创造价值 · 幸福人生

GongKee
工科机电

广东工科机电有限公司

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节能降耗创领者

Pioneer in Energy Efficiency for Ceramics Equipment

陶瓷&石材新技术装备系统制造商

Ceramic&Stone industry creative equipment system manufacturer

关于工科

ABOUT GONGKEE

广东工科机电有限公司成立于2005年春天。公司坐落于经济重镇-佛山市南海区，是集陶瓷、石材机械装备，新型材料研发、生产、销售、服务为一体的国家高新技术企业。

公司获得国内外授权发明专利6项，实用新型专利60多项。公司坚持发挥“工于科技，长于创造”的精神，“求是、求新”的作风，首创“环流磨”打蜡机，抛坯机，抛釉机及其配套工具系统，发明了“陶瓷压轮”磨边机;“无极磨”抛光机及配套刀具系统，达到世界领先水平。

公司长期为陶瓷和石材企业提供“优质、高效、节能、环保、智能”的机械设备及技术服务。公司坚持自主创新，从单机装备工艺系统研制，成长为加工整线及配套刀具的装备系统制造商。十年工科为陶瓷、石材行业创造了五大新技术装备系统。

公司一直努力实践“尚善、尚美”的做人和做事标准。产品遵循“精确、精致、精典”的路径，以“为客户创造价值为宗旨，以市场需求为导向，迅速成长为陶瓷、石材行业新技术装备系统的知名制造商。

工科机电----正在不断实现“创造价值、幸福人生”的企业目标。

工于科技·长于创造 GONGKEE

节能降耗创领者 | 陶瓷&石材新技术装备系统制造商

Guangdong Gongkee Mechanical & Electrical Co., td. established in the spring of 2005,as well as entitled the national hi-tech enterprlse, as integrated ceramic & stone mechanical equipment and materials design, manufacturing, sales and service, located inthe economic center of nanhai district offoshan city.

By the end of 2015, advanced products innovated by gongkee have gained 66 issued patents, including 6 inventive patents and 60 utility patents with 100% service invention implement rate, we adhere the spirit of" scieniic practises with a focus on crealiviy ", the sivle of "seeking faclseeking innovalion".gonakee is the firsl who designed and manulaclured "circulalion arinding wax-polishing machine " "ile body circulation rinding machine" "circulation grinding polishing machine" and its supporing tool system.invented the "ceramic rollers squaring-chamfering machine" .non-polar arinding & polishing machine and its supporting tool svstem which reaches the top levelin the world

We always service for ceramic and stone customers insists on the company spirit "high quality, high efficiency, energy saving, environmental protection, inteligent mechanical equipment and technical". we insist independent innovation,from single equipment processing system, grow into processing lines and supporting tools equipment system manufacturers. en-year gongkee ofers ceramics,stone industry with five new technology equipment:

Company have been trying to practice " advocating goodness,advocating perfect" standard of life and work. follow the path of " accurate.

exquisite, classic", it aims for "create value for customers". oriented by market demand, rapid growth of the well-known manufacturer of ceramic.stone industries by new technology and equipment system.

Gongkee is constantly achieving"value creation,happy life" business goals.



新二次球磨系统

NEW TWICE BALL MILLING SYSTEM

	传统间歇球磨 Traditional Batch Ball Milling	新二次球磨系统 New Twice Ball Milling System	变化 Change
系统概述 System Overview	一次性球磨，球石配比需兼顾砸破与研磨 Single-stage ball milling requires a balanced ball media ratio to optimize both impact crushing and fine grinding.	粗磨砸破、细磨研磨，通过管道泵直接输送 Coarse grinding for impact crushing and fine grinding for particle refinement, with direct pipeline pump delivery.	可在最小化投资的基础上获得最佳投资性价比 Achieve the optimal cost-performance ratio with minimal investment.
细度要求 Fineness Requirement	250目筛余1.5% 1.5% residue on 250 mesh	250目筛余1.5% 1.5% residue on 250 mesh	
球磨时间（H） Milling Time (Hours)	14	11	节约20%以上 Save over 20%
单位电耗 Power Consumption (kWh)	42	35	节约15%以上 Save over 15%
单位球耗（元） Ball Consumption Cost (¥)	12	12	我们承揽球耗，成本完全可控 Cost fully controlled by our company
球石 ball	中铝、中高铝 medium-high aluminum balls 、medium aluminum balls	粗磨用现有球石，细磨用微晶高铝球 For rough grinding, use existing ball stones; for fine grinding, use microcrystalline high-aluminum balls.	兼顾效率提高与成本降低 Balance efficiency improvement and cost reduction
球磨机（选配） ball mill	10-12转/分钟 10-12revolutions per minute	10-20转/分钟 10-20revolutions per minute	可大幅提高球磨效率 it can significantly improve the ball milling efficiency

