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AMHS物料搬运及 存储系统整体解决方案

Integrated AMHS Material Handling and Storage Solution

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绵阳大族富创得科技有限公司
Mianyang Fortrend Technology Co., Ltd.



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COMPANY PROFILE

企业介绍

AMHS系统整体解决方案

绵阳大族富创得科技有限公司是大族激光科技产业集团旗下、上海大族富创得科技股份有限公司的全资子公司，2025年11月于四川绵阳成立，注册资本5000万元，落地涪城智能制造产业园，是集团布局西南半导体智能装备产业的核心支点。母公司上海大族富创得作为国内半导体晶圆自动化传输设备第一梯队供应商，拥有覆盖SMIF、EFEM、Sorter、VTM等半导体搬运全线产品的完整能力；而绵阳子公司则聚焦其中技术门槛最高、对晶圆厂产能影响最直接的核心领域——天车（OHT）系统，专注于该产品的研发、制造与交付。

公司依托母公司超45年半导体自动化搬运技术积累与全球超100项专利优势，深耕半导体AMHS（自动物料搬运系统）核心领域，天车（OHT）为其标志性产品。该产品悬挂于洁净室天花板轨道运行，可实现晶圆盒、面板载具的“Tool-to-Tool”全自动空中物流，兼具不占地、高洁净、高节拍、低振动的核心优势，能将机台等待时间缩短30%以上。天车项目自2023年起布局，目前已有上千米轨道顺利交付，实现软硬件一体化，可搭配母公司SMIF、EFEM等产品形成全厂全流程自动化解决方案。产品采用模块化设计，95%关键零部件可实现国产替代，并可根据客户需求提供定制化方案；售后团队均具备5年以上相关经验，全国超30个售后办事处，确保设备稳定运行。

作为西南地区半导体智能装备的重要载体，公司立足绵阳“中国科技城”产业优势，深度融入涪城区临港经济发展区“园区提质、企业满园”行动计划。当前，涪城区正加速建设玻璃基半导体产业园等重大项目，为公司提供了优越的产业配套与政策支持。公司紧密对接本地电子信息企业与前沿科创资源，积极投身西部半导体产业生态建设，致力于打造区域内领先的半导体自动化搬运解决方案提供商，助力西南地区先进制造业迈向半导体新高地。

Mianyang Fortrend Technology Co., Ltd. is a wholly-owned subsidiary of Shanghai Fortrend Technology Co., Ltd., which is part of Han's Laser Technology Industry Group. Established in November 2025 in Mianyang, Sichuan, with a registered capital of RMB 50 million, the company is based in the Fucheng Intelligent Manufacturing Industrial Park and serves as the Group's strategic hub for semiconductor intelligent equipment in Southwest China.

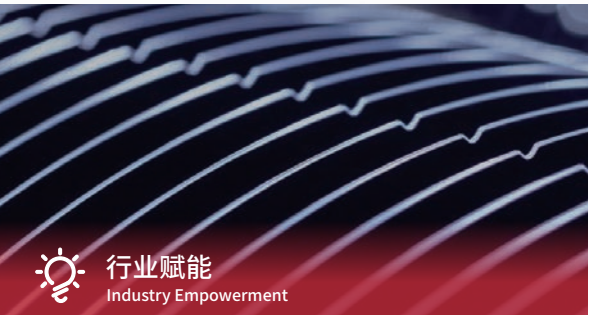
Its parent company, Shanghai Fortrend Technology Co., Ltd., is a first-tier supplier in China's semiconductor wafer automated handling sector, offering a complete product portfolio covering SMIF, EFEM, Sorter, VTM, and other full-line semiconductor transport solutions. The Mianyang subsidiary, in turn, focuses on the most technically demanding and directly fab-throughput-impacting core area—the Overhead Hoist Transport (OHT) system—dedicated to the R&D, manufacturing, and delivery of this flagship product.

Leveraging its parent company's over 45 years of accumulated expertise in semiconductor automation handling and more than 100 global patents, the company is deeply engaged in the core domain of AMHS (Automated Material Handling Systems). Its OHT system, which runs on ceiling-mounted tracks in cleanrooms, enables fully automatic "Tool-to-Tool" aerial logistics for wafer cassettes and panel carriers. With key advantages including zero floor-space occupation, high cleanliness, high throughput, and ultra-low vibration, the system reduces machine waiting time by over 30%.

