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

陶瓷复合雷蒙磨-磨辊-磨环

Ceramic insert Raymond mill-Ring-roller

公司简介
Company profile

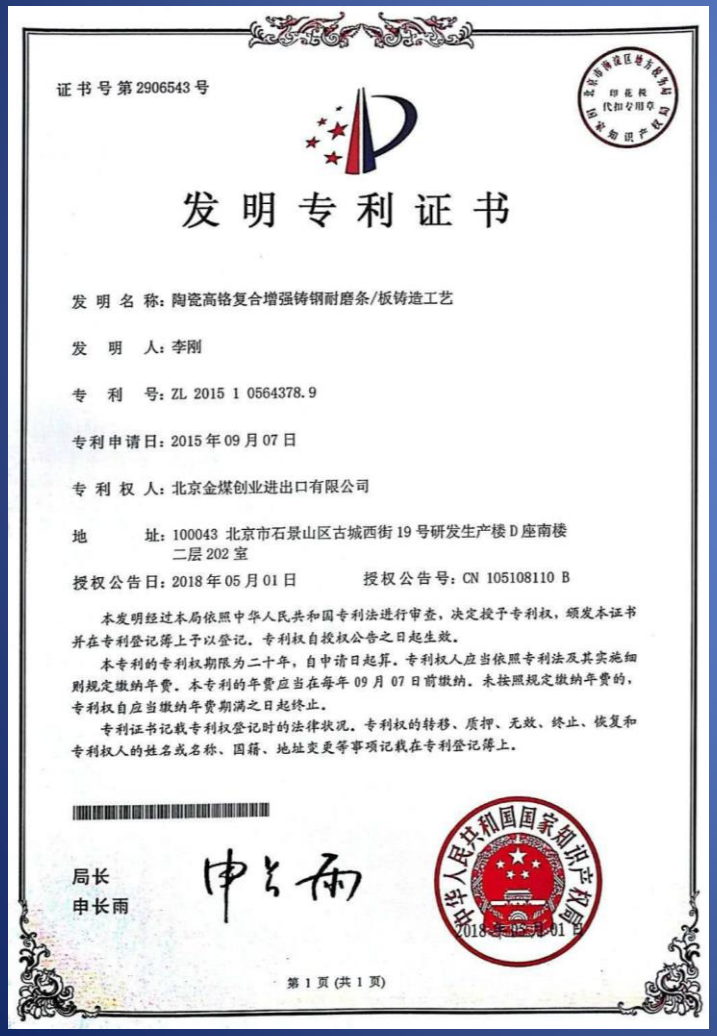
北京金煤创业科技股份有限公司于2006年成立，2016 年改制为股份制公司并成功登陆新三板。公司总部坐落在中国北京中关村科技园古城基地。是集研发，生产，出口销售的互联网+新材料制造企业。
公司主营金属基陶瓷复合材料，耐磨耐热材料，冶金、矿山、水泥、燃煤热电厂设备配件等。产品：高铬陶瓷复合铸造耐磨材料，马氏体钢陶瓷复合铸造耐磨耐冲击材料及各类高锰钢陶瓷复合材料，金属基陶瓷纤维复合材料，ZTA陶瓷机械零部件。

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

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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

专利权人：北京金煤创业科技股份有限公司

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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。

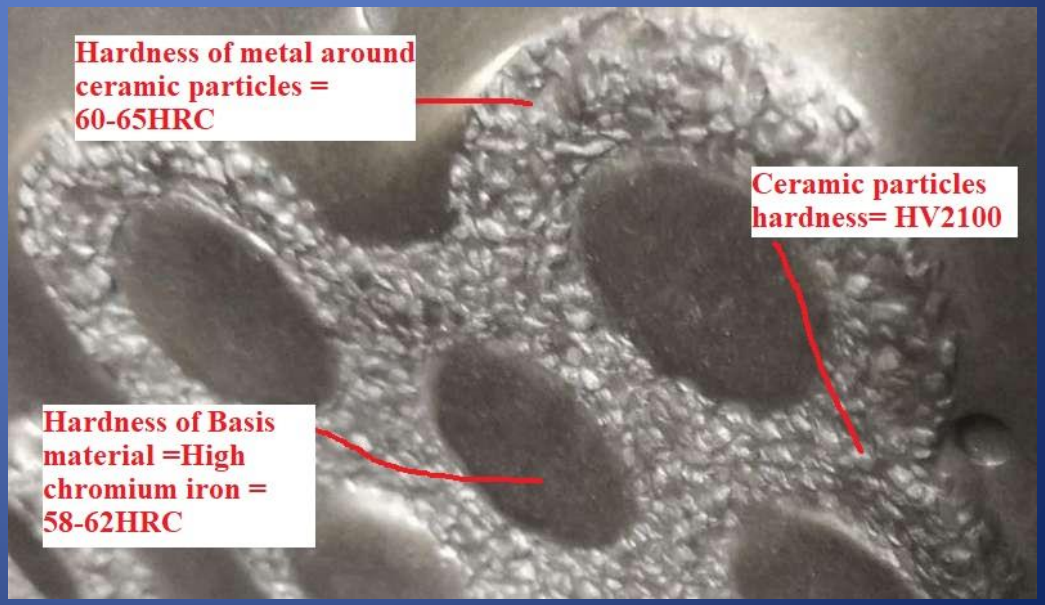
高铬陶瓷复合层的硬度呈阶梯分布:

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-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

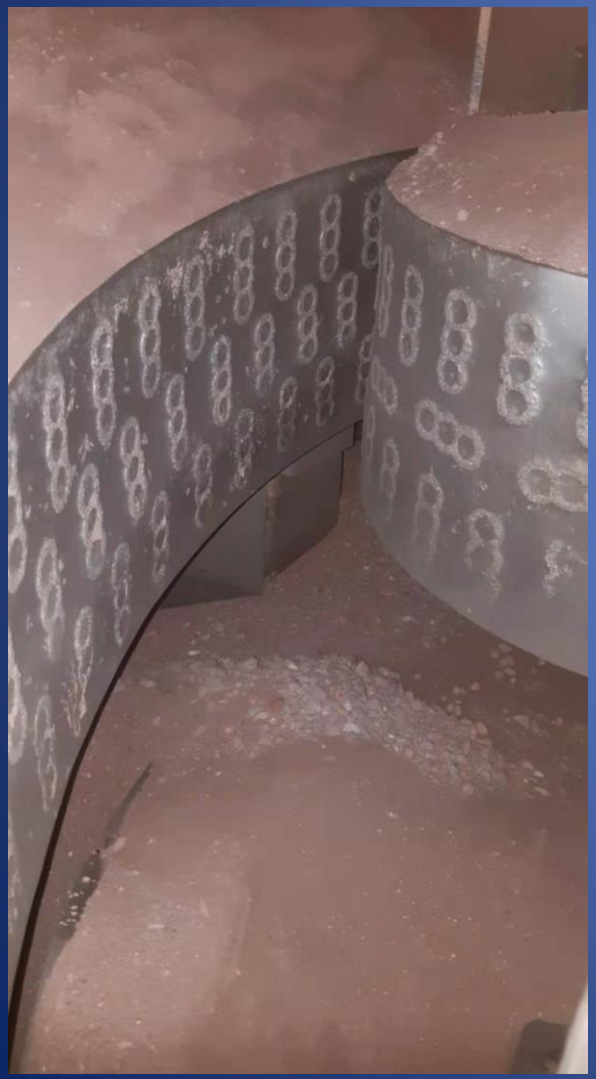
适合在高冲击、高磨损条件下使用

陶瓷复合雷蒙磨-磨辊-磨环-
Ceramic insert Raymond mill-Ring-roller

- 雷蒙磨磨环及磨辊是雷蒙磨的主要易损件， 磨环及磨辊是直接与物料接触的配件，目前多选用合金钢-65Mn 或高锰钢-Mn13，在物料强烈冲击载荷作用下，及破碎过程中的挤压，碾磨作用，他们易出现宏观断裂失效，同时由于物料与他们之间有相对摩擦切削作用，这些耐磨件的磨损相当严重，一般情况下，雷蒙磨在使用一段时间以后就要换磨棍。
- 针对这一情况，DJM 选用高锰钢为基材的陶瓷复合材料，即基体采用高锰钢（或高铬铸铁），同时在基体上嵌铸具有高耐磨性的陶瓷随形加强筋，在保持高锰钢原有的加工硬化耐冲击性能的同时提高了高锰钢的耐磨强度，陶瓷复合铸造磨环及磨辊的使用寿命约为常规高锰钢的2倍以上。
- Raymond grinding ring and roller are the main wearing parts of Raymond grinding, grinding ring and roller are directly in contact with the material of the accessories, the current selection of alloy steel -65Mn or high manganese steel -Mn13, under the strong impact load of the material, and crushing process extrusion, grinding action, they are prone to macro fracture failure. At the same time, due to the relative friction cutting effect between the material and them, the wear of these wear-resistant parts is quite serious, under normal circumstances, Raymond mill will be changed after a period of time. In view of this situation, DJM selects high manganese steel as the substrate ceramic composite material, that is, high manganese steel (or high chromium cast iron) is used as the matrix, and ceramic shaped reinforcement with high wear resistance is embedded in the matrix, which can maintain the original work hardening and impact resistance of high manganese steel while improving the wear resistance of high manganese steel. The service life of ceramic composite casting grinding ring and grinding roller is more than 2 times that of conventional high manganese steel.

陶瓷复合雷蒙磨-磨辊-磨环
Ceramic insert Raymond mill-Ring-roller

陶瓷复合雷蒙磨-磨辊-磨环
Ceramic insert Raymond mill-Ring-roller



陶瓷复合雷蒙磨-磨辊-磨环
Use effect of Ceramic insert Raymond mill-Ring-roller

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谢谢！ / Thanks !

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