新二次球磨系统优势 | FEATURES

- **将现有一次磨工艺改为新的二次磨工艺，可以利用现有球磨机中的中高铝球/中铝球进行一次粗磨，我公司重新配置微晶高铝球进行二次细磨。**

  By changing the current single grinding process to the new twice grinding process, we can conduct the initial coarse grinding using the medium-high aluminum balls or medium aluminum balls present in the existing ball mill. Our company reconfigures the microcrystalline high-aluminum balls for the second fine grinding.

- **安装管道泵，将粗磨机浆料直接泵入细磨机，细磨后直接进入浆池，可在不影响生产配方与布局的情况下开展节能降耗，相关粗细磨可完全错峰生产且产量有所增加。**

  Install the pipeline pump and directly pump the slurry from the coarse grinder into the fine grinder. After fine grinding, it will directly enter the slurry pool. This can achieve energy conservation and cost reduction without affecting the production formula and layout. The coarse and fine grinding processes can be completely staggered for production and the output will increase.

- **可为客户节约20%以上的球磨时间，15%以上的单位电耗。**

  It can save the customer over 20% of the ball-milling time and over 15% of the unit power consumption.

- **由我方提供全套技术支持并承揽球耗，使客户的节能降耗事项长期落地有保障。**

  We will provide all-round technical support and bear the cost of the ball, ensuring that the customers' efforts to save energy and reduce consumption can be implemented consistently and securely.

- **可选配球磨机，原有球磨机转速是为天然球石（比重2.2g/cm³）设计并不匹配比重大幅提高的球石（高铝比重3.6g/cm³），球磨机提速可大幅提高球磨效率。**

  Optional ball mill: The rotation speed of the original ball mill was designed for natural ball stones (specific gravity 2.2g/cm³), which is not matched to ball stones with a significantly increased specific gravity (high-alumina ball stones have a specific gravity of 3.6g/cm³). Increasing the rotation speed of the ball mill can significantly improve the ball milling efficiency.







球磨机

BALL MILL

球磨机的核心原理是通过筒体旋转驱动研磨介质（如磨球）产生周期性的冲击与研磨作用。当筒体转动时，研磨介质在离心力作用下随筒体壁上升，升至特定高度后因重力脱离筒壁，以抛物线轨迹落下，对筒内原料产生冲击破碎效应；同时，原料在筒体底部受研磨介质的滚动和滑动作用，发生摩擦研磨。通过这种复合作用，原料逐步被细化至目标粒度并排出。该过程中，研磨介质的运动轨迹、冲击能量及物料的摩擦剪切力共同决定了粉磨效率。

The core principle of a ball mill is that the rotation of the cylinder drives grinding media (such as grinding balls) to generate periodic impact and grinding actions.As the cylinder rotates, the grinding media adhere to the inner wall due to centrifugal force, ascending to a critical height before gravity causes them to detach, falling in a parabolic trajectory to deliver impact crushing energy. Simultaneously, at the bottom of the cylinder, materials undergo friction and shear forces from the rolling and sliding motions of the media. This dual-action process progressively refines materials to the desired particle size, which are then discharged. Efficiency is determined by the media's motion trajectory, impact energy, and the shear forces applied to the materials.