The OHT project has been under development since 2023, with over one kilometer of track already successfully delivered. It features integrated hardware and software, and can be combined with the parent company's SMIF, EFEM, and other products to deliver a comprehensive plant-wide automation solution. Built on a modular design, over 95% of critical components can be sourced domestically, with customization options available to meet diverse customer requirements. Our after-sales service team brings over 5 years of experience on average, supported by more than 30 service outlets nationwide to ensure reliable equipment operation.

ADVANTAGES

企业优势



专注于为客户提供半导体晶圆/光罩/基板自动化传输系统整体解决方案。
We are dedicated to providing comprehensive automated handling solutions for semiconductor wafers, photomasks, and substrates.



遵循严格标准及产品检验,全方位把控产品质量,为客户提供最佳品质保障。
Committed to adhering to stringent standards and conducting comprehensive product inspections, we ensure full - spectrum quality control to provide customers with the best possible quality assurance.



千级洁净车间达到6000㎡, 万级洁净车间达到12000㎡, 产品专注于半导体核心领域, 为产品的高产量和高质量提供了坚实保障。
6,000 m² of Class 1,000 cleanroom, and 12,000 m² of Class 10,000 cleanroom. Focused on the core of the semiconductor industry, these facilities provide a solid guarantee for high throughput and superior product quality.



全球员工约650人, 研发人员占比33%, 研发投入占比21%, 拥有专业的技术研发团队和先进的实验室设备, 以技术创新理念服务市场。
With over 650 employees worldwide, 33% of whom are R&D personnel, and an R&D investment ratio of 21%, we possess a professional technical R&D team and advanced laboratory equipment, serving the market with a technology - innovation - oriented philosophy.

SERVICE

服务与支持



销售分为华东/华北/华南/西南/西北5大地区, 在上海/深圳/北京/武汉等近32个本地客服中心, 并逐渐增加中, 总体近130名销售和售后服务人员。
Sales and support are organized across five major regions—East China, North China, South China, Southwest and Northwest—and served by nearly 32 local service centers in cities such as Shanghai, Shenzhen, Beijing and Wuhan, with more being added. In total, the company fields close to 130 sales and after-sales personnel.



我们的服务遍布全球, 构建覆盖世界的服务网络, 以专业团队与前沿技术, 为客户提供全天候、全方位、全领域的最佳体验。
We are dedicated to providing comprehensive automated handling solutions for semiconductor wafers, photomasks, and substrates.

PATENT STRENGTH

专利实力

以技术创新为核心，全球专利超百项

富创得始终坚持以技术创新为核心，公司通过不断的研发投入，成功将创新理念转化为实际应用，已在全球范围内拥有超100多项专利。实现关键核心技术自有自主，体现富创得在半导体行业中技术研发和创新方面的深厚实力，展现产品和服务的独特性和竞争力。

Fortrend has consistently upheld technological innovation as its core value. The company has successfully transformed innovative concepts into practical applications through continuous R&D investment, and has secured over 100 patents worldwide. This achievement underscores Han's Laser's robust capabilities in technology research and innovation within the semiconductor industry, highlighting the uniqueness and competitive edge of its products and services.

全球认证 Global Certification



TUV认证证书
TUV Certification



TUV认证证书
TUV Certification



UACK认证证书
UACK Certification



SAFES认证证书
SAFES Certification

产品专利 Product Patent



发明专利认证证书
Invention Patent Certification



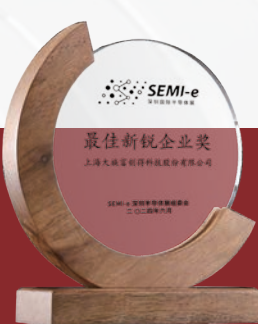
GLORIES OF COMPANY

公司荣誉

富创得在技术创新和行业贡献方面获得了广泛认可，荣获了多项重要奖项。包括“中国瞪羚企业TOP1000强”、“闵行区科技小巨人企业”、“高新技术企业”以及“国家级专精特新企业”，此外，上海大族富创得还获得了“湾芯奖-年度企业奖”以及被北方华创评为2025年度“精英合作伙伴” (Elite Partnership Award)，这反映了其在富创得卓越的产品性能、领先的核心技术、优质的售后保障及强大的供应链协同能力。

