KLEMENT

德国技术 中国智造

GERMAN TECHNOLOGY
CHINESE SMART MANUFACTURING

克莱蒙特——无机矿物质铸件引领者

KLEMENT——LEADER OF INORGANIC MINERAL CASTING

全面提供矿物铸件解决方案、矿物铸件定制化服务

Comprehensively provide mineral casting solutions, mineral casting customization services

致力于各类精密机械装备矿物铸件的研发、生产及销售

Dedicated to the R&D, production & sales of all kinds of precision machinery equipment mineral casting

KLEMENT

山东克莱蒙特新材料科技有限公司

Shandong Klement New Material Technology Co., Ltd.

400-0537-397

http://www.klement.cn　　mineral-casting@klement.cn

山东省济宁市兖州区新兖镇北环城路以北冀州路以东（中欧产业园内）

North of Beihuancheng Road, East of Jizhou Road(Inside Sino-Europe Industrial Park), Xinyan Town, Yanzhou District, Jining City, Shandong Province.

企业官方公众号　　营销微信号

企业简介
COMPANY PROFILE

山东克莱蒙特新材料科技有限公司
SHANDONG KLEMENT NEW MATERIAL TECHNOLOGY CO.,LTD.

山东克莱蒙特新材料科技有限公司于2015年与德国公司建立战略合作关系，将成套的矿物铸件配方、生产工艺、制造设备、检测仪器等核心技术全面引进到中国。

Shandong Klement New Material Technology Co.,Ltd. established a strategic cooperation relationship with German companies in 2015, and introduced complete sets of mineral casting formula, production process, manufacturing equipment, testing instruments and other core technologies to China.

公司所使用的是一种新型节能、环保的高强度无机矿物复合材料。矿物铸件是以德国独家拥有的聚合物矿物成分为核心原材料，以国内的优质玄武岩石为骨料，通过严格工艺过程将聚合物材料、骨料及其它材料按比例混合，经过充分均匀搅拌后注入模具凝固而成的铸件产品，具有优良的阻尼减振性能、极佳的热稳定性、超强的耐腐蚀性能，以及良好的力学性能，可替代铸铁、铸钢、天然花岗石等传统材料，被广泛应用于机床、医疗、半导体、印刷行业等重点领域。

The company uses a new type of energy-saving, environmentally friendly high strength inorganic mineral composite material. Mineral castings are based on polymer mineral components exclusively owned by Germany as the core raw materials, with domestic high-quality basalt rock as the aggregate, through a strict process to mix polymer materials, aggregates and other materials in proportion, after full uniform stirring into the mold solidified casting products. With excellent damping performance, thermal stability, super corrosion resistance, and good mechanical properties, can replace cast iron, cast steel, natural granite and other traditional materials, is widely used in machine tools, medical, semiconductor, printing industry and other key fields.

公司拥有强大的国内外技术团队，大型模块化铸造车间，材料实验室及应用实验室，具备从整体方案设计、结构转换、模具设计制造、生产制造到精密加工和整机装配的全链条服务能力，年产能可达50000吨。

The company has a strong domestic and foreign technical team, large modular casting workshop, material laboratory and application laboratory, with the whole chain service capacity from the overall scheme design, structural conversion, mold design and manufacturing, manufacturing to precision machining and machine assembly, with an annual capacity of up to 50,000 tons.

公司凭借矿物铸件稳定的材料性能和先进高效的制造工艺，为高端装备制造行业提供高性能矿物铸件定制服务。

Relying on the stable material properties of mineral castings and advanced and efficient manufacturing process, the company provides high-performance mineral castings customization services for high-end equipment manufacturing industry.

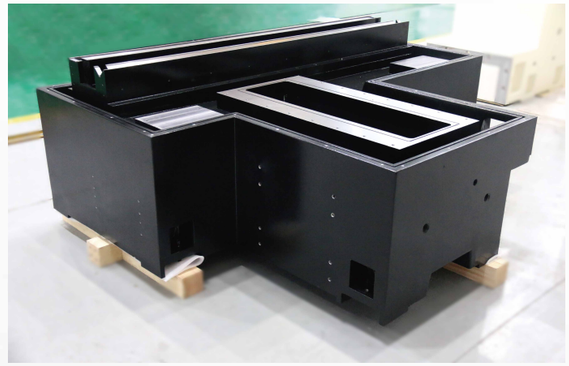
同时，我们将以客户需求为导向，不断提升创新能力，坚持以优良的品质、完善的服务，全面提升产品市场占有率及客户满意度，持续为装备制造行业提供创新发展活力，加快产业转型升级。

At the same time, we will closely follow customers' needs, continuously enhance innovation capacity, adhere to excellent quality, better service, and comprehensively increase the share in the market and and improve customers' satisfaction, accelerate industrial transformation and upgrading.