技术优势 | TECHNICAL ADVANTAGES

● 可调转速系统优化研磨效率

- 传统球磨机转速（10-12转/分钟）基于密度2.2g/cm³的天然球石设计，而微晶高铝球密度达3.6g/cm³，其离心力需求与运动惯性显著提升。
- 定制化球磨机采用10-20转/分钟可调转速方案，通过匹配高密磨球的动力学特性，大幅增强研磨介质的冲击动能，较传统设备效率提升30%以上。

● Variable Speed Optimization for Enhanced Efficiency

- Traditional ball mills operate at 10-12 RPM, optimized for natural grinding media (density: 2.2 g/cm³). In contrast, high-alumina ceramic balls (density: 3.6 g/cm³) require increased centrifugal force and rotational inertia.
- Customized ball mills feature adjustable speeds (10-20 RPM), dynamically matching the kinetic requirements of high-density media. This results in a 30%+ improvement in grinding efficiency compared to conventional systems.

● 永磁电机+变频器的智能驱动方案

- 永磁电机：相比传统异步电机，效率提升15%-20%，具备高功率因数（>0.95）和低能耗特性，适配长时间连续运转场景。
- 变频器协同控制：通过实时调节电机转速，精准匹配不同物料的研磨曲线（如粗磨阶段高转速冲击、细磨阶段低转速研磨），实现能耗与效率的最优平衡，同时降低启动电流对电网的冲击。

● Intelligent Drive System: Permanent Magnet Motor + Variable Frequency Drive (VFD)

- Permanent Magnet Motor: Offers 15%-20% higher efficiency than induction motors(with power factors exceeding 0.95). Ideal for continuous, high-load operations.
- VFD Integration: Enables real-time speed adjustment to optimize grinding parameters (e.g., high-speed for coarse grinding, low-speed for fine milling). This reduces energy consumption while minimizing grid impact during startup.



陶瓷磨抛系统

CERAMIC GRINDING AND POLISHING SYSTEM









陶瓷抛光生产线系统 | Ceramic Polishing Production Line System

- **高标准的机架确保稳定性和耐用性。**
  High-standard racks ensure stability and durability.
- **集中排水和防锈涂层延长设备使用寿命。**
  Centralized drainage and anti-rust coating extend equipment service life.
- **安全设计保障人员安全。**
  Safety designs guarantee personnel safety.
- **专利皮带技术控制偏差并防止皮带跑偏。**
  Patented belt technology controls deviation and prevents belt running.

抛光机 | Polishing Machine

- **创新268 型磨盘技术提高稳定性。**
  Innovative Type 268 grinding disc technology enhances stability.
- **柔性联轴器设计确保磨头升降平稳。**
  Joint bearing design ensures smooth lifting and lowering of the grinding head.
- **刚性桥架和每分钟 20次的横梁摆动增强抛光均匀性。**
  Rigid bridge frame and 20-time/minute crossbeam swing enhance polishing uniformity.
- **电气控制防止砖块遗漏或重叠。**
  Electrical control prevents missing or overlapping bricks.
- **自润滑主轴无需维护。**
  Flexible coupling design ensures smooth lifting/lowering of the grinding head.

磨边机 | Edge Grinding Machine

- **伺服推砖速度≥每分钟 75 次。**
  Servo brick-pushing speed ≥ 75 times/minute.
- **动态压砖装置简化操作。**
  Dynamic pressing device simplifies operation.
- **多轴宽度调节专利防止变形。**
  Multi-axis width adjustment patent prevents deformation.
- **电调式可移动架宽并配有电流表。**
  Electrically adjustable rack width with ammeter.

打蜡机 | Waxing Machine

- **纳米膜+自动滴蜡提高光泽度和抗污性。**
  Nano-film + automatic wax dripping improves gloss and stain resistance.
- **行星结构提高成膜效率。**
  Self-lubricating main shaft requires no maintenance.
- **柔性联轴器设计确保磨头升降平稳。**
  Joint bearing design ensures smooth lifting and lowering of the grinding head.
- **自润滑主轴无需维护。**
  Planetary structure enhances film-forming efficiency.
- **电气控制防止砖块遗漏或重叠。**
  Electrical control prevents missing or overlapping bricks.