Fortrend has garnered extensive recognition for its technological innovation and contributions to the industry, receiving numerous prestigious awards. These include "China's Top 1000 Gazelle Enterprises," "Minhang District Technology Little Giant Enterprises," "High-Tech Enterprise," and "National Specialized and New Enterprise." Additionally, the company has been honored with the "Bay Chip Award - Enterprise of the Year" and recognized as the "Elite Partnership Award" by North Microelectronics for 2025, reflecting its exceptional product performance, leading core technologies, high-quality after-sales support, and robust supply chain collaboration capabilities.

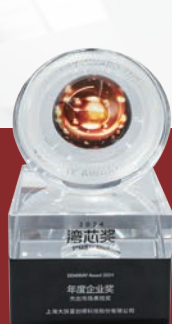
荣誉奖杯 Honorary Trophy



SEMI-e -最佳新锐企业奖
Bay Chip Award - Enterprise of the Year



求是缘-新芯会员
Seeking Truth Is a Bond - New Core Member



湾芯奖-年度企业奖
Bay Chip Award - Enterprise of the Year



北方华创-精英合作伙伴
Elite Partnership Award



中国瞪羚企业TOP1000强
China's Top 1000 Gazelle Enterprises



闵行区科技小巨人企业
Minhang District Technology Little Giant Enterprises



高新技术企业
High-Tech Enterprise



国家级专精特新企业
Specialized and New enterprise

AMHS物料搬运及存储系统整体解决方案

INTEGRATED AMHS MATERIAL HANDLING AND STORAGE SOLUTION

标准机械界面

-  晶圆标准机械界面
Wafer SMIF
-  150-200mm晶圆自动开盒器
Wafer SMIF Loadport (PLM)

设备前端模块

-  晶圆分选设备
Wafer Sorter
-  晶圆前端自动传输设备
Wafer EFEM
-  槽式清洗机前端自动化设备
WTS
-  立式炉自动化设备
FTS

真空传输设备

-  真空传输平台
VTM
-  真空传输机械手
VTM Transfer Robot
-  真空寻边装置
VTM Aligner

核心部件

-  晶圆/光罩/PLP传输机械手
Wafer/Mask/PLP Robot
-  300mm/Frame晶圆装置平台
Wafer/Frame Loadport
-  OCS/Frame OCS
-  玻璃基板装载平台PANEL
Panel PLP Loadport
-  寻边装置
Aligner

光罩搬运系统

-  光罩分选设备
Mask Sorter
-  光罩前端自动传输设备
Mask EFEM
-  光罩标准机械界面
Mask SMIF
-  光罩自动开盒器
Mask SMIF Loadport (PLM)
-  光罩真空传输平台
Mask VTM
-  光罩自动存储系统
Mask Stocker
-  光罩传输机械手
Mask Robot
-  光罩真空传输机械手
Mask Vacuum Transfer Robot

AMHS物料搬运及存储系统整体解决方案

-  天车系统
OHT-Overhead Hoist Transport
-  自动搬运机器人
AGV
-  晶圆/光罩存储系统
Wafer/Sorter Stocker
-  空中缓存净化设备
OHBP-Overhead Buffer (Purge)

8/12寸OHT

8/12 OHT （OVERHEAD HOIST TRANSPORT）

产品介绍 PRODUCT INTRODUCTION



◆ 8寸OHT



◆ 12寸OHT

规格参数 SPECIFICATIONS PARAMETER

产品型号 Product Model	8寸OHT	12寸OHT
设备尺寸 Equipment Dimensions	967mm*460mm*831mm	967mm*460mm*881mm
设备重量 Equipment Weight	≤120kg	≤120kg
供电方式 Power Supply	非接触式供电 Non-contact Power Supply	非接触式供电 Non-contact Power Supply
行走速度 Travel Speed	最高速度5m/s Max. Speed: 5 m/s	最高速度5m/s Max. Speed: 5 m/s
定位方式 Positioning Method	条码尺定位 Barcode Scale Positioning	条码尺定位 Barcode Scale Positioning
定位精度 Positioning Accuracy	±1mm	±1mm
抓手旋转角度 Gripper Rotation Angle	±3°	±3°