WORKSHOP OVERVIEW
车间概况

公司拥有7800㎡的恒温铸造车间，5000㎡的恒温装配车间、3000㎡模具制造车间，引进德国全套的自动化矿物铸件生产设备，配备标准化的工艺控制系统及各项生产辅助装备，为模具制造、模具装配及矿物铸件产品的精度和品质，提供了可靠保障。

The company has 7800 square meters of constant temperature casting workshop, 5000 square meters of constant temperature assembly workshop, 3000 square meters of mold manufacturing workshop, and has introduced a full set of automatic mineral casting production equipment from Germany, equipped with standardized process control system and various production auxiliary equipment, which provide reliable guarantee for mold manufacturing, mold assembly and mineral casting products precision and quality.



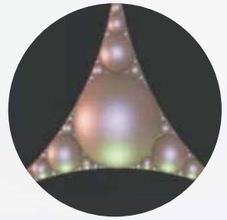
为适应市场需求，满足客户更高要求，公司采用德国品牌精密木工机械设备，F45推台锯、裁板机、大型动柱龙门等模具生产加工设备，有效保障了模具制造过程的精度和品质。

In order to meet market demand and satisfy higher requirements of customers, the company adopts German brand precision woodworking machinery equipment, F45 sliding table saw, plate cutting machine, and mold production and processing equipment such as large moving column gantry, which effectively guarantees the precision and quality of mold manufacturing process.

MINERAL CASTING ADVANTAGE
矿物铸件优势

1 良好的自密实性能
Good self-compacting performance

矿物成分的胶凝材料具有极强的流动性，使矿物铸件材料具有超强的自密实性能。整个浇铸过程无需振动和加压等方式辅助浇铸，铸件本体有着极佳的孔隙率和密实性能。



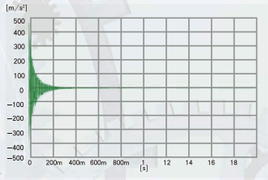
优化颗粒级配
Optimize Particle Gradation

颗粒堆积密实化
Particles are Packed and Compacted

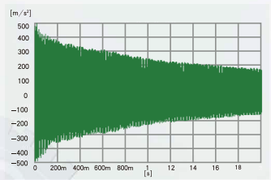
The cementitious material with mineral composition has strong fluidity, which makes the mineral casting material have super self-compacting property. The whole casting process without vibration and pressure auxiliary casting, casting body has excellent porosity and compactness.

2 吸振性能强
Strong Vibration Absorption Performance

矿物铸件的阻尼性能是钢和铸铁的10倍以上（吸振参数），并且吸振能力更好，能大幅吸收和衰减来自外部的震动。在切削加工中，带来优秀的表面加工质量和更高的加工精度，同时增加了切削刀具的寿命。



矿物铸件
Mineral casting

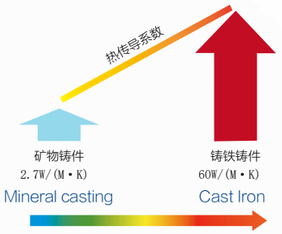


铸铁铸件
Cast Iron Casting

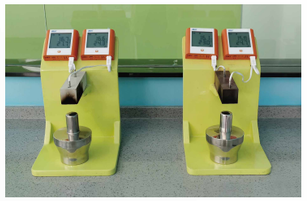
The damping performance of mineral castings is more than 10 times that of steel and cast iron (vibration absorbing parameters), and better absorbing capacity, which can greatly absorb and attenuate external vibration. In cutting, it brings excellent surface machining quality and higher machining accuracy, and increases the life span of cutting tools.

3 极佳的热稳定性
Excellent thermal stability

热传导是铸铁的1/20，比热容是铸铁的2.1倍，温度变化是导致机床精度变化的主要原因之一。使用矿物铸件制造的机床部件，具有极高的比热容和低热传导率，能够把温度影响变化引起的机床精度变化控制到最低，保证了机床加工精度的稳定性。



铸铁的温度变化式矿物铸件的22倍
The temperature variation of cast iron is 22 times that of mineral casting



材料耐热性能测试
Material heat resistance test

The heat conduction is 1/20 of cast iron, and the specific heat capacity is 2.1 times of cast iron. The temperature change is one of the main reasons leading to the change of machine tool accuracy. The machine tool parts made of mineral castings have very high specific heat capacity and low heat conductivity, which can control the changes of machine tool accuracy caused by the changes of temperature influence to the minimum, and ensure the stability of machine tool processing accuracy.