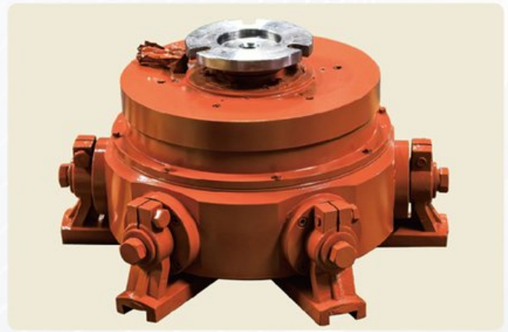
智能化与数字化 | Intelligence and Digitization

- **10英寸触摸屏+可移动屏幕实现实时操作，远程集中控制系统满足智能制造需求。**
  10-inch touch panel + movable screen enable real-time operation.Remote centralized control system meets intelligent manufacturing needs.
- **智能系统收集并分析数据，通过远程监控确保高效稳定的生产。**
  Intelligent system collects and analyzes data, with remote monitoring to ensure efficient and stable production.

石材磨抛系统

STONE GRINDING AND POLISHING SYSTEM







石材磨抛系统概述 | OVERVIEW

	常规抛光线 Conventional Polishing Line	高效磨抛系统 High-Efficiency Grinding & Polishing System	变化 Change
系统概述 System Overview	传统定厚、抛光+碳化硅磨具+非专业磨具 Traditional thickness calibration、polish + silicon carbide abrasives + non-professional operation	超高效定厚、抛光+金刚石磨具+专业承揽+数字化 Ultra-efficient thickness calibration、polish + diamond abrasives + professional team + digitalized control	既降低成本又提高产品质量 Cost reduction and quality improvement
石材规格 Stone Size		2000*3500mm	
每班产量（张） Output per Shift (sheets)	30	180	6倍提升 6x Increase
耗材寿命（H） Abrasive Life (Hours)	1.5	100	66倍提升 66x Increase
表面光泽度 Surface Glossiness (GU)	30-40	40-60	10度以上提升 Increase by more than 10 GU

超高效定厚、抛光
Ultra-efficient thickness calibration、polish

数字化
Digitalized Control

金刚石磨具
Diamond Abrasives

专业承揽
Professional Team

由工科提供行业独家的先进装备系统+磨具+承揽+数字化整体解决方案，实现石材磨抛系统的革命性进步，助力客户专注于业务而不是生产。

Advanced equipment system+abrasive tools+undertake+digitalized overall solution(It is exclusively provided by the Gongkee industry)It brings about a revolutionary advancement to the stone grinding and polishing system, enabling customers to focus on their business rather than production.

数控智能抛光机

CNC INTELLIGENT POLISHING MACHINE

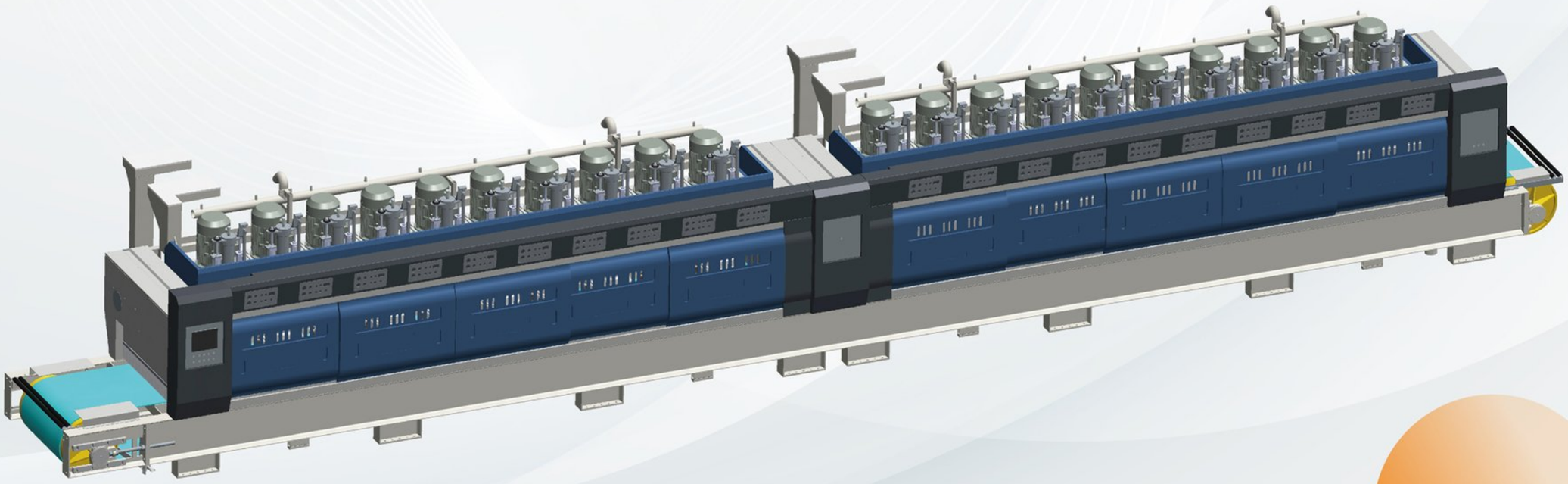
数控智能抛光机配置智能控制系统，运行参数实时监测。具有网络通讯功能，可远程监控，数据化生产。