产品介绍 PRODUCT INTRODUCTION

OHT (Overhead Hoist Transport) 天车是半导体 AMHS (自动物料搬运系统) 的核心设备, 悬挂在洁净室天花板轨道上运行, 通过升降机构直接抓取并运送 FOUNP、晶圆盒或面板载具到各工艺机台, 实现“Tool-to-Tool”全自动空中物流, 系统由轨道、滑触供电、OHT 小车、地面接驳以及调度软件组成, 具有不占地、高洁净、高节拍、低振动等优势, 可将机台等待时间缩短 30 % 以上

OHT (Overhead Hoist Transport) is the core equipment of the semiconductor AMHS (Automated Material Handling System). Suspended from and running on cleanroom ceiling tracks, it directly picks up and transports FOUNPs, wafer carriers, or panel cassettes to various process tools via its lifting mechanism, enabling fully automated "Tool-to-Tool" aerial logistics. The system comprises track infrastructure, conductor-rail power supply, OHT vehicles, ground transfer stations, and dispatching software. It offers advantages such as zero floor-space occupancy, high cleanliness compliance, high throughput (takt rate), and low vibration, and is capable of reducing equipment waiting time by over 30%.

产品特点 PRODUCT FEATURES

■ 轻量化和小型化设计:降低能耗,提高运行效率,产品各方面性能更高,对安装空间和吊装称重要求更低

Lightweight and Compact Design: Reduces energy consumption while improving operational efficiency and overall product performance; minimizes requirements for installation space and overhead structural load capacity.

■ 模块化设计:安装维护便捷,操作简易;轨道LAYOUT布局更灵活,满足多种布局设计方案

Modular Design: Enables easy installation, maintenance, and operation; offers greater flexibility in track layout to accommodate diverse configuration designs.

■ 可定制化:针对楼层较低和一些机台狭窄或布局参差不齐的生产环境, 富创得可提供多种不同的解决方案

Customizability: Tailored for production environments with low ceiling heights, narrow tool bays, or irregular layouts, Fortrend offers a diverse range of customized solutions.

■ 经验丰富的售后团队:售后技术人员均有5年以上相关经验,可以快速响应处理现场问题,保证生产安全平稳运行

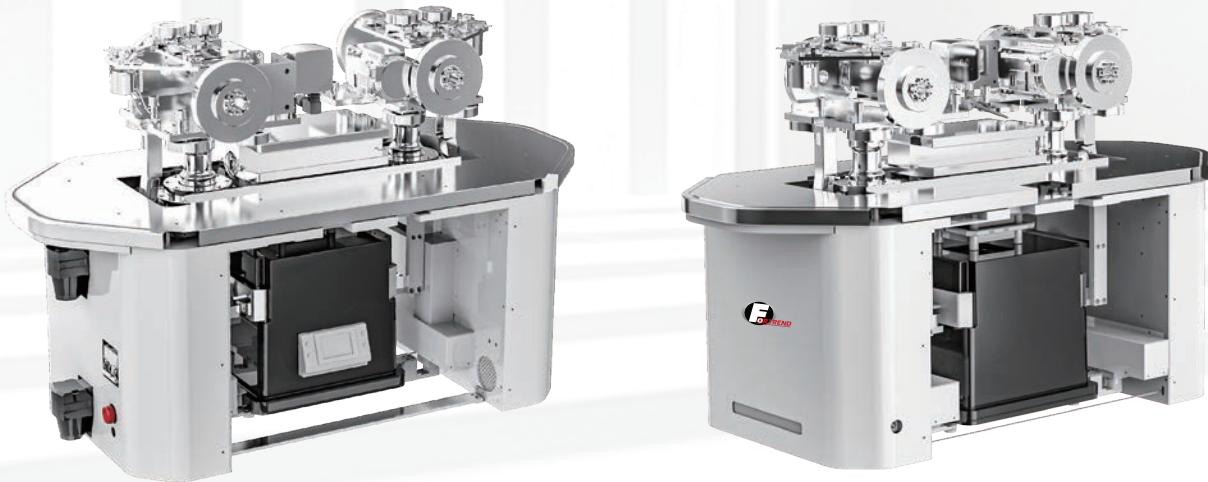
Experienced After-Sales Team: Our service engineers each possess over five years of relevant experience, enabling rapid on-site response and issue resolution to ensure safe, stable, and uninterrupted production operations.