4 静态性能
Static Property

衡量机床床身等部件静态特性的标准通常是材料的刚性，也就是承载下的最小形变。同等重量下，在不考虑形状影响时铸铁件与矿物铸件的刚度是相同的。

The standard to measure the static characteristics of machine tool bed and other parts is usually the rigidity of the material, that is, the minimum deformation under load. Under the same weight, the rigidity of iron castings and mineral castings is the same without considering the influence of shape.

5 铸造精度高
High casting accuracy

矿物铸件通过高精度模具，表面可实现0.1mm/m铸造精度，一般外观面无需再进行机械加工，大幅节省加工成本和缩短铸件交付周期。

Mineral castings can achieve a casting accuracy of 0.1mm/m on the surface through high-precision molds. Generally, the surface does not need to be processed, thus greatly saves processing costs and shortens the casting delivery cycle.

6 成型能力强
Strong Molding Ability

矿物复合材料具有较强的成型能力，能够完成较为复杂的外形结构。

Polymer mineral materials have good molding ability and can complete more complex shape structures.

7 耐腐蚀性能强
Strong Corrosion Resistance

矿物铸件有良好的密实结构和非常低的孔隙率，具有极低的渗透性、超强的抗侵蚀能力、优秀的阻尼性能。

Mineral castings have good compact structure, very low porosity, extremely low permeability, super strong corrosion resistance and excellent damping performance.

· 矿物铸件实验室 ·
Mineral Casting Laboratory

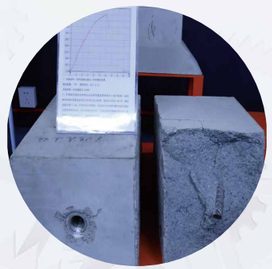
STRICT PROCESS CONTROL
严格的过程控制

抗压性能测试
Compressive Resistance Test

小样搅拌测试
Sample Stirring Test

抗弯性能测试
Bending Resistance Test

冲击破坏力（7800N）
Impact Destructive Power



包裹力测试
Wrapping Force Test

拉伸测试
Tensile Test

抗酸抗碱测试
Acid & Alkali Resistance Test

实验数据分析及应用：根据四季温度变化、物料批次变更等因素，依据实验结论调整工艺操作方法及骨料，以实验数据结论及时调控操作方法，确保产品生产过程的规范性。

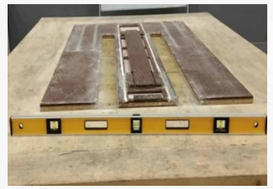
Analysis and application of experimental data: Adjust the processing operation method and aggregate according to seasonal temperature change, material batch change and other factors, timely adjust the operation method based on the experimental data conclusions, to ensure the standardization of the product production process.