The CNC intelligent polishing machine is equipped with an intelligent control system, enabling real-time monitoring of operating parameters. It has network communication functions for remote monitoring and digitized production.



数控智能抛光机特点 | FEATURES

- **人机界面采用触摸屏控制；**
  The human-machine interface is controlled via a touch-screen.
- **具有模块耗损实时精确检测功能；**
  It has a function for real-time and precise detection of module wear.
- **磨头电机配电流数字表；**
  The grinding head motor is equipped with a current digital meter.
- **具有缺砖、叠砖保护功能；**
  It has protection functions against tile shortage and tile stacking.
- **具有缺砖变速和碎砖自动避让功能；**
  It has functions for speed change due to tile shortage and automatic avoidance of broken tiles.
- **具有故障提示功能，方便用户及时处理；**
  It has a parameter storage function for convenient user invocation.
- **具有允许参数存储功能，方便用户调用；**
  It has a parameter storage function for convenient user invocation.
- **磨头及上部润滑采用自动加油系统；**
  The grinding head and upper lubrication adopt an automatic oiling system.
- **具有网络通讯功能，可实现远程监控；**
  It has network communication functions to achieve remote monitoring.
- **采用有工科发明专利的GK268抛光磨头，密封性能优越，润滑效果显著提升，磨头使用寿命更长；**
  It uses the GK268 polishing grinding head with a technical invention patent, which has superior sealing performance, significantly improved lubrication effect, and longer service life of the grinding head.
- **磨头上部总成主轴升降采用自润滑铜套滑配，升降配合部分可免加油；**
  The spindle lifting of the upper assembly of the grinding head adopts self-lubricating copper bushing sliding fit, and the lifting fit part can be oil-free.
- **气缸升降采用仿形结构，避免主轴在不同心的工况中运行，有效提升了上部轴承和油封的使用寿命；**
  The cylinder lifting adopts a copying structure to avoid the spindle running under off-center working conditions, effectively improving the service life of the upper bearings and oil seals.
- **大梁与滑枕采用一体式结构，整体机加工，保证了加工面的精度等级；马鞍设计采用有工科实用新型专利的结构，提高了马鞍的强度；大梁摆动平稳、噪声小，摆动次数可提升20%。**
  The girder and cross slide adopt an integrated structure with overall machining to ensure the accuracy level of the machining surface; the saddle design adopts a structural utility model patent to improve the strength of the saddle; the girderoff-center swings smoothly with low noise, and the number of swings can be increased by 20%.



数控智能磨边机

CNC INTELLIGENT EDGING MACHINE

数控智能磨边机特点 | FEATURES

- **人机触摸屏界面操作，高性能PLC控制；**
  Human-machine touchscreen interface operation, high-performance PLC control.

