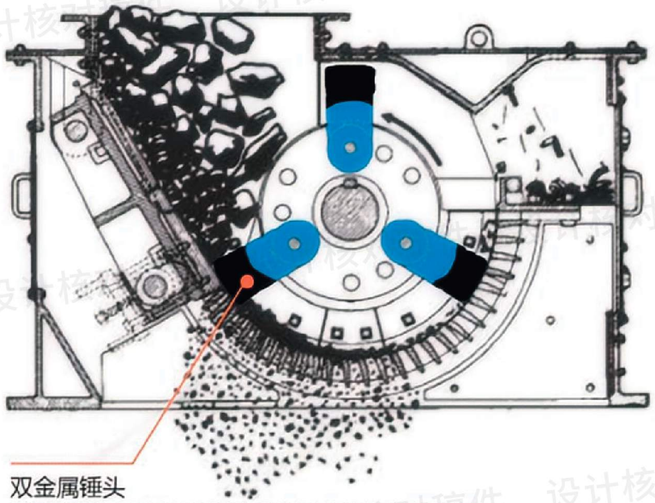
金相分析
Microstructure



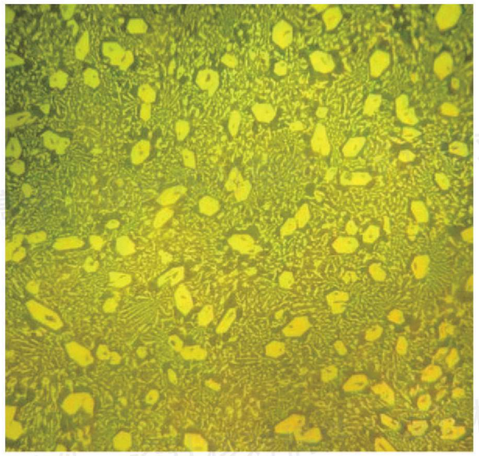
光谱分析
Spectrum Analysis

双金属锤头 Bimetal Composite Crusher Hammer





双金属锤头
BIMETAL COMPOSITE CRUSHER HAMMER



金相组织 Metallographic Structure

◎ 产品简介/Product Overview:

双金属锤头是一种复合高铬铸铁和合金钢的耐磨铸件，主要用于破碎机（如锤式破碎机）中高速旋转和冲击对物料的击打和粉碎。

Bimetal composite crusher hammer are wear-resistant castings made from composite high-chromium iron and alloy steel, primarily used in crushers (e.g., hammer crushers) for high-speed rotation and impact crushing of materials.

◎ 工艺特点/Process Features:

通过两种金属液态熔合工艺实现两种材料的冶金结合，集高铬铸铁的优异抗磨性和合金钢的良好韧性于一体。打击部位通常采用高铬铸铁(Cr20~30),具有极高的硬度和耐磨性；柄部多选用高硬韧合金钢，具备良好的抗冲击性。

The metallurgical combination of the two materials is achieved through the liquid fusion process of the two metals, combining the excellent wear resistance of high-chromium cast iron and the good toughness of alloy steel. The striking part is usually made of high-chromium cast iron (Cr20~30), which has extremely high hardness and wear resistance; the handle is mostly made of high-hardness and toughness alloy steel, which has good impact resistance.

◎ 核心优势/Core Advantages:

高铬铸铁的硬度可达HRC60-65,耐磨性为普通高锰钢的3倍以上，具有显著的性价比。

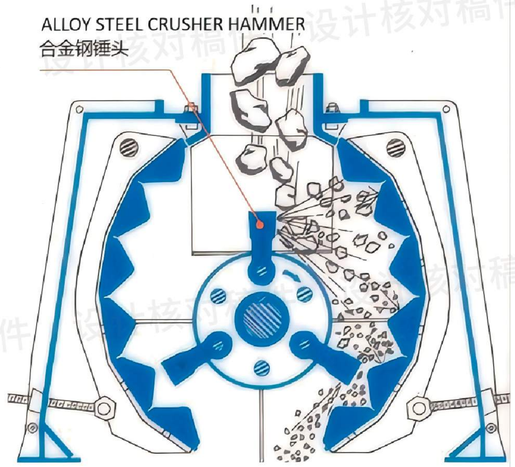
The hardness of high-chromium iron can reach HRC 60-65，with wear resistance three times that of ordinary high-manganese steel, which has a significant cost-effectiveness advantage.

◎ 微观组织和机械性能/Microstructure and Mechanical Properties:

锤头位置 Hammer Position	材质 Material	金相组织 Metallographic Structure	机械性能 Mechanical PropertiesOf Products		使用寿命 ServiceLife	备注 Remarks
			冲击韧性 Impact Toughness AK(J/cm²)	洛氏硬度 Rockwell Hardness (HRC)		
柄部 Handle	30CrNiMo	F+P+B	⩾30	⩾32	为高锰钢配件的3倍以上 Three times longer than that of high manganese steel.	钢层厚度为15mm以上 Thickness of steel layer is over 15mm.
打击部位 Strike Location	高铬铸铁 High Alloy Chromium	$M_7C_3+M_{23}C_6+M+A_{残}$	⩾6	⩾60		

双硬度锤头 Dual Hardness Crusher Hammer





◎ 产品简介/Product Overview:

双硬度合金钢锤头专为废钢破碎工矿研发，适配报废车体、钢结构废钢等高冲击破碎场景。采用整体铸造+分区热处理，兼顾打击面耐磨性与锤柄韧性，改善废钢破碎易磨损，开裂断裂等难题。

Dual hardness crusher hammer head is specially developed for scrap steel crushing, suitable for high impact crushing scenarios such as scrapped vehicle bodies and steel structure scrap steel. Adopting integral casting and zone heat treatment, balancing the wear resistance of the striking surface and the toughness of the hammer handle, improving the problems of scrap steel crushing, easy wear, cracking and fracture.

◎ 工艺特点/Process Features:

优化多元合金配比，一体铸造成形，具备高硬度与高韧性并且耐高冲击。

Optimize the proportion of multiple alloys, cast in one piece, with high hardness, high toughness, and high impact resistance.