STANDARD PRODUCTION PROCESS
标准化生产流程

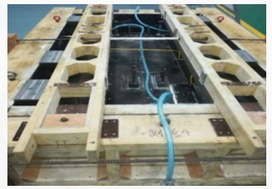
原材料
Raw Material

混合搅拌
Mixing and Stirring

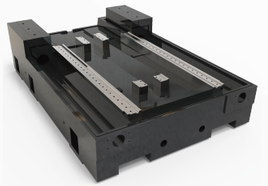
浇铸
Pouring



模具
Mold



部件装配
Component Assembly



铸件
Castings

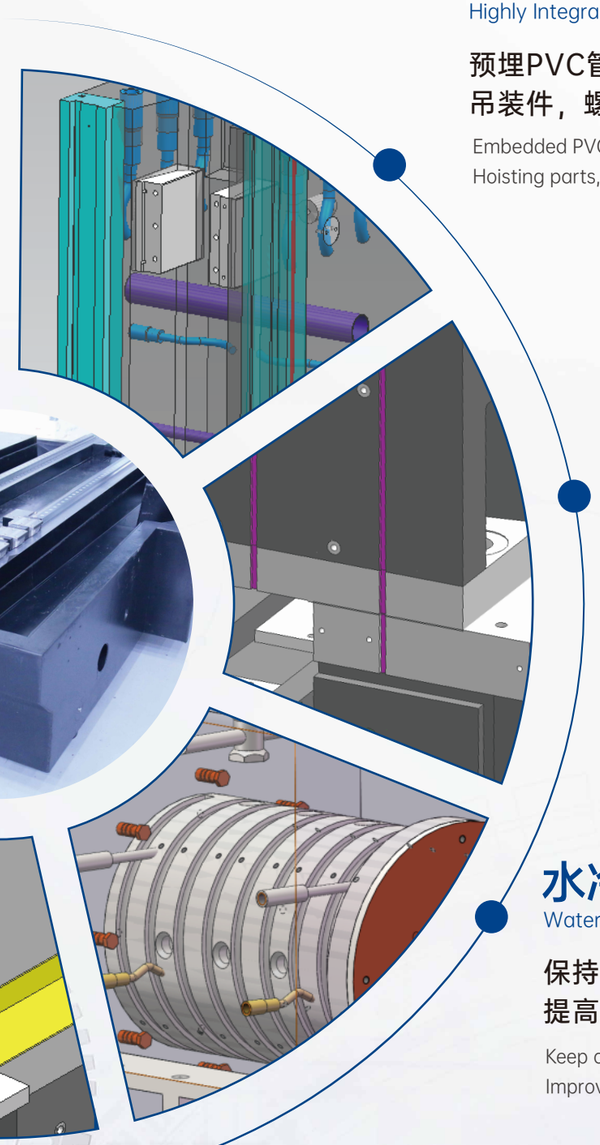
矿物铸件采用常温铸造工艺，产品制作周期仅需5.5天即可进行加工（无需时效），相比传统铸铁铸造工艺更加节能、高效。

Mineral castings adopt normal temperature casting techniques, the product manufacturing period only needs 5.5 days for machining(no need aging), which are more energy efficient and productive compared with traditional iron casting techniques.

KLEMENT

让我们更专业地为您服务

We will serve you more professionally



高度整合
Highly Integrated

预埋PVC管；
吊装件，螺纹嵌件。

Embedded PVC pipe;
Hoisting parts, threaded inserts.

密封槽
Sealing Groove

床身、立柱预留封闭沟槽，
通过增加密封胶条防止漏水。

Reserved closed groove for bed and column, prevent water leakage by adding sealant strips.

排屑槽
Chip Removal Groove

预埋排屑槽，
提高矿物铸件耐磨性。

Embedded chip removal groove, improve the wear resistance of mineral castings.

水冷
Water-cooling

保持铸件恒温；
提高精度稳定性。

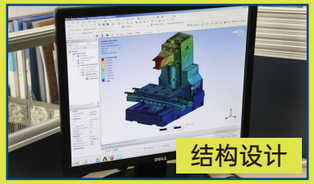
Keep constant temperature of the casting ; Improve accuracy and stability

叉车槽
Forklift Chute

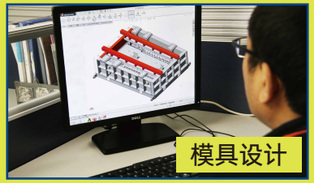
物流运输时的安全装置。

Safety devices during logistics transportation.