机台设备装载时间 Tool Load Time	10S	10S
机台设备卸载时间 Tool Unload Time	10S	10S
OHB装载时间 OHB Load Time	8S	8S
OHB卸载时间 OHB Unload Time	8S	8S
直道振动值 Straight Track Vibration	<0.3G	<0.3G
弯道振动值 Curved Track Vibration	<0.5G	<0.5G
洁净等级 Cleanliness Class	CLASS 100	CLASS 100
通讯方式 Communication Method	WIFI 6 802.11ax	WIFI 6 802.11ax

OHT-MINI

OHT-MINI

产品介绍 PRODUCT INTRODUCTION



规格参数 SPECIFICATIONS PARAMETER

产品型号 Product Model	8寸OHT
设备尺寸 Equipment Dimensions	967mm*460mm*660mm
设备重量 Equipment Weight	≤60kg
供电方式 Power Supply	非接触式供电 Non-contact Power Supply
行走速度 Travel Speed	最高速度7m/s Max. Speed: 7 m/s
定位方式 Positioning Method	条码尺定位 Barcode Scale Positioning
定位精度 Positioning Accuracy	±1mm
转弯速度 Turning Speed	最高速度1m/s

产品介绍 PRODUCT INTRODUCTION

富创得 Mini OHT 主要应用于楼层高度<3.8m 的低层 Fab 厂房,承担主通道物料转运工作,实现 Bay 与 Bay 之间的跨区域输送;配合 Bay 内部 OHT 协同运行,达成全厂完整自动化物流输送体系

The Fortrend Mini OHT is primarily designed for low-clearance fabs with ceiling heights below 3.8 m. It serves as the main-aisle material transfer solution, enabling inter-bay cross-zone transport. Working in conjunction with in-bay OHT systems, it establishes a complete, fab-wide automated material handling and logistics network.

产品特点 PRODUCT FEATURES

■ 层高适配性能优异, 适配旧厂房改造场景, 无需大规模吊顶改造, 改造投入更低

Excellent Ceiling Height Adaptability: Optimized for legacy fab retrofit scenarios, requiring no extensive ceiling reconstruction and significantly lowering retrofit investment.

■ 运行速度高, 最高行驶速度可达 7m/s, 输送效率突出

High Travel Speed: Maximum operating speed reaches 7 m/s, delivering outstanding transport efficiency.

■ 整机结构设计简洁, 故障点少, 设备稳定性高

Streamlined System Design: Simplified overall architecture with fewer failure points ensures superior equipment stability and reliability.

■ 车体轻量化设计, 对轨道承重荷载要求更低, 有效减少厂房结构改造成本

Lightweight Vehicle Design: Reduced structural load requirements on the track system effectively minimize facility modification costs.

机台设备装载时间 Tool Load Time	-
机台设备卸载时间 Tool Unload Time	-
OHB装载时间 OHB Load Time	-
OHB卸载时间 OHB Unload Time	-
直道振动值 Straight Track Vibration	<0.3G
弯道振动值 Curved Track Vibration	<0.5G
洁净等级 Cleanliness Class	CLASS 100
通讯方式 Communication Method	WIFI 6 802.11ax