◎ 核心优势/Core Advantages:

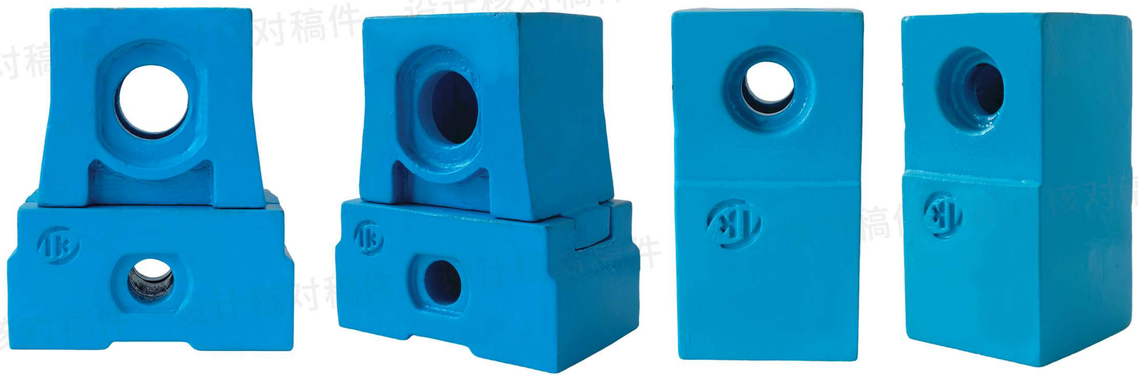
独特的热处理工艺，相比高锰钢能够大幅提升使用寿命，抗冲击不易断，能够大幅减少停机换件，综合成本更低，支持定制，适配主流废钢破碎设备。

The unique heat treatment process can significantly improve the service life compared to high manganese steel, resist impact and be less prone to breakage, greatly reduce downtime for parts replacement, lower overall cost, support customization, and adapt to mainstream scrap steel crushing equipment.

◎ 微观组织和机械性能/Microstructure and Mechanical Properties:

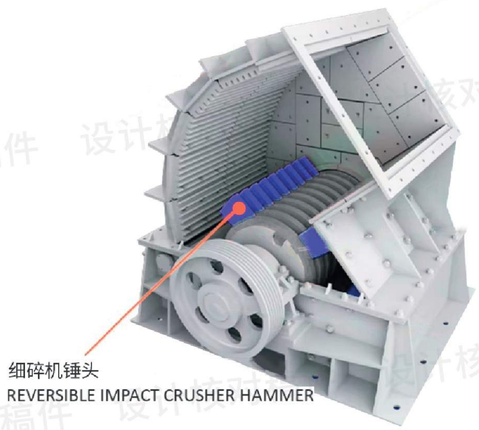
材质 Material	锤头位置 Hammer Position	机械性能 Mechanical PropertiesOf Products	
		冲击韧性 Impact Toughness KV2(J/cm²)	洛氏硬度 Rockwell Hardness (HRC)
50CrNiMoVTi	柄部Handle	≥18	35-40
	打击部位Strike Location	≥7	≥55

细碎机锤头 Reversible Impact Crusher Hammer









细碎机锤头
REVERSIBLE IMPACT CRUSHER HAMMER

◎ 产品简介/Product Overview:

细碎机锤头也叫碎煤机锤头，是为碎煤机量身打造的核心部件，广泛应用于煤炭、焦化、电力等多个行业的碎煤处理环节，该锤头还适用于破碎各类脆性矿物，如盐、石膏、明矾和石灰石等。

Reversible impact crusher hammer is a core component tailored for coal crusher. It is widely used in coal crushing processing in coal, coking, electric power and other industries. The hammer is also suitable for crushing various brittle minerals, such as salt, gypsum, alum and limestone.

◎ 工艺特点/Process Features:

细碎机锤头有整体式锤头和组合式锤头两种。整体式锤头材质为高铬铸铁-钢双金属，外观质量好，尺寸精度高；组合式锤头是高铬耐磨部位与合金钢柄的机械连接，打击部位采用复合铸造工艺，柄可重复利用。

There are two types of fine crusher hammers: integral hammers and combined hammers. The material is high chromium cast iron-steel bimetal, with good appearance quality and high dimensional accuracy; the combined hammer head is a mechanical connection between the high chromium wear-resistant part and the alloy steel handle, the striking part adopts the composite casting process, and the handle can be reused.

◎ 核心优势/Core Advantages:

组合式细碎机锤头的打击部位和锤柄是分开的，当锤头严重磨损时，只需要更换打击部位，从而显著降低使用成本。

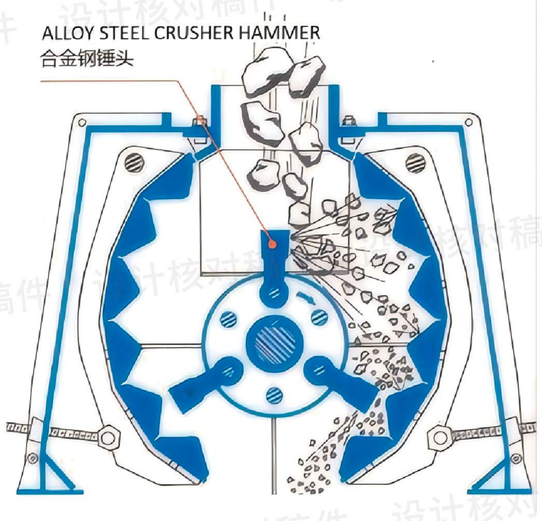
The striking part and hammer handle of the combined fine crusher hammer are separate. hammer is severely worn, only the striking part needs to be replaced, which significantly reduces the cost of use.