Preliminary Technical Exchange

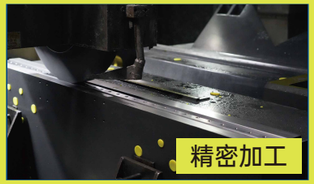


Structural Design

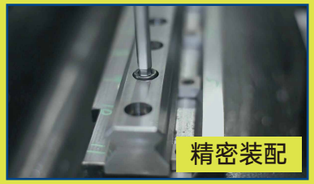


Mold Design

Normal Temperature Casting



High Precision Machining



Precision Assembly

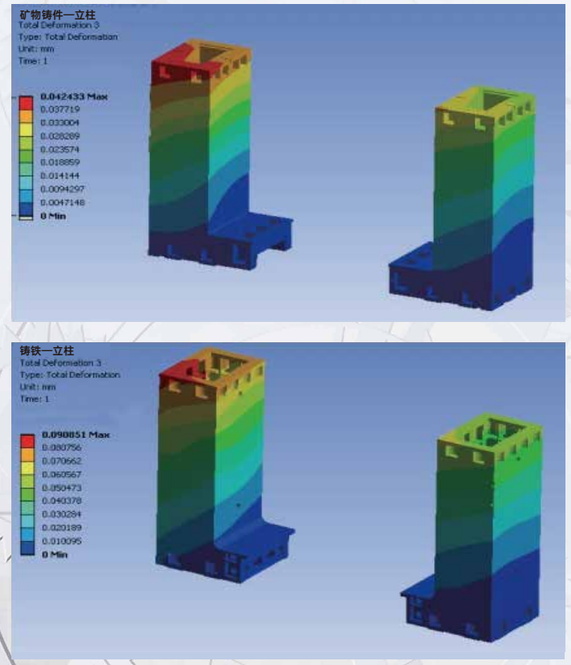
FEM/FEA

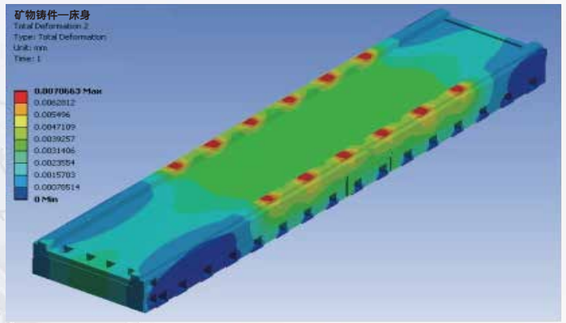
矿物材料结构立柱形变量仅为铸铁结构的 46.7%

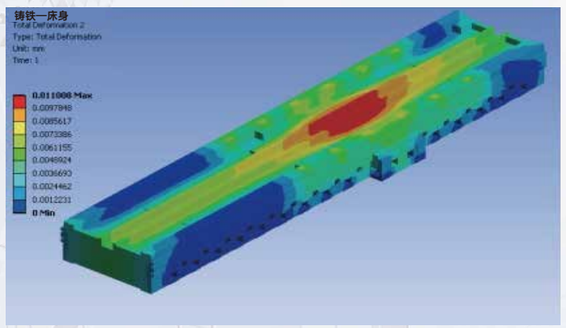
The column shape variation of mineral material structure is only 46.7% of that of cast iron structure.

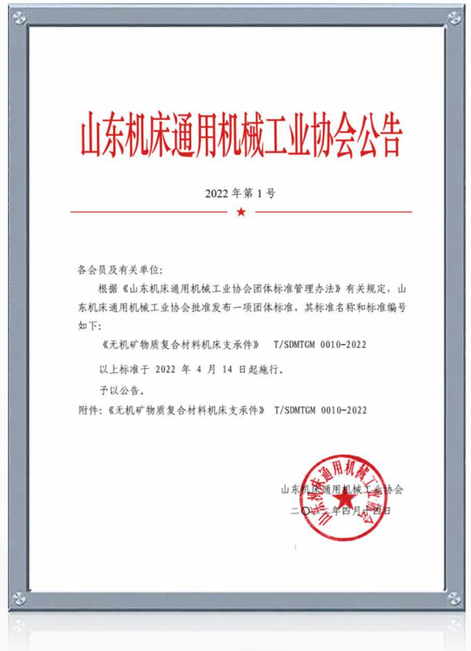
矿物材料结构床身形变量仅为铸铁结构的 64.2%

The bed shape variation of mineral material structure is only 64.2% of that of cast iron structure.









山东机床通用机械工业协会公告

2022 年第 1 号

各会员及有关单位：

根据《山东机床通用机械工业协会团体标准管理办法》有关规定，山东机床通用机械工业协会批准发布一项团体标准，其标准名称和标准编号如下：

《无机矿物质复合材料机床支承件》 T/SDMTGM 0010-2022

以上标准于 2022 年 4 月 14 日起施行。

予以公告。

附件：《无机矿物质复合材料机床支承件》 T/SDMTGM 0010-2022

山东机床通用机械工业协会

二〇二二年四月十四日

《无机矿物质复合材料机床支承件》行业标准制定者

《Inorganic Mineral Composite Material Machine Tool Supporting Elements》
Industry Standard Setter