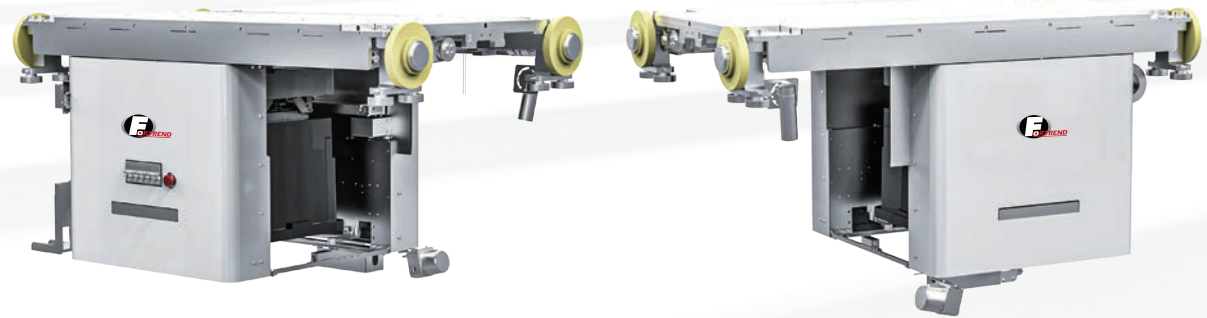
OHT-S(空中移栽小车)

OHT-S (OVERHEAD TRANSFER SHUTTLE)

产品介绍 PRODUCT INTRODUCTION

OHT-S 主要应用于半导体车间，专门用于搬运8英寸带蘑菇头的 POD(晶圆运输盒)。在 OHB 站点与 SMIF 站点之间，设备可精准、高效地搬运晶圆盒。同时，设备通过多重防护与净化技术，确保整个搬运过程符合高洁净度要求全方位保障操作安全，为半导体生产环节的物流流转提供稳定可靠的支持

The OHT-S is designed for semiconductor fabs, specifically for transporting 8-inch mushroom-head PODs (wafer transport pods). Operating between OHB (Overhead Buffer) and SMIF (Standard Mechanical Interface) stations, the system enables precise, high-efficiency wafer box handling. Through multi-layer protection and purification technologies, it ensures the entire transport process meets stringent cleanliness standards while guaranteeing comprehensive operational safety, providing stable and reliable support for material logistics throughout semiconductor production.



规格参数 SPECIFICATIONS PARAMETER

尺寸及行程 Dimensions & Stroke	L:16.0m X轴行程:15.5m(长度可调); W:1.3m Y轴行程:0.65m; H:1m Z轴行程:3.0m L: 16.0 m, X-axis Stroke: 15.5 m (length adjustable); W: 1.3 m, Y-axis Stroke: 0.65 m; H: 1 m, Z-axis Stroke: 3.0 m
储位负载 Slot Load Capacity	250KG 250 kg
NTB 负载 NTB Load Capacity	5KG 5 kg
储位 Storage Slots	40个(根据具体型号调整) 40 slots (adjustable per model)
传输时间 Transfer Time	平均移动时间:20秒 Average Transfer Time: 20 s
	LD:10秒 Load: 10 s
	ULD:10秒 Unload: 10 s
E84功能 E84 Function	可实现E84传感器通讯 E84 Sensor Communication Supported

产品特点 PECIFICATION PARAMETER

■ 极速响应，消除“机等料”：部署在机台正上方，单次Load/Unload (装载/卸载) 最快仅需10秒，1分钟内可完成至少2次连续换料任务。OHT天车可提前将物料放入NTB，机台完成当前任务后能立即接料，无需等待天车调度，大幅提升设备稼动率(传统模式通常仅75%-80%)

Ultra-Rapid Response, Eliminating "Tool Starvation": Deployed directly above process equipment, a single Load/Unload cycle takes as little as 10 seconds, completing at least two consecutive material changeover tasks within one minute. The OHT can pre-stage materials in the NTB (Near Tool Buffer), enabling the tool to receive materials immediately upon completion of the current task without waiting for OHT dispatching. This significantly improves equipment utilization rates (traditional modes typically achieve only 75%-80%).

■ 智能缓冲，优化AMHS流量：作为OHT与机台间的“中转站”，NTB可平衡产线负载。OHT无需为每次换料频繁往返，可一次性为多台NTB备料，显著降低天车空跑率和轨道拥堵，提升整个AMHS系统的吞吐量

Intelligent Buffering, Optimizing AMHS Traffic Flow: Serving as a "relay hub" between OHT and process tools, the NTB effectively balances production line loads. The OHT no longer needs to make frequent round trips for every material changeover; instead, it can batch-supply materials to multiple NTBs in a single run, significantly reducing OHT empty running and track congestion while enhancing overall AMHS throughput.