◎ 微观组织和机械性能/Microstructure and Mechanical Properties:

锤头位置 Hammer Position	材质 Material	金相组织 Metallographic Structure	机械性能 Mechanical PropertiesOf Products		使用寿命 ServiceLife	备注 Remarks
			冲击韧性 Impact Toughness AK(J/cm²)	洛氏硬度 Rockwell Hardness (HRC)		
柄部 Handle	30CrNiMo	F+P+B	≥30	≥32	为高锰钢配件的3倍以上 Three times longer than that of high manganese steel.	钢层厚度为15mm以上 Thickness of steel layer is over 15mm.
打击部位 Strike Location	高铬铸铁 High Alloy Chromium	$M_7C_3+M_{23}C_6+M+A_{残}$	≥6	≥60		

合金钢锤头 Alloy Steel Crusher Hammer





◎ 产品简介/Product Overview:

经过多年潜心实验，天阔新研发合金钢锤头的性能参数得到了大幅度提升。该款合金钢锤头是专为大型单段破碎机高强度破碎大物料设计的核心部件，特别适用于大块物料、大冲击载荷的耐磨领域。

After years of intensive experiments, the performance parameters of Tiankuo' s newly developed alloy steel hammer have been greatly improved. This alloy steel hammer is a core component designed for high-intensity crushing of large materials in large single-stage crushers, and is particularly suitable for the wear-resistant field of large block materials and large impact loads.

◎ 工艺特点/Process Features:

该系列产品添加了多元合金优化成份，采用整体铸造并通过特殊热处理工艺，从而获得复相强韧性基体组织，使产品集高强度、高韧性、高硬度于一身。

This series of products adds multi-element alloy optimization components, adopts integral casting and undergoes special heat treatment process to obtain a complex phase strong and tough matrix structure, making the product a combination of high strength, high toughness and high hardness.

◎ 核心优势/Core Advantages:

合金钢锤头经过特殊热处理工艺，具有高硬韧的特性，在较大冲击载荷的工况条件下也具备优异的使用性能。

相比传统高锰钢镶棒锤头，我公司生产的合金钢锤头使用寿命可提高50%以上，具有极高的性价比。

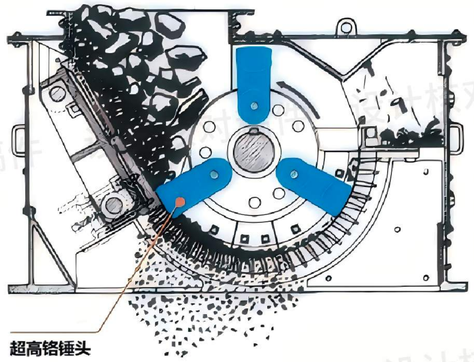
The alloy steel hammer head has undergone a special heat treatment process and has high hardness and toughness. It also has excellent performance under working conditions with large impact loads. Compared with traditional high manganese steel rod-inserted hammer heads, the alloy steel hammer heads produced by our company can increase their service life by more than 50%，and have extremely high cost performance.

◎ 微观组织和机械性能/Microstructure and Mechanical Properties:

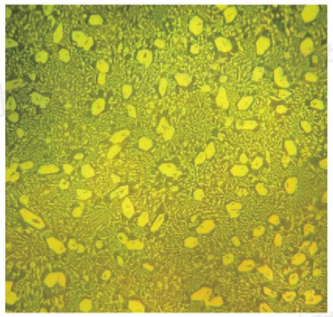
材质 Material	锤头位置 Hammer Position	机械性能 Mechanical PropertiesOf Products		表面粗糙度 Surface Roughness Ra(μm)
		冲击韧性 Impact Toughness AK(J/cm²)	洛氏硬度 Rockwell Hardness (HRC)	
30CrNiMoVTi	柄部Handle	>20	>40	⩽25
	打击部位Strike Location	>16	>50	⩽25
50CrNiMoVTi	柄部Handle	>18	35-40	⩽25
	打击部位Strike Location	>7	>55	⩽25

超高铬锤头 Ultra High Chrome Hammer





超高铬锤头
ULTRA HIGH CHROME HAMMER



金相组织
Metallographic Structure

◎ 产品简介/Product Overview:

单一高铬锤头主要用于制砂机和反击式破碎机，这种锤头由高铬合金铸造而成，含有较高的铬量和碳量，洛氏硬度HRC≥64，具备卓越的耐磨性。

Ultra high chromium hammer is mainly used for sand making machine and impact crusher. This hammer is cast from high chromium alloy, contains high chromium and carbon content, Rockwell hardness HRC 2 64, and has excellent wear resistance.

◎ 工艺特点/Process Features:

高铬锤头在铸造过程中采用综合变质处理技术，碳化物趋于团块状，从而具备了更好的韧性和耐磨性。

The high chromium hammer adopts comprehensive modification treatment technology during the casting process, and the carbides tend to be agglomerated, thus having better toughness and wear resistance.

◎ 核心优势/Core Advantages:

纯高铬锤头含有高硬度碳化物，在高应力冲击磨损下不易脱落，从而使锤头具备更好的耐磨性和强韧性。

Ultra high-chromium hammer contains high-hardness carbide, and it is not easy to fall off under high stress impact wear, thus making the hammer have better wear resistance and toughness.

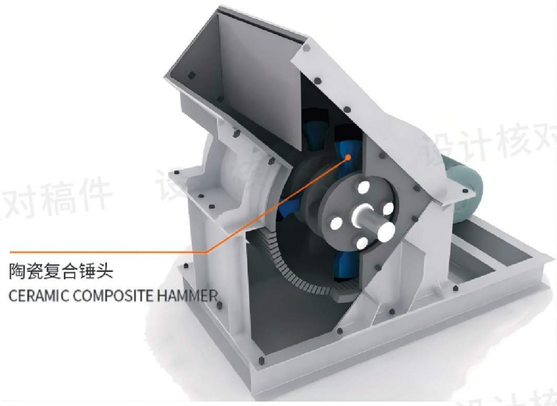
◎ 微观组织和机械性能/Microstructure and Mechanical Properties:

材质 Material	金相组织 Metallographic Structure	机械性能 Mechanical PropertiesOf Products	
		冲击韧性 Impact Toughness AK(J/cm²)	洛氏硬度 Rockwell Hardness (HRC)
高铬铸铁 High Alloy Chromium	$M_7C_3+M_{23}C_6+M+A$	≥6	63-66

Ceramic Composite Hammer 陶瓷复合锤头







◎ 产品简介/Product Overview:

陶瓷复合锤头是在双金属复合铸造工艺基础上在高铬耐磨部位铸渗陶瓷颗粒硬质相，适用于破碎各种高硬度和磨蚀性的物料。

Ceramic composite hammer is based on bimetallic composite casting process, with ceramic particles cast infiltrated in high chromium wear-resistant parts. It is suitable for crushing various high hardness and abrasive materials.

