北京金煤创业科技股份有限公司
BeiJing JinMei Entrepreneur Co., Ltd.

陶瓷复合锤式破碎机-锤头

MMC Hammer Crusher-Hammer

公司简介
Company profile

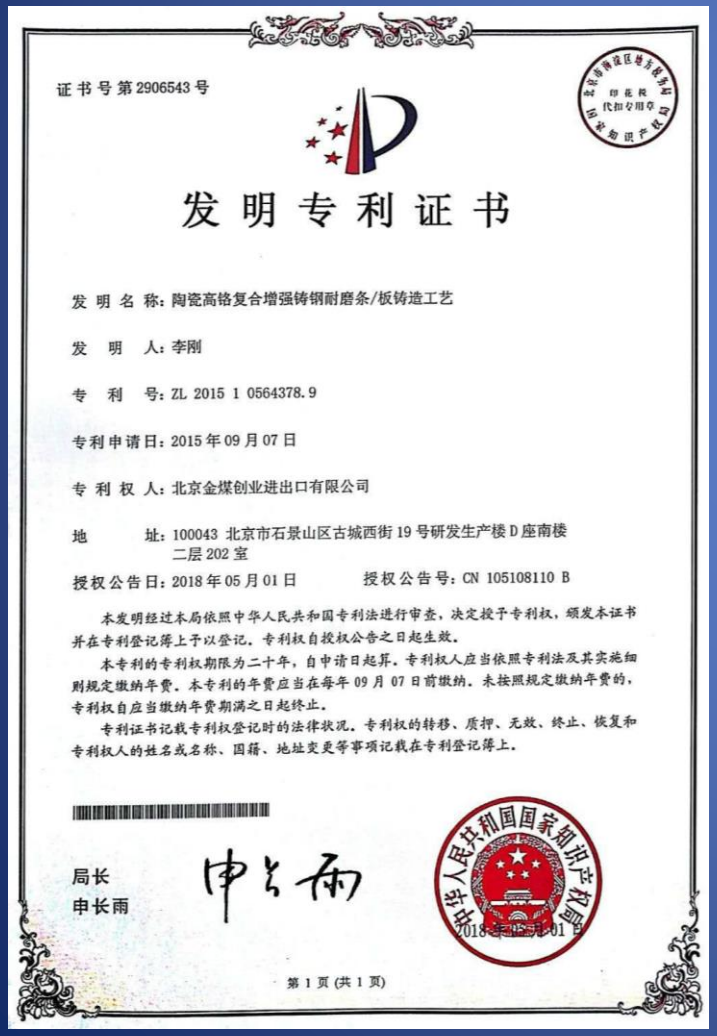
北京金煤创业科技股份有限公司于2006年成立，2016 年改制为股份制公司并成功登陆新三板。公司总部坐落在中国北京中关村科技园古城基地。是集研发，生产，出口销售的互联网+新材料制造企业。
公司主营金属基陶瓷复合材料，耐磨耐热材料，冶金、矿山、水泥、燃煤热电厂设备配件等。产品：高铬陶瓷复合铸造耐磨材料，马氏体钢陶瓷复合铸造耐磨耐冲击材料及各类高锰钢陶瓷复合材料，金属基陶瓷纤维复合材料。

Beijing JinMei Entrepreneur Co., Ltd (DJM) was established in 2006, Headquarter located in Zhongguancun High-tech Park in Beijing, China. DJM was restructured into Joint-Stock company & listed on NEEQ in 2016. DJM's a research and development, production, export sales of Internet + new materials manufacturing enterprises.
DJM is focusing on Metal Matrix Ceramic Composite (MMCC) material, wear-resistant and heat-resistant material.

Products: High chromium cast iron ceramic composite castings, Martensite steel ceramic composite castings, high manganese steel ceramic composite castings, and Metal matrix ceramic fibre composite casting materials, ZTA ceramic mechanical parts. Products are widely used in metallurgical industry, mining, cement, Coal-fired thermal power plant as spare parts.