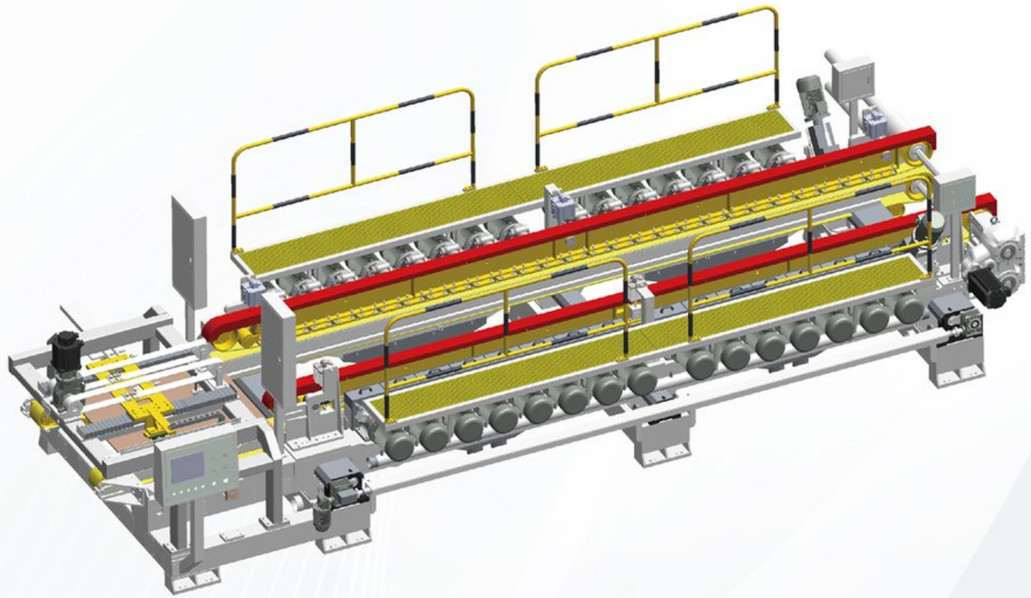
- **对角线误差数字控制自动修正；**
  Digital control and automatic correction of diagonal errors.

- **工作宽度数字控制自动调整；**
  Digital control and automatic adjustment of working width.

- **配置普通电机+编码器精准控制磨边头进给，磨边轮损耗自动补偿，损耗完自动复位提示更换；大幅度降低了现场操作工的工作量，也减少了现场操作人员配置；**
  Configured with a common motor + encoder for precise control of the edging head feed, automatic compensation for edging wheel wear, and automatic reset prompt for replacement after wear is complete; this greatly reduces the workload of on-site operators and reduces the configuration of on-site operators.

- **配备具有自主知识产权的上位机软件，可实时与上位机进行通讯；软件采用标准以太网接口，可无缝接入工厂局域网，与各类ERP软件集成互联；**
  Equipped with upper computer software with independent intellectual property rights, which can communicate with the upper computer in real time; the software uses a standard Ethernet interface and can seamlessly access the factory local area network and integrate with various ERP software.

- **本产品属于干、湿一体设计，增加除尘系统，可作为干法磨边机使用。**
  It uses a peristaltic pump for wax dripping, which can easily adjust the wax dripping speed; wax dripping starts during operation and stops automatically when the machine is stopped, reducing wax water loss.