◎ 工艺特点/Process Features:

陶瓷复合锤头通常以高铬铸铁等耐磨合金材料为基体，然后在磨损部位复合一定量的耐磨陶瓷颗粒。

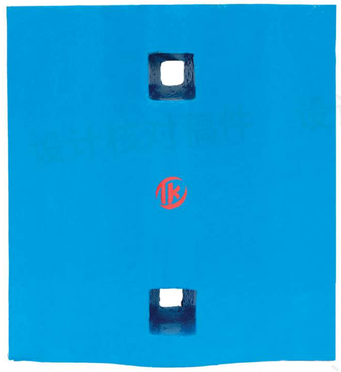
Ceramic composite hammer usually use wear-resistant alloy materials such as high chromium cast iron as the matrix, and then a certain amount of wear-resistant ceramic particles are compounded at the wear area.

◎ 核心优势/Core Advantages:

陶瓷颗粒的高硬度显著提高了锤头的耐磨性；金属基体提供了足够的强度和韧性；同时陶瓷材料也具有良好的热稳定性以及很强的抗腐蚀性。

The high hardness of ceramic particles significantly improves the wear resistance of the hammer head; the metal matrix provides sufficient strength and toughness; at the same time, the ceramic material also has good thermal stability and strong corrosion resistance.

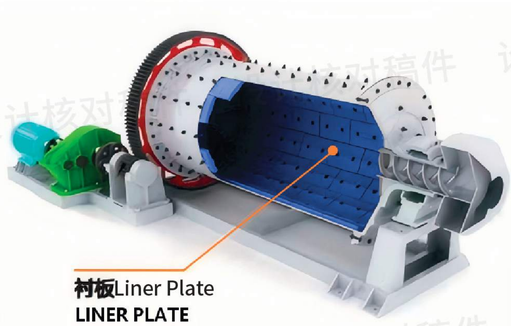
合金钢衬板 Alloy Steel Liner Plate

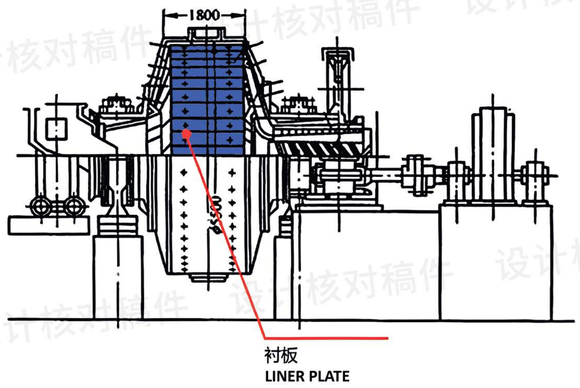












◎ 产品简介/Product Overview:

特别针对球磨机、自磨机及半自磨机，天阔新研发的合金钢衬板是一种以高硬韧耐磨钢为主要材质的耐磨材料，核心优势在于可升级替代传统高锰钢材质，能有效保护设备表面免受磨损、冲击与腐蚀，具有耐磨性强、冲击韧性大的优势。

Alloy steel liner plate is a wear-resistant material used to protect the surface of equipment from wear, impact and corrosion. As the liner plate of ball mills, crushers, conveyors and other equipment, its main material is high hardness and toughness wear-resistant steel.

◎ 工艺特点/Process Features:

合金钢衬板的生产工艺注重材料的合金化和热处理，适用于复杂形状和大型部件。

The production process of alloy steel liner plate focuses on alloying and heat treatment of materials, and is suitable for complex shapes and large components.

◎ 核心优势/Core Advantages:

合金钢衬板具有优异的理化性能，硬度高、耐磨性强、冲击韧性值大，使用寿命远超传统材料如高锰钢。不仅能够承受巨大的冲击力，长期保持表面形状，还具有出色的腐蚀抗性，适应多种工作环境，如矿山湿磨、干磨、混合磨等。

Alloy steel liner plate has excellent physical and chemical properties, high hardness, strong wear resistance, high impact toughness value, and its service life far exceeds that of traditional materials such as high manganese steel.It can not only withstand huge impact force and maintain its surface shape for a long time, but also has excellent corrosion resistance and can adapt to a variety of working environments, such as wet grinding, dry grinding, mixed grinding, etc. in mines.

◎ 微观组织和机械性能/Microstructure and Mechanical Properties:

材质 Material	金相组织 Metallographic Structure	机械性能 Mechanical PropertiesOf Products		使用寿命 ServiceLife
		冲击韧性 Impact Toughness AK(J/cm²)	洛氏硬度 Rockwell Hardness (HRC)	
35CrNiMoVTi	M+B+A	⩾16	⩾50	比高锰钢提高50%-100% 50%-100% higher than high manganese steel.

高铬衬板 High Chrome Liner Plate





◎ 产品简介/Product Overview:

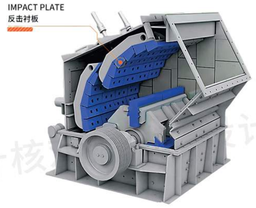
高铬衬板是一种高性能的耐磨材料，具有出色的耐磨性、抗冲击性和耐腐蚀性，能够在高负荷、高速度的工作环境下长时间保持表面平整。

High chrome liner plate is a high-performance wear-resistant material with excellent wear resistance, impact resistance and corrosion resistance. It can maintain a flat surface for a long time in a high-load and high-speed working environment.