No: (18)SW0040

济宁市产品质量监督检验所
Jining Institute of Supervision & Inspection on Product Quality

检验报告
Test Report

共 2 页 第 2 页

序号	检验项目	标准要求	检验结果	单项判定
/	带螺螺纹M16	/	/	/
1	循环拉力试验，kN	/	94.0	不判定
2	循环拉力试验，kN	/	106.5	不判定
3	循环拉力试验，kN	/	93.5	不判定
4	循环拉力试验，kN	/	101.0	不判定
5	循环拉力试验，kN	/	123.5（钢筋断裂）	不判定
/	随机螺纹M16	/	/	/
1	循环拉力试验，kN	/	108.0	不判定
2	循环拉力试验，kN	/	95.0	不判定
3	循环拉力试验，kN	/	88.5	不判定
4	循环拉力试验，kN	/	43.0	不判定
/	M12 丝杆	/	/	/
1	循环拉力试验，kN	/	65.0（丝杆断裂）	不判定
2	循环拉力试验，kN	/	66.5（丝杆断裂）	不判定
/	M16 丝杆	/	/	/
1	循环拉力试验，kN	/	97.0	不判定
2	循环拉力试验，kN	/	107.0	不判定
3	循环拉力试验，kN	/	97.0	不判定

检验员：

No: (17)SW0188

济宁市产品质量监督检验所
Jining Institute of Supervision & Inspection on Product Quality

检验报告
Test Report

共 2 页 第 1 页

样品名称 Sample	矿物测试块	检验类别 Test Kind	委托检验
委托单位 Client	山东元茗蒙特新材料科技有限公司	规格型号 Model, Type	300x300x800
生产单位 Manufacturer	山东元茗蒙特新材料科技有限公司	样品等级 Grade	/
送检单位地址 Address of Client		商 标 Brand	/
抽样地点 Sampling Location		送样人员 Sampler	张明瑞
抽样基数 Sample Batch		送样日期 Receipt Date	2017-08-03
样品数量 Sample Quality	1块	生产日期 Producing Date	/
样品特征和状态 Sample Description	深灰，正常	样品编号 Batch No	170103
检验环境 Environmental for Test	晴天，22℃	检验日期 Test Date	2017-8-4
检验依据 Test Standard	GB/T 228.1-2010		
检验要求 Test Item	钢管拉力（28KJ/J）		
检验结论 Test Conclusion	该样品检测结果详见附页。		
备注 Note			

检测：2017.08.07 审核：2017.08.01 主检：2017.08.04

No: (17)SW0205

济宁市产品质量监督检验所
Jining Institute of Supervision & Inspection on Product Quality

检验报告
Test Report

共 2 页 第 1 页

样品名称 Sample	矿物测试块	检验类别 Test Kind	委托检验
委托单位 Client	山东元茗蒙特新材料科技有限公司	规格型号 Model, Type	300x300x800
生产单位 Manufacturer	山东元茗蒙特新材料科技有限公司	样品等级 Grade	/
送检单位地址 Address of Client		商 标 Brand	/
抽样地点 Sampling Location		送样人员 Sampler	张明瑞
抽样基数 Sample Batch		送样日期 Receipt Date	2017-08-15
样品数量 Sample Quality	1	生产日期 Producing Date	/
样品特征和状态 Sample Description	深灰，正常	样品编号 Batch No	170208
检验环境 Environmental for Test	晴天，22℃	检验日期 Test Date	2017-8-21
检验依据 Test Standard	GB/T 228.1-2010		
检验要求 Test Item	钢管拉力		
检验结论 Test Conclusion	该样品检测结果详见附页。		
备注 Note			

检测：2017.08.29 审核：2017.08.20 主检：2017.08.20

No: (17)SW0090

济宁市产品质量监督检验所
Jining Institute of Supervision & Inspection on Product Quality

检验报告
Test Report

共 2 页 第 1 页

样品名称 Sample	矿物测试块	检验类别 Test Kind	委托检验
委托单位 Client	山东元茗蒙特新材料科技有限公司	规格型号 Model, Type	300x300x800
生产单位 Manufacturer	山东元茗蒙特新材料科技有限公司	样品等级 Grade	/
送检单位地址 Address of Client		商 标 Brand	/
抽样地点 Sampling Location		送样人员 Sampler	张明瑞
抽样基数 Sample Batch		送样日期 Receipt Date	2017-05-03
样品数量 Sample Quality	1块	生产日期 Producing Date	2017-05-03
样品特征和状态 Sample Description	深灰，正常	样品编号 Batch No	170119
检验环境 Environmental for Test	晴天，23℃	检验日期 Test Date	2017-5-5
检验依据 Test Standard	GB/T 228.1-2010		
检验要求 Test Item	钢管拉力（40-60T）		
检验结论 Test Conclusion	该样品检测结果详见附页。		
备注 Note			

检测：2017.05.07 审核：2017.05.01 主检：2017.05.05

PROCESSING CAPACITY
加工能力

机加车间现拥有各类数控加工设备 50 余台，10 年以上工程师 5 名，并具备德国蔡司三坐标检测仪、光学准直仪等高精密检测设备。在职员工 65 人，车间占地 8000 余平方米，主要为各类机械设备零部件提供加工服务。

The machining workshop now boasts more than 50 sets of various CNC processing equipment, 5 engineers with more than 10 years' experience, and high-precision testing equipment such as Zeiss three-coordinate measuring machine, optical collimator, etc. With 65 employees, the workshop covers an area of more than 8000 square meters, mainly providing processing services for various mechanical equipment parts.