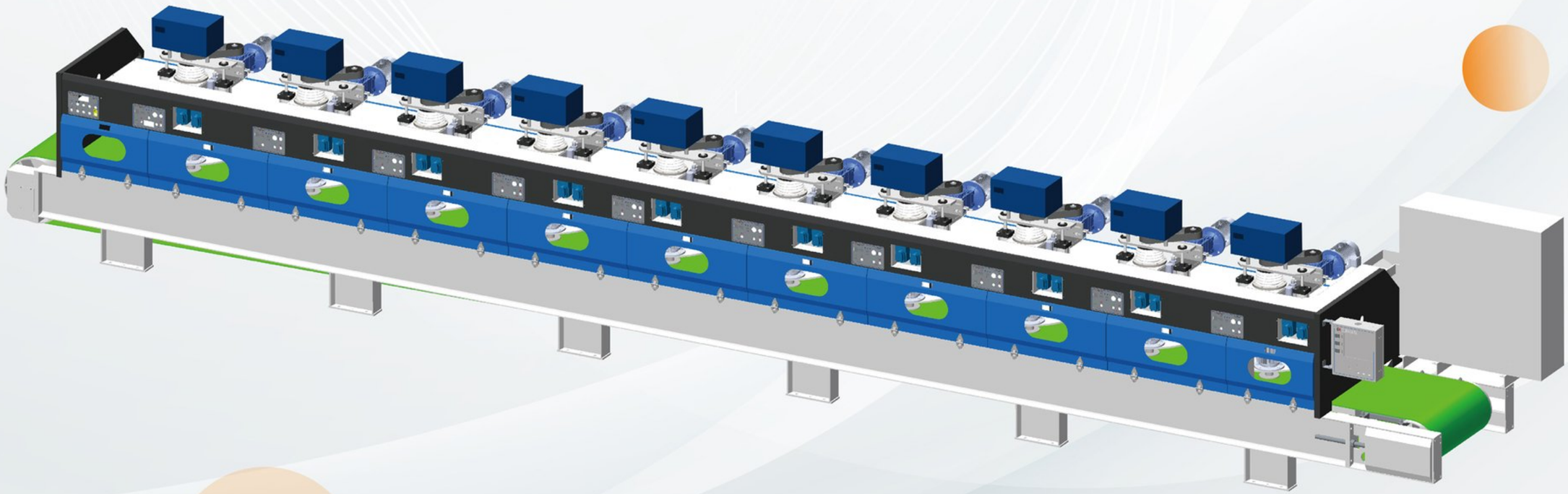
数控智能打蜡机

CNC INTELLIGENT WAXING MACHINE



数控智能打蜡机特点 | FEATURES

- **人机界面采用触摸屏控制；**
  The human-machine interface is controlled via a touchscreen.
- **具体磨具损耗电动补偿功能；**
  It has an electric compensation function for specific abrasive tool wear.
- **具有缺砖、叠砖保护功能；**
  It has protection functions against tile shortage and tile stacking.
- **具有允许参数存储功能，方便用户调用。**
  It has a parameter storage function for convenient user invocation.
- **具有故障提示功能，方便用户及时处理；**
  It has a fault prompt function to facilitate timely handling by users.
- **采用蠕动泵滴蜡，可方便调节滴蜡的速度；工作时开始滴蜡，停机时自动停蜡，可减少蜡水损耗；**
  It uses a peristaltic pump for wax dripping, which can easily adjust the wax dripping speed; wax dripping starts during operation and stops automatically when the machine is stopped, reducing wax water loss.