◎ 工艺特点/Process Features:

高铬衬板采用高铬铸铁作为材质，其优异的金相组织形态确保了衬板能够在各种恶劣环境下持续展现出卓越的性能。

High chrome liner plate is made of high chromium cast iron. Its excellent metallographic structure ensures that the lining can continue to show excellent performance in various harsh environments.



◎ 核心优势/Core Advantages:

凭借其出色的耐磨性、抗冲击性和耐腐蚀性，高铬衬板适用于各种恶劣的工作环境拓宽了应用场景。

With its excellent wear resistance, impact resistance and corrosion resistance, high chrome liner plateis suitable for various harsh working environments, broadening the application scenarios.

◎ 微观组织和机械性能/Microstructure and Mechanical Properties:

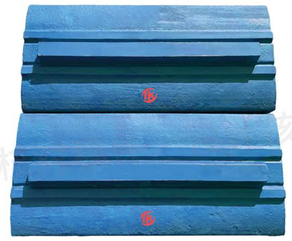
材质 Material	金相组织 Metallographic Structure	机械性能 Mechanical PropertiesOf Products		使用寿命 ServiceLife
		冲击韧性 Impact Toughness AK(J/cm²)	洛氏硬度 Rockwell Hardness (HRC)	
Cr15	$M+M_7C_3+M_{23}C_6+A$	≥6	≥59	适用于φ3米以下磨机，使用寿命3-5年 Suitable for mills belowp3m, with a service life of 3-5 years
Cr20	$M+M_7C_3+M_{23}C_6+A$	≥6	≥60	适用于φ3米以上磨机，使用寿命3-8年 Suitable for mills abovep3m, with a service life of 3-8 years
Cr26	$M+M_2C_3+M_{23}C_6+A$	≥6	≥62	适用于φ4米以上磨机，使用寿命3-8年 Suitable for mills abovep4m, with a service life of 5-10 years

Bimetal Blow Bar 双金属板锤

◎ 产品简介/Product Overview:

双金属板锤是一种采用两种不同金属材料复合制成的反击式板锤，适用于反击式破碎机等设备。通过物料与板锤之间的挤压和剪切作用，双金属板锤能有效实现破碎效果，生产的物料粒型均匀、圆整度好。

Bimetal blow bar is a composite hammer made of two different metal materials, suitable for impact crusher and other equipment. Through the extrusion and shearing between the material and the hammer, the bimetallic blow bar can effectively achieve the crushing effect, and the produced material has uniform particle shape and good roundness.





◎ 工艺特点/Process Features:

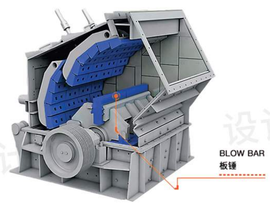
双金属板锤采用双金属复合铸造工艺，将高铬合金和高硬韧合金钢复合在一起。

The bimetal blow bar adopts bimetallic composite casting process to combine high chromium alloy and high hardness and toughness alloy steel.

◎ 核心优势/Core Advantages:

双金属板锤在破碎较大物料时具有安全可靠耐磨的优势。

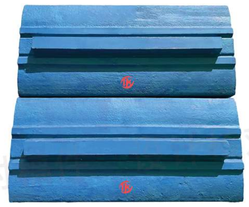
Bimetal blow bar is safe, reliable and wear-resistant when crushing larger materials.



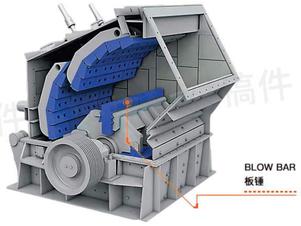
◎ 微观组织和机械性能/Microstructure and Mechanical Properties:

材质 Material	金相组织 Metallographic Structure	机械性能 Mechanical PropertiesOf Products		使用寿命 ServiceLife	备注 Remarks
		冲击韧性 Impact Toughness AK(J/cm²)	洛氏硬度 Rockwell Hardness (HRC)		
30CrNiMo	F+P+B	≥30	≥32	为高锰钢配件的3倍以上 Three times longer than that of high manganese steel.	钢层厚度为15mm以上 Thickness of steel layer is over 15mm.
高铬铸铁 High Alloy Chromium	$M_7C_3+M_{23}C_6+M+A_{残}$	≥6	≥60		

高铬板锤 High Chrome Blow Bar









金相组织 Metallographic Structure

◎ 产品简介/Product Overview:

高铬板锤采用高铬铸铁材料铸造而成，装配于反击式破碎机等设备中，具有极高的硬度和耐磨性，主要用于破碎较小的物料，如花岗岩、玄武岩和石灰岩等，一般作二级、三级破碎使用。

High chromium blow bar is made of high chromium cast iron material and is installed in equipment such as impact crusher. It has extremely high hardness and wear resistance. It is mainly used for crushing smaller materials such as granite, basalt and limestone, etc., and is generally used for secondary and tertiary crushing.

◎ 工艺特点/Process Features:

高铬板锤在制造过程中采用了先进的综合变质处理技术，使其硬度值HRC稳定在63-66之间，展现出了卓越的耐磨性能。同时，该板锤还具备一定的抗冲击性能，确保了其在复杂工况下的稳定性和耐用性。

The high chrome blow bar adopts advanced comprehensive modification technology in the manufacturing process, which stabilizes its hardness value HRC between 63-66, showing excellent wear resistance. At the same time, the blow bar also has certain impact resistance, ensuring its stability and durability under complex working conditions.

◎ 核心优势/Core Advantages:

高硬度和耐磨性使高铬板锤的使用寿命显著延长，良好的耐磨性保证了破碎设备的高效运行。

High hardness and wear resistance significantly extend the service life of high chrome blow bar, and good wear resistance ensures the efficient operation of crushing equipment.