EQUIPMENT OVERVIEW
设备概况

2 台瓦德里希重型龙门（18 米和 13 米 ），加工范围 18 米 ×5 米 ×5.5 米。

2 sets of Waldrich heavy-duty gantry (18m and 13m),
with processing range of 18m × 5 m× 5.5 m.

主要为各类大型重型零件提供加工服务，全行程加工精度可控制在 0.05mm 以内。

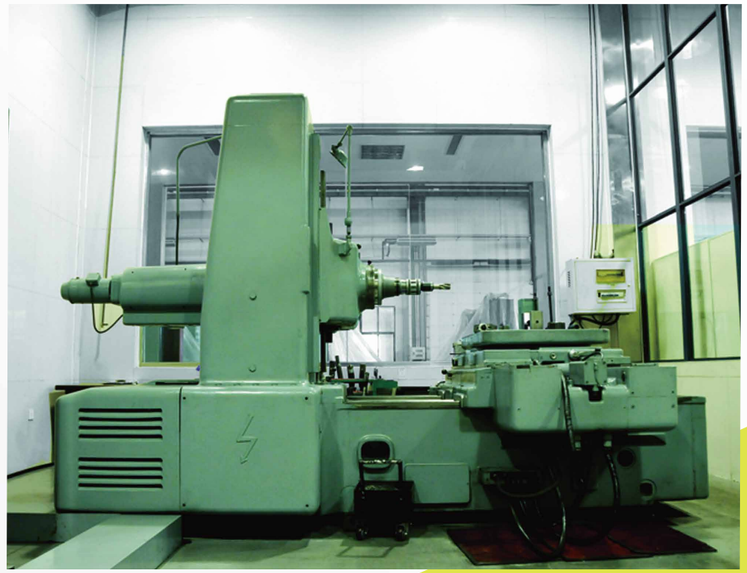
It mainly provides processing services for various large and heavy parts,
and the full-stroke processing accuracy can be controlled within 0.05mm.

1 台 RY-GB8550F5 桥式五轴龙门，全行程定位精度 0.03mm 以内，直线度 0.02mm 以内。

1 set of RY-GB8550F5 bridge-type five-axis gantry, with full-stroke positioning accuracy within 0.03mm and straightness within 0.02mm.

可提供 8.5 米 ×4.5 米内大型工件精加工。

It can provide finishing of large work-pieces within 8.5m×4.5m.

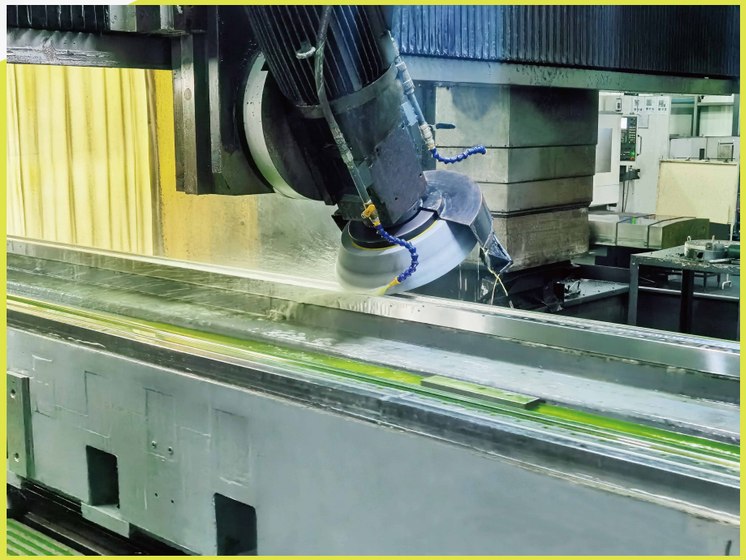


2 台 DIXI 坐标镗，可提供高精密座类产品加工，孔圆柱度 0.002mm。

2 sets of DIXI coordinate boring machines,It can provide high-precision seat products processing,Bore cylindricity is 0.002mm.