产品应用条件 PRODUCT APPLICATION CONDITIONS

■ 系统与通信协议：工厂需运行MES(制造执行系统) 和MCS(物料控制系统)。NTB通过这些系统获取搬运指令，并遵循SECS/GEM等半导体行业标准通信协议与上位系统及机台(EAP)交互

The OHT-S is designed for semiconductor fabs, specifically for transporting 8-inch mushroom-head PODs (wafer transport pods). Operating between OHB (Overhead Buffer) and SMIF (Standard Mechanical Interface) stations, the system enables precise, high-efficiency wafer box handling. Through multi-layer protection and purification technologies, it ensures the entire transport process meets stringent cleanliness standards while guaranteeing comprehensive operational safety, providing stable and reliable support for material logistics throughout semiconductor production.

■ 自动化对接接口：现场需具备与OHT天车系统对接的接口和物理空间。NTB作为中转站，需要能流畅接收来自天车的物料，并与机台的Load Port (装载端口) 无缝衔接

Automated Interface: The facility shall have interfaces and adequate physical space to dock with the OHT system. As a transfer station, the NTB needs to smoothly receive materials from the OHT and seamlessly connect to the equipment Load Port.

性能参数 Performance Parameters	正常工作时间(UPTIME)≥99.9% Uptime ≥ 99.9 %
	平均故障间隔时间(MTBF)≥2000H MTBF ≥ 2,000 hours
	平均报警修复时间(MTTR)≤1H MTTR ≤ 1 hour
	平均保养间隔时间(MTBC)≥6个月 MTBC ≥ 6 months
超声波sensor Ultrasonic Sensor	储位有无货探测 Slot Occupancy Detection
对位sensor Alignment Sensor	取放货前位置确认，防止偏差。 Pre-load/unload position verification to prevent misalignment
洁净等级 Cleanliness Class	Class 100
定位精度 Positioning Accuracy	+1mm ±1 mm

8寸晶圆自动存储系统

WAFER AUTOMATED STORAGE SYSTEM

产品介绍 PRODUCT INTRODUCTION

晶圆自动存储系统(是专为半导体晶圆厂设计的自动存储子系统,具备多层存放空间,用于自动化存储、提取和传送各种规格的晶圆料盒,以实现晶圆在不同工艺之间的流转。富创得Stocker可配套AMHS,降低人力盘点的需求,实现自动化的物流管理,实现物料的统一管理,提高工作效率的同时减少人为错误

The Wafer Automatic Storage System is an automated storage subsystem tailored for semiconductor fabs. With multi-tier storage spaces, it handles automated storage, retrieval, and transfer of various wafer carriers to enable seamless wafer flow between processes. Paired with AMHS, the Fuchuangde Stocker reduces manual inventory overhead, achieves automated logistics and unified material management, and improves efficiency while eliminating human error.



规格参数 SPECIFICATIONS PARAMETER

载具类型 Carrier type	8寸 Pod Stk
载重 Payload	最大载重5公斤 Max 5Kg
外形尺寸 Dimension	长×宽×高:根据需求定制 L x W x H :根据需求定制
行走速度 Traveling - Velocity	最大行走速度1.6米/秒 Max 1.6m/s
行走加速度 Traveling - Acceleration	行走加速度0.8米/秒² 0.8m/s²
行走驱动方式 Traveling - Drive Method	交流伺服电机、直线导轨+摩擦驱动 AC Servo Motor, LM-Guide + Friction Drive
升降速度 Lifting - Velocity	最大升降速度2米/秒 Max 2 m/s
升降加速度 Lifting-Acceleration	0.6 m/s²

产品特点 PECIFICATION PARAMETER

■ 高洁净度环境:可稳定维持Class 100 (≥0.5μm微粒≤100个/m³)的超净环境,部分型号通过非接触式供电和FFU层流系统,大幅降低微粒污染风险

Excellent Ceiling Height Adaptability: Optimized for legacy fab retrofit scenarios, requiring no extensive ceiling reconstruction and significantly lowering retrofit investment.

■ 运低震动防损伤:采用高可靠性结构设计,将搬运震动控制在≤0.5G (先进型号可至0.35G),配合耐磨卡槽,有效降低晶圆裂片和隐性损伤风险

Excellent Ceiling Height Adaptability: Optimized for legacy fab retrofit scenarios, requiring no extensive ceiling reconstruction and significantly lowering retrofit investment.