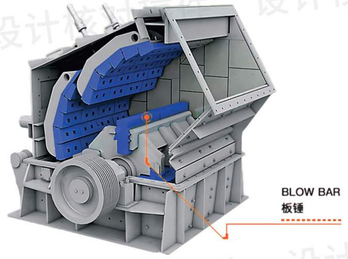
◎ 微观组织和机械性能/Microstructure and Mechanical Properties:

材质 Material	金相组织 Metallographic Structure	机械性能 Mechanical PropertiesOf Products	
		冲击韧性 Impact Toughness AK(J/cm²)	洛氏硬度 Rockwell Hardness (HRC)
高铬铸铁 High Alloy Chromium	$M_7C_3+M_{23}C_6+M+A$	≥6	63-66

Alloy Steel Blow Bar 合金钢板锤







◎ 产品简介/Product Overview:

合金钢板锤采用高硬韧耐磨钢材料铸造而成，适用于反击式破碎机等设备，特别适合破碎较大物料。

Alloy steel blow bar is made of high hardness, toughness and wear-resistant steel material, suitable for equipment such as impact crusher, especially for crushing larger materials.

◎ 工艺特点/Process Features:

合理的选材、严格的生产工艺和特殊的热处理，使合金钢板锤具有优异的耐磨性和较高的冲击韧性。

Reasonable material selection, strict production process and special heat treatment make the alloy steel blow bar have excellent wear resistance and high impact toughness.

◎ 核心优势/Core Advantages:

合金钢板锤的优异性能保证了其在高应力、大冲击载荷条件下的安全可靠性，使用寿命显著延长。

The excellent performance of alloy steel blow bar ensures its safety and reliability under high stress and large impact load conditions, and its service life is significantly extended.

材质 Material	机械性能 Mechanical PropertiesOf Products		表面粗糙度 Surface Roughness Ra(μm)
	冲击韧性 Impact Toughness AK(J/cm²)	洛氏硬度 Rockwell Hardness (HRC)	
30CrNiMoVTi	>18	>50	⩽25
50CrNiMoVTi	>8	>55	⩽25

其他配件 Other Accessories



◎ **产品简介/Product Overview:**

破碎机锤柄是锤式破碎机的重要组成部分，主要用于支撑和固定锤头。它通过将锤头连接到破碎机的转子上，确保了稳定的运行和有效的破碎性能。

A vital part of hammer crushers, the crusher hammer handle is mainly utilized to support and secure the hammerhead. It ensures steady operation and effective crushing performance by connecting the hammerhead to the crusher’ s rotor.



◎ **筛板/Screen Plate**

筛板是仅次于锤头和衬板的易损件，筛板的作用是控制破碎物的粒度大小。

The screen plate is the second most vulnerable part after the hammer head and the liner plate. Its function is to control the particle size of the crushed materials.

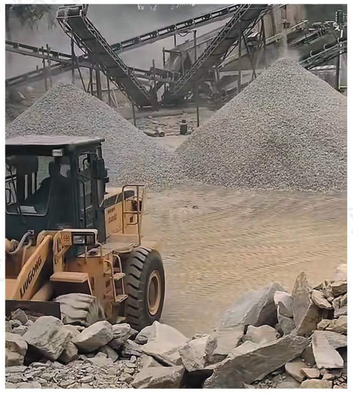
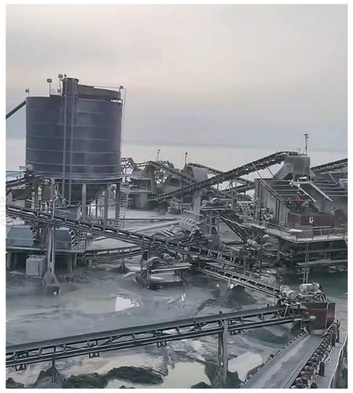


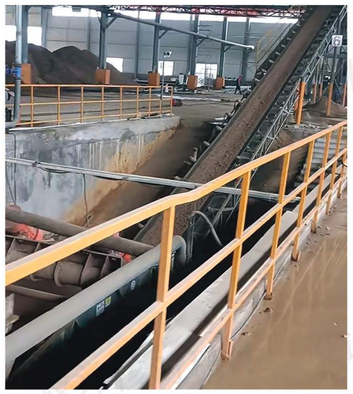
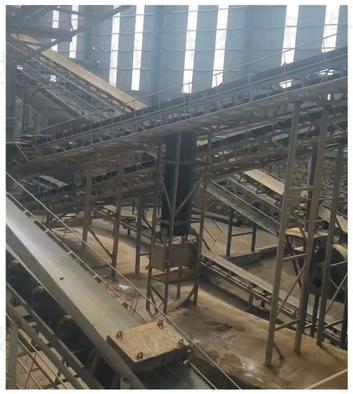
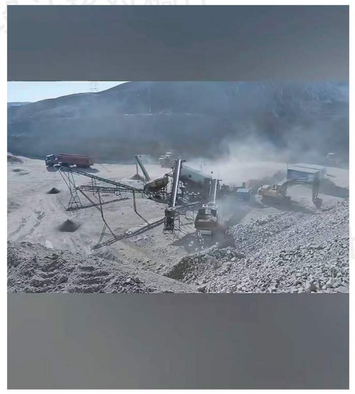
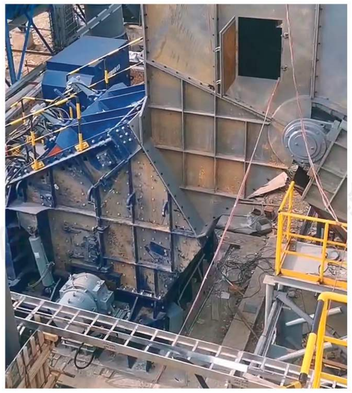
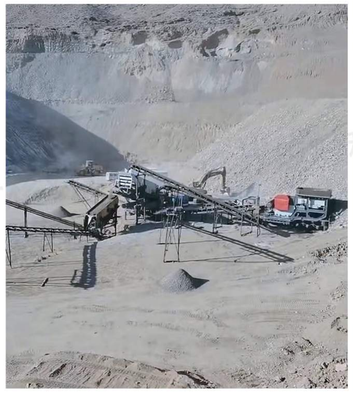
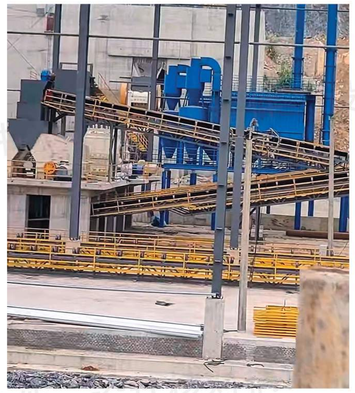
◎ **锤轴/Hammer Shaft**

锤式破碎机的锤轴位于破碎机的主轴上，主要的作用是用来悬挂锤头。

The hammer shaft of the hammer crusher is located on the main shaft of the crusher, and its main function is to suspend the hammer heads.