发明专利证书
Patent certificate

陶瓷高铬复合增强铸钢耐磨条板铸造工艺
Metal Matrix ceramic composite casting



证书号第2906543号

发明专利证书

发明名称：陶瓷高铬复合增强铸钢耐磨条/板铸造工艺

发明人：李刚

专利号：ZL 2015 1 0564378.9

专利申请日：2015年09月07日

专利权人：北京金煤创业进出口有限公司

地址：100043 北京市石景山区古城西街19号研发生产楼D座南楼二层202室

授权公告日：2018年05月01日　　授权公告号：CN 105108110 B

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2018年05月01日

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陶瓷高锰钢复合耐磨件铸造工艺
High Mn Steel Matrix ceramic composite casting

证书号第4307009号

发明专利证书

发明名称：陶瓷高锰钢复合耐磨件铸造方法

发明人：李刚

专利号：ZL 2018 1 1057291.2

专利申请日：2018年09月11日

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授权公告日：2021年03月19日　　授权公告号：CN 109128098 B

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2021年03月19日

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其他事项参见续页

MMC-Cr 高铬铸铁陶瓷复合耐磨材料

MMC-Cr （ High Chromium cast iron matrix ceramic insert casting wear-resistant material）

MMC-Cr （ High Chromium cast iron matrix ceramic insert casting wear-resistant material）

That is, the reinforcement phase - ceramic particles are fused and cast in the easily worn parts of metal parts with high chromium cast iron as the base material. The metal-ceramic composite layer is formed by the metallurgical combination of ceramic particles and casting alloy. The metallurgical bonding of ceramic particles with metal is realized by the heat of metal liquid. The hardness of ceramic-ceramic composite layer formed by ceramic particles and matrix metal shows a step distribution. The hardness of ceramic particles in the composite layer can reach 3-4 times of the hardness of high chromium cast iron material, so as to achieve the anti-wear effect; Compared with ordinary high chromium cast iron, the service life of the product is greatly extended.

The hardness of the High chromium iron ceramic composite layer is distributed in steps：

Ceramic particles hardness= HV2100

Hardness of metal around ceramic particles = 60-65HRC

Hardness of Basis material =High chromium iron = 58-62HRC

Suitable for use under low impact and high wear conditions

MMC-Cr 高铬铸铁陶瓷复合耐磨材料

即在高铬铸铁为基材的金属部件易磨损部位熔铸增强相-陶瓷颗粒.通过陶瓷颗粒与铸造合金的冶金结合来实现金属陶瓷复合并形成金属陶瓷复合层; 陶瓷颗粒与金属的冶金结合是通过金属液体的热量来实现的; 陶瓷颗粒与基体金属形成金属陶瓷复合层的硬度呈阶梯分布: 复合层中陶瓷颗粒的硬度可达高铬铸铁材料硬度的3-4倍，从而实现抗磨的效果;与普通高铬铸铁件相比，产品使用寿命大幅度延长。

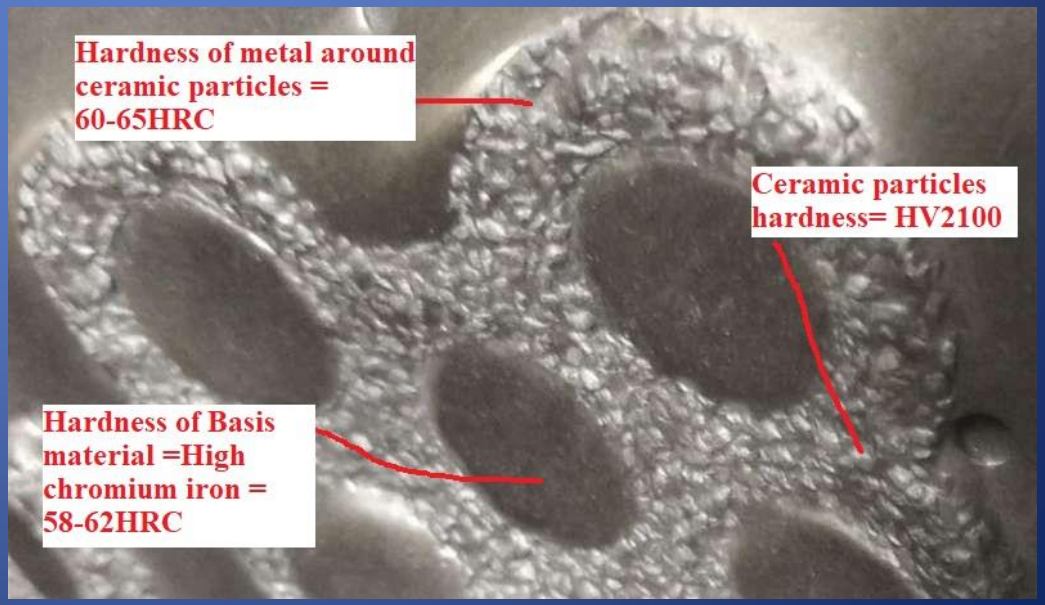
高铬陶瓷复合层的硬度呈阶梯分布:

陶瓷颗粒硬度= HV2100

陶瓷颗粒周围的金属硬度= 60-65HRC

基材硬度=高铬铸铁= 58-62HRC

适合在低冲击和高磨损条件下使用



MMC-M 马氏体钢陶瓷复合耐磨材料
MMC-M (Martensite steel matrix ceramic Insert casting Wearparts）

MMC-M (Martensite steel matrix ceramic insert casting wear-resistant material）

That is, the reinforcement phase - ceramic particles are cast in the easily worn parts of the metal parts with martensitic steel as the base material. The metal-ceramic composite layer is formed by the metallurgical combination of ceramic particles and casting alloy. The metallurgical bonding of ceramic particles with metal is realized by the heat of metal liquid. The hardness of ceramic-ceramic composite layer formed by ceramic particles and matrix metal is distributed in a step: give full play to the characteristics of high strength and high hardness of martensitic steel, reduce the plastic deformation of metal parts, and improve the impact resistance; Combined with the high wear resistance of ceramic particles, the anti-wear performance of the working surface is improved. The result is a metal component that is both wear resistant and impact resistant. Due to the selection of martensitic steel as the base material, so that the composite material has a good welding, and processing properties, while the product is suitable for flame gas cutting, grinding wheel saw, shear, water cutting, plasma and other cutting methods, welding without preheating or subsequent heating treatment; Compared with ordinary high chromium cast iron, the service life of the product is greatly improved.

The hardness of the Martensite Steel ceramic insert composite layer is distributed in steps：

Ceramic particles hardness= HV2100

Hardness of metal around ceramic particles = 60-65HRC

Hardness of Basis material =Martensite Steel = 48-53HRC

It is suitable for use under high impact and high wear conditions and can be welded

MMC-M 马氏体钢陶瓷复合耐磨材料

即在马氏体钢为基材的金属部件易磨损部位熔铸增强相-陶瓷颗粒.通过陶瓷颗粒与铸造合金的冶金结合来实现金属陶瓷复合并形成金属陶瓷复合层; 陶瓷颗粒与金属的冶金结合是通过金属液体的热量来实现的; 陶瓷颗粒与基体金属形成金属陶瓷复合层的硬度呈阶梯分布: 充分发挥马氏体钢的高强度及高硬度特点，减少金属部件的塑性变形，提高抗冲击能力；结合陶瓷颗粒的高耐磨特性，提高工作面的抗磨性能；从而获得即耐磨且抗冲击的金属部件。因选用马氏体钢为基材，从而使复合材料具有很好的焊接,及加工性能，同时产品适用火焰气割，砂轮锯，剪切，水割，等离子等多种切割方式切割，焊接时无需对其进行预热或后续加热处理;与普通高铬铸铁件相比，产品使用寿命大幅度提高。

马氏体钢陶瓷复合层的硬度分布:

陶瓷颗粒硬度= HV2100

陶瓷颗粒周围的金属硬度= 60-65HRC

基体硬度=马氏体钢硬度= 48-53HRC

适合在高冲击、高磨损条件下使用，可焊接

MMC-Mn高锰钢陶瓷复合耐磨材料
MMC-Mn （High Manganese Steel Ceramic Insert casting wearparts）

MMC-Mn （High-manganese ceramic insert casting wear-resistant material）

That is, the reinforcement phase - ceramic particles are fused and cast in the easily worn parts of metal parts with high manganese steel as the base material. The metal-ceramic composite layer is formed by the metallurgical combination of ceramic particles and casting alloy. The metallurgical bonding of ceramic particles with metal is realized by the heat of metal liquid. The hardness of ceramic-ceramic composite layer formed by ceramic particles and matrix metal shows a step distribution. In the casting engineering, alloy elements in composite ceramic materials are used to refine the grain of high-manganese steel, improve the matrix properties of high-manganese steel, give full play to the work-hardening characteristics of high-manganese steel, reduce plastic deformation, and improve the low-impact wear resistance. Combined with the high wear resistance of the ceramic material, the wear resistance of the working surface is improved, so that the wear-resistant and impact-resistant material is obtained. The life of high manganese steel ceramic composite is greatly improved.