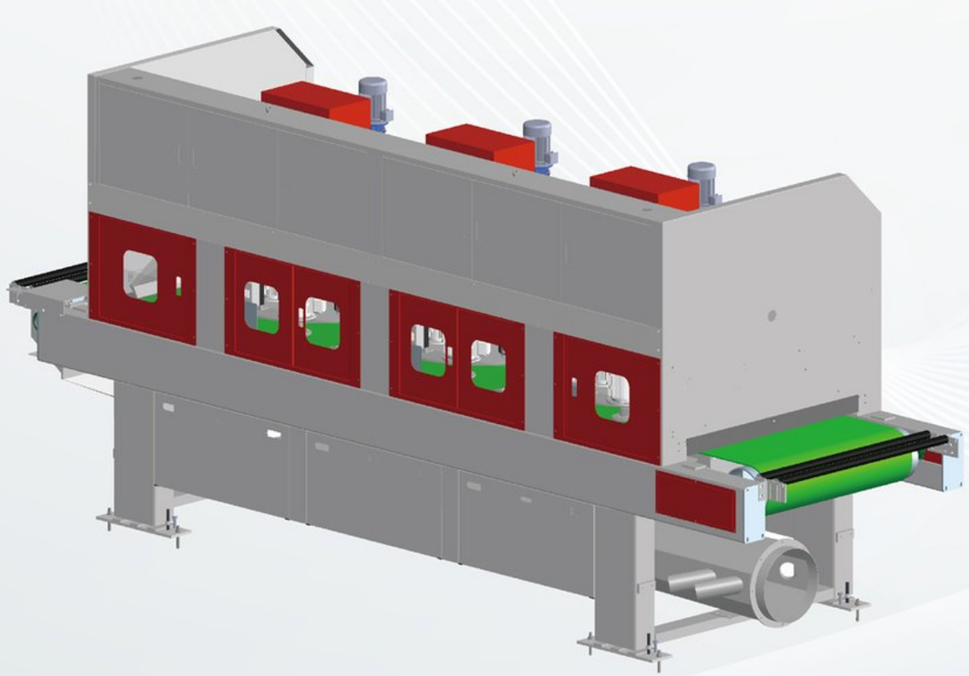


环流磨抛坯机

TILE BODYCIRCULATION GRINDING MACHINE

环流磨抛坯机是工科机电采用“环流磨”结构，优化除尘系统，配套专业抛坯磨轮的陶瓷抛光设备。可用于压机坯、干燥坯、素烧坯的表面抛坯处理，可保证砖坯表面达到光滑、细腻、表面能均化等效果。

Tile Body Circulation Grinding Machine adopts "Circulation structure of the Grinding" structure to optimize the dust removal system and support the professional cast billet Grinding of ceramic polishing equipment. Can be used polishing the green tiles, dried tile, biscuit firing tile, it can make sure the tile surface to exquisite,smooth,and surface energy such as homogenization effect.



环流磨抛坯机特点 | FEATURES

环流磨结构

磨头部分采用独立行星运动结构，高效、平稳、方便、可靠；

Grinding head part adopts planet gear structure, which makes it more efficient, stable, convenient and reliable.

操控系统

配置先进的全数字化操控系统，操作方便、简单；

Equipped with the advanced full digital control system, which helps convenient operation.

自动进给补偿功能

通过采用PLC控制，磨块使用后，系统可按预设的参数进行自动定量补偿；

Automatic feed compensation function: Adopting the PLC control system, the grinding block can be automaticquantitative compensated according to the preset parameters after using.

科学的除尘管道布局

Scientific layout of dust removal pipe can also ensurethat the dust can get effective protection andmanagement during the work.

适用范围广

可满足300-1600mm砖坯的表面抛坏处理；

The equipment series can be used in the processing of 300~2200 mm products surface polishing.

破损率低

使用先进的升降控制系统，保证进给完全数字化，砖坯破损率几乎为零；

Lowbreakage: Using advanced elevator control system to ensure that feed entirely digital and tile breakage rate can almost be zero.

素抛系统

GLAZE POLISHING SYSTEM

	无抛坯 Non-polished	素抛系统 Glaze Polishing System	变化 Change
系统概述 System Overview	需要保证一定施釉量以减少缺陷率 Requires sufficient glaze application to reduce defects	加工坯体表面，减少缺陷，有利于均匀渗釉 Processes tile surface to reduce defects and enhance glaze penetration	既降低成本又提高产品质量 Cost reduction and quality improvement
瓷砖规格 Tile Size	300*300瓷片 300×300mm Ceramic Tile	300*300瓷片 300×300mm Ceramic Tile	
釉料使用量（每片） Glaze Consumption (per tile)			减少30g Decrease by 30g
釉料成本节约（m^2） Glaze Cost Saving (per m^2)			1元 ¥1.00
优等率 First-grade Product Rate	94%	95%	提高1%优等率 Increase the first-grade product rate by 1%
素抛成本（m^2） Polishing Cost (per m^2)	0	0.17	增加0.17元，含设备折旧、耗材、电费 An increase of ¥0.17.Including equipment depreciation, consumables, electricity

好的“素烧坯”是制作高质量瓷片的基础。通过抛坯能将坯体表面毛孔打开，减少施釉量，方便均匀渗釉，使坯体显得更白，去除窑火、落脏等表面缺陷，减少成品砖水波纹，提高优等率，有效提升瓷片的附加值。

A "bisque ware" is the foundation for making high-quality porcelain tiles.Throwing the greenware,it can open the pores on its surface, reduce glaze application rate , facilitate even gtlaze penetration, and make the greenware appear whiter.It can also remove surface defects such as kiln fire marks and dirt, reduce the water ripple effect of the finished bricks, increase the grade rate, and effectively enhance the added value of the ceramic tiles.