应用案例 Application Case

合作客户
Partner Clients








合作伙伴
Partners

华新水泥 · 徐矿集团 · 沂州集团 YIZHOU GROUP · RION 瑞隆 重工 · JBS JINBAOSHAN MACHINERY · SNKSAN 鑫金山 · 国粤集团 GUOYUE GROUP · SUNWODA 欣旺达 · CUCC 中联水泥

沂州集团有限公司
临沂中联水泥有限公司
枣庄鑫金山智能装备有限公司
衢州元立金属制品有限公司
山东金宝山机械有限公司
枣庄市瑞隆机械制造有限公司
江苏徐矿综合利用发电有限公司
山东金岭矿业股份有限公司
华新水泥股份有限公司
国粤（韶关）电力有限公司
山东兖矿济三电力有限公司
安徽钱营孜发电有限公司
新会双水发电(B厂)有限公司
湖北紫岗矿业有限公司
辽宁调兵山煤矸石发电有限责任公司
华能运河发电有限公司
山东里彦发电有限公司

客户案例
Customer Case

断裂难题攻克！泗冠破碎机锤头升级，效益显著提升！

客户名称：山东泗冠建筑工程有限公司（马头山矿）
设备型号：鑫金山SPCD-2630新型单段锤式破碎机
应用背景：一破进料尺寸大，面临原高锰钢镶棒锤头易断裂的痛点
升级方案：更换为天阔新研发超级耐磨钢锤头

核心痛点与升级方案对比：

对北比项目	原高锰钢镶棒锤头	天阔超级耐磨钢锤头	增幅/降幅
使用寿命（月）	1.5	2个月	**提升33%**
抗断裂掉块能力	易断裂、掉块	不断裂，运行稳定	-
对生产连续性影响	停机更换频繁，影响大	减少停机，保障连续生产	-
综合效益	维护成本高，效率受限	停机减少，寿命延长，综合效益显著提升	-

客户评价：
“更换耐磨钢锤头后，不仅彻底解决了我们之前锤头频繁断裂掉块的头疼问题，锤头使用寿命也明显延长了，现在生产连续性和稳定性都有了很大保障，感谢你们提供的优质耐磨钢锤头，解决了后顾之忧”一山东泗冠建筑工程有限公司（马头山矿）。

效益总结：
新型耐磨钢锤头的应用，为泗冠矿业带来了看得见的效益：减少停机时间、降低维护成本、延长锤头使用寿命，提升设备综合利用率，为其在复杂物料条件下的高效生产提供了坚实保障。

Industry Solution Cases

Customer Case|Fracture Problem Solved!Siguang Crusher Hammer Head Upgrade Delivers Significant Efficiency Improvement!

Customer Name: Shandong Siguang Construction Engineering Co.,Ltd
Equipment Model: Xinjinshan JSPCD-2630 New Single-Stage Hammer CrusherApplication
Background: The primary crushing process involves large feed sizes,facing the pain point of frequent **fractures in** the original high-manganese steel rod-inserted hammer heads
Upgrade Solution: Replace with Tiankuo’ s newly developed super wear-resistant steel hammer head

Core Pain Points and Upgrade Solution:

Comparison Item	Original High-Manganese Steel Rod-Inserted Hammer Head	Tiankuo Super Wear-Resistant Steel Hammer Head	Increase/Decrease
Service Life (Months)	1.5	2	**Increased by 33%**
Anti-Fracture and Chipping Resistance	Prone to fracture and chipping	No fracture,stable operation	-
Impact on Production Continuity	Frequent shutdowns for replacement, significant impact	Reduced shutdowns,ensuring continuous production	-
Comprehensive Benefits	High maintenance costs,limited efficiency	Reduced shutdowns,extended service life,significant improvement in comprehensive benefitsimprovement in	-

Customer Review:
“After replacing with the wear-resistant steel hammer heads,we not only completely solved the annoying problem of frequent fractures and chipping of the previous hammer heads,but also significantly extended the service life of the hammer heads.Now,the continuity and stability of production are well guaranteed.Thank you for providing high-quality wear-resistant steel hammer,which have solved our worries.”-Shandong Siguang Construction Engineering Co.,Ltd.

Benefit Summary:
The application of the new wear-resistant steel hammer heads has brought tangible benefits to Siguang Mining:reduced downtime,lower maintenance costs,extended hammer head service life,improved comprehensive equipment utilization,and provided solid support for its efficient production under complex material conditions.