The hardness of the High manganese steel ceramic insert composite layer is distributed in steps：

Ceramic particles hardness= HV2100

Hardness of metal around ceramic particles = 60-65HRC

Basis material=High manganese steel =Hardness HB190-220

Impact hardness of High manganese steel = HB400-500

It is suitable for use under high impact and high wear conditions

MMC-Mn 高锰钢陶瓷复合耐磨材料

即在高锰钢为基材的金属部件易磨损部位熔铸增强相-陶瓷颗粒.通过陶瓷颗粒与铸造合金的冶金结合来实现金属陶瓷复合并形成金属陶瓷复合层; 陶瓷颗粒与金属的冶金结合是通过金属液体的热量来实现的; 陶瓷颗粒与基体金属形成金属陶瓷复合层的硬度呈阶梯分布: 在浇铸工程中利用复合陶瓷材料中的合金元素细化高锰钢晶粒，提高高锰钢基体性能，充分发挥高锰钢的加工硬化特点，减少塑性变形，提高低冲击耐磨能力； 结合陶瓷材料的高耐磨特性，提高工作面的抗磨性能，从而获得即耐磨且抗冲击的耐磨材料。高锰钢陶瓷复合材料的寿命大幅度提高。

高锰钢陶瓷复合层的硬度呈阶梯分布:

陶瓷颗粒硬度= HV2100

陶瓷颗粒周围的金属硬度= 60-65HRC

基材=高锰钢=硬度HB190-220

高锰钢冲击硬度= HB400-500

适合在高冲击、高磨损条件下使用

金属陶瓷复合铸造锤头
Metal matrix ceramic composite Hammer

- DJM可以选用合金钢、高锰钢（或双金属）为基体熔铸陶瓷颗粒的复合铸造工艺制作锤头，采用粉末冶金制芯结合铸造烧结工艺，在浇铸过程中利用复合陶瓷材料降低钢水温度，利用复合陶瓷材料中的合金元素细化合金钢晶粒，提高基体性能，充分发挥合金钢的高强度且耐冲击的特点，提高锤头的抗冲击能力；结合复合陶瓷材料的高耐磨特性，提高锤头工作面的抗磨性能，从而获得即耐磨且抗冲击的锤头。大幅提高使用寿命.
- 高锰钢陶瓷复合（高冲击条件下的凿削破碎）
- 合金钢陶瓷复合（高冲击高冲涮刨削条件下的凿削破碎）
- 双金属陶瓷复合（低中级冲击条件下的凿削破碎）
- 优点：增加使用寿命，可达原本体材料的1—3倍
- DJM can use the composite casting process of alloy steel、high Manganese steel (or bimetal) as the matrix for casting ceramic particles to make the hammer head. Powder metallurgy core making combined with casting and sintering process is adopted. In the casting process, composite ceramic materials are used to reduce the temperature of molten steel, and alloy elements in composite ceramic materials are used to refine the alloy steel grains and improve the matrix properties. Give full play to the characteristics of high strength and impact resistance of alloy steel, improve the impact resistance of hammer head; Combined with the high wear resistance of the composite ceramic material, the wear resistance of the working surface of the hammer head is improved, so that the hammer head is wear-resistant and impact-resistant. Greatly improve the service life.
- High manganese steel matrix ceramic insert casting Hammer be appropriate for crushing under high impact conditions
- Alloy steel matrix ceramic insert casting Hammer be appropriate for crushing under medium impact conditions
- Bimetallic ceramic insert casting Hammer be appropriate for crushing under low and intermediate impact conditions
- Advantages: increase the service life, up to 1-3 times the original body material

陶瓷布局及安装

installation and use effect of Ceramic core for ceramic insert casting Hammer

金属陶瓷复合铸造锤头
Metal matrix ceramic composite Hammer

陶瓷双金属复合铸造锤头
Bimetal matrix ceramic composite Hammer

金属陶瓷复合铸造锤头
Metal matrix ceramic composite Hammer

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谢谢！ / Thanks !

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