1 台仓敷 AKB-13 数控铣加工中心，可提供高精密大型箱体类产品加工。

1 set of Kuraki AKB-13 CNC milling machining center, whcih can provide high precision large-scale box type products processing.



4 台导轨磨床，行程分别是 12 米、6 米、4 米、3 米；最大磨削工件尺寸为 12m×4.5m×1.9m。

4 sets of guide rail grinding machines with travel of 12m, 6m, 4m and 3m respectively; The maximum grinding workpiece size is 12m × 4.5m × 1.9m.

全程直线度可控制在每米 5μm 以内。可提供各类大型床体类、台面类精密表面磨削加工。

The straightness of full stroke can be controlled within 5μm per meter.It can provide precision surface grinding of all kinds of large bed and table.

4 台卧式加工中心，可提供各类中小型精密座类、箱体类加工。

4 sets of horizontal machining centers, which can provide all kinds of small and medium-sized precision seat type and box type processing.

20 余台立式加工中心，可提供各类中小型零件部加工。

More than 20 sets of vertical machining centers, which can provide processing for various small and medium-sized parts.

2 台 10 米龙门，可提供 10 米 ×4 米 ×2.4 米内的大型零部件加工；
6 台 9 米以下龙门，3 米 /3.5 米 /4 米 /6.5 米 /9 米。

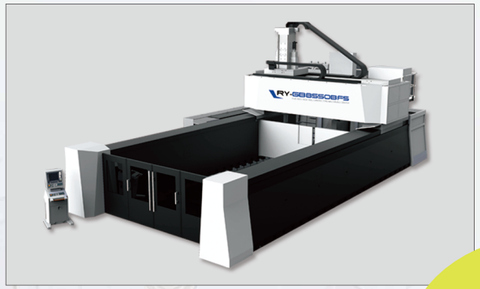
2 sets of 10m gantry, which can provide 10m × 4m × 2.4m large parts processing;
6 sets of less than 9m gantry , 3m/3.5m/4m/6.5m/9m.

拥有德国蔡司三坐标检测仪、光学准直仪等高精密检测设备，所有量检具，
每年定时邀请第三方检测机构进行校验。

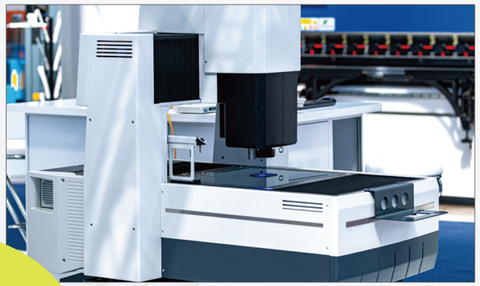
It boasts high-precision testing equipments such as German Zeiss three-coordinate measuring instrument , optical collimator, etc. All measuring instruments are regularly calibrated by third-party testing agencies every year.

APPLICATION AREA
应用领域

机床行业
Machine Tool Industry

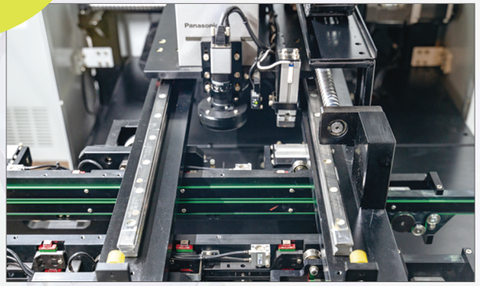


精密光学设备
Precision Optical Equipment



应用领域
Application Field

精密医疗设备
Precision Medical Equipment



半导体行业
Semiconductor Industry

PRODUCT ADVANTAGES
产品优势

高阻尼性 High Damping

30%	10%	20%	10%
表面加工质量 提高30%	**刀具使用寿命 延长10%**	**声压级别局部 减弱20%**	**装配调试时间 减少10%**
Surface processing quality increased by 30%	Tool service life increased by 10%	Sound pressure level decreased by 20% locally	Assembly & commissioning time decreased by 10%

热稳定性 Thermostability

保证	延长	削弱	精度
保证机床 几何精度	**延长运动 部件寿命**	**削弱环境对 温度场影响**	**保证被加工 工件精度**
Ensure the geometric accuracy of the ma-chine tool	Prolong the ser-vice life of moving parts	Weakening influence of environment on temperature field	Ensure the accuracy of the processed workpiece