设计核对稿件

客户案例
Customer Case

鲁南中联水泥锤出效益新高度！天阔超级耐磨钢锤头处理量翻倍，成本锐减

客户名称：鲁南中联水泥有限公司
设备型号：鑫金山SPCD-1824新型单段锤式破碎机
应用背景：处理石灰石物料，原使用高锰钢镶棒锤头
升级方案：更换为天阔新研发超级耐磨钢锤头

核心痛点与升级方案对比：

对北比项目	原高锰钢镶棒锤头	天阔超级耐磨钢锤头	增幅/降幅
处理量（万吨）	35	80	**提升129%**
万吨石料锤头成本（元/万吨）	-	-	**提升55%**
抗断裂能力	-	稳定不断	-
综合效益	更换频繁，综合成本高	寿命延长1倍多，综合效益显著提升	-

客户评价：
“天阔耐磨钢锤头，在石灰石工况下表现卓越，显著延长使用寿命，减少更换频率，降低综合成本，为鲁南中联水泥带来了实实在在的经济效益提升！”一鲁南中联水泥有限公司。

效益总结：
升级天阔超级耐磨钢锤头后，处理量实现翻倍式跃升，万吨石料锤头成本大幅缩减，锤头寿命倍增且抗断裂性能优异，综合成本显著优化。

Industry Solution Cases

Customer Case Lunan Zhonglian Cement Achieves New Heights in Benefits!Tiankuo Super Wear-Resistant Steel Hammer Heads Double Processing Capacity and Sharply Reduce Costs

Customer Name: Lunan Zhonglian Cement Co.,Ltd.
Equipment Model: Xinjinshan JSPCD-1824 New Single-Stage Hammer CrusherApplication
Background:Processing limestone materials,originally using high-manganese steel rod-inserted hammer heads
Upgrade Solution: Replace with Tiankuo’ s newly developed super wear-resistant steel hammer heads

Core Pain Points and Upgrade Solution:

Comparison Item	Original High-Manganese Steel Rod-Inserted Hammer Head	Tiankuo Super Wear-Resistant Steel Hammer Head	Increase/Decrease
Processing Capacity (10,000Tons)	35	80	**Increased by 129%**
Hammer Head Cost per 10,000 Tons of Stone (Yuan/10,000 Tons)	-	-	**Reduced by 55%**
Anti-Fracture Capacity	-	Stable,no fracture	-
Comprehensive Benefits	Frequent replacement,high comprehensive cost	Service life more than doubled, significant improvement in comprehensive benefits	-

Customer Review:
“Tiankuo’ s wear-resistant steel hammer heads perform excellently under limestone working conditions.They significantly extend the service life,reduce replacement frequency,lower comprehensive costs,and bring substantial economic benefit improvements to Lunan Zhonglian Cement!”-Lunan Zhonglian Cement Co.,Ltd.

Benefit Summary:
After upgrading to Tiankuo’ s super wear-resistant steel hammer heads,the processing capacity has achieved a doubling growth,the hammer head cost per 10,000 tons of stone has been greatly reduced,the hammer head service life has doubled with excellent anti-fracture performance,and the comprehensive cost has been significantly optimized.

客户案例
Customer Case

3倍处理量+65%成本大降！临沂中联水泥破碎机锤头升级，降本增效“狂飙”

客户名称：临沂中联水泥有限公司

设备型号：鑫金山SPCD-1820新型单段锤式破碎机

应用背景：原锤头处理量有限，对生产连续性和综合效益提出挑战

升级方案：更换为天阔新研发超级耐磨钢锤头

核心痛点与升级方案对比：

对北比项目	原高锰钢镶棒锤头	天阔超级耐磨钢锤头	增幅/降幅
处理量（万吨）	20	60	**提升200%**
万吨石料锤头成本（元万吨）	-	-	**降低65%**
抗断裂能力	不断	稳定不断	-
综合效益	更换频繁，综合成本高	寿命延长3倍，减少停机频率，综合效益显著提升	-

客户评价：

“更换天阔耐磨钢锤头后，处理量提升至原来的3倍，在保持稳定运行的同时大幅延长寿命，吨成本显著下降，真正现降本增效！”—临沂中联水泥有限公司。

效益总结：

临沂中联水泥有限公司针对原锤头处理量有限、更换频繁、综合成本高的痛点，升级天阔超级耐磨钢锤头后，实现三大核心效益跃升：

1.处理量暴涨：从20万吨跃至60万吨，是原来的3倍，生产连续性大幅增强；

2.成本锐减：万吨石料锤头成本降幅高达65%，吨成本显著下降；

3.寿命与稳定性提升：锤头寿命延长3倍且抗断裂能力稳定，停机更换频率锐减，维护效率提升。

通过“提量、降本、增效”三重协同，实现水泥生产综合效益质的飞跃。

Industry Solution Cases

Customer Case 3x Processing Capacity +65%Cost Reduction!Linyi Zhonglian Cement’ s Crusher Hammer Head Upgrade Drives “Leapfrog”Cost Reduction and Efficiency Improvement!

Customer Name: Linyi Zhonglian Cement Co.,Ltd.

Equipment Model: Xinjinshan JSPCD-1820 New Single-Stage Hammer CrusherApplication

Background: The original hammer heads had limited processing capacity,posing challenges to production continuity and comprehensive benefits

Upgrade Solution: Replace with Tiankuo’ s newly developed super wear-resistant steel hammer heads

Core Pain Points and Upgrade Solution:

Comparison Item	Original High-Manganese Steel Rod-Inserted Hammer Head	Tiankuo Super Wear-Resistant Steel Hammer Head	Increase/Decrease
Processing Capacity (10,000Tons)	20	60	**Increased by 200%**
Hammer Head Cost per 10,000 Tons of Stone (Yuan/10,000 Tons)	-	-	**Reduced by 65%**
Anti-Fracture Capacity	No fracture	Stable,no fracture	-
Comprehensive Benefits	Frequent replacement,high comprehensive cost	Service life tripled,reduced shutdown frequency.significant improvement in comprehensive benefits	-

Customer Review:

‘After replacing with Tiankuo’ s wear-resistant steel hammer heads,the processing capacity has increased to 3 times that of the original.While maintaining stable operation,the service life has been greatly extended,and the unit cost has decreased significantly,truly achieving cost reduction and efficiency improvement!”-Linyi Zhonglian Cement Co.,Ltd.

Benefit Summary:

1.Surge in Processing Capacity:Increased from 200,000 tons to 600,000 tons,3 times the original,significantly enhancing production continuity.

2.Sharp Cost Reduction:The hammer head cost per 10,000 tons of stone has decreased by as much as 65%, with a significant drop in unit cost.

3.Improved Service Life and Stability:The hammer head service life has tripled with stable anti-fracture capacity.the frequency of shutdowns for replacement has dropped sharply.