■ 无人化全自动运行:集成高精度机械臂(定位精度可达±0.05mm)与RFID/视觉识别,支持7×24小时不间断运行,彻底避免人员进出带来的污染风险

Streamlined System Design: Simplified overall architecture with fewer failure points ensures superior equipment stability and reliability.

■ 平衡产能差异:作为产线“缓冲池”,在前道(如光刻)与后道(如封装)工序间暂存物料,避免因产能波动导致设备停机或闲置。软硬深度协同:通过SECS/GEM协议与MES/MCS系统实时联动,数据驱动提前备料,配合OHT/AGV精准对接机台,最大化减少机台等待时间

Lightweight Vehicle Design: Reduced structural load requirements on the track system effectively minimize facility modification costs.

产品应用条件 PRODUCT APPLICATION CONDITIONS

■ 设备需安装在满足ISO Class 5/6或更高等级的车间内,工厂需具备或规划MES(制造执行系统)和MCS(物料控制系统;现场需预留符合SEMI标准的OHT天车口、AGV接口或人工操作口;设备需能兼容FOUP、FOSB、Cassette等标准载具,需满足物理空间与承重要求

The equipment must be installed in a cleanroom meeting ISO Class 5/6 or higher. The factory must have or plan to implement MES (Manufacturing Execution System) and MCS (Material Control System). The site must reserve SEMI-standard OHT docking ports, AGV interfaces, or manual operation ports. The equipment must be compatible with standard carriers such as FOUP, FOSB, and Cassette, and must meet the required physical space and load-bearing specifications.

升降驱动方式 Lifting-Drive Method	AC Servo Motor、Timing Belt
储位数 Store the Number	根据场地评估 Subject to Site Assessment / Customized per Site Evaluation
供电方式 Power supply	无线供电 Wireless Power Supply
通信方式 Communication	Serial RS-232、Parallel I/O、E84、SECSII/HSMS
洁净度等级 Cleanness	Class 100
动力需求 Utility requirement	三相380V, 30A
每小时产能 WPH	>80 3-Phase 380V, 30A
振动 Vibration	< 0.5 G

12寸晶圆自动存储系统

WAFER AUTOMATED STORAGE SYSTEM

产品介绍 PRODUCT INTRODUCTION

晶圆自动存储系统(是专为半导体晶圆厂设计的自动存储子系统,具备多层存放空间,用于自动化存储、提取和传送各种规格的晶圆料盒,以实现晶圆在不同工艺之间的流转。富创得Stocker可配套AMHS,降低人力盘点的需求,实现自动化的物流管理,实现物料的统一管理,提高工作效率的同时减少人为错误

The Wafer Automatic Storage System is an automated storage subsystem tailored for semiconductor fabs. With multi-tier storage spaces, it handles automated storage, retrieval, and transfer of various wafer carriers to enable seamless wafer flow between processes. Paired with AMHS, the Fuchuangde Stocker reduces manual inventory overhead, achieves automated logistics and unified material management, and improves efficiency while eliminating human error.



规格参数 SPECIFICATIONS PARAMETER

载具类型 Carrier type	12寸 FOUP STK 12寸 FOUP STK
载重 Payload	最大载重15公斤 Max 15 Kg
外形尺寸 Dimension	长×宽×高:根据需求定制 L x W x H :根据需求定制
行走速度 Traveling - Velocity	最大行走速度2米/秒 Max 2m/s
行走加速度 Traveling - Acceleration	行走加速度1.2米/秒² 1.2 m/s²
行走驱动方式 Traveling - Drive Method	交流伺服电机、直线导轨+摩擦驱动 AC Servo Motor, LM-Guide + Friction Drive
升降速度 Lifting - Velocity	最大升降速度2米/秒 Max 2 m/s
升降加速度 Lifting-Acceleration	1.2 m/s²

产品特点 PECIFICATION PARAMETER

■ 高洁净度环境:可稳定维持Class 100 ($\geq 0.5\mu\text{m}$ 微粒 ≤ 100 个/ m^3)的超净环境,部分型号通过非接触式供电和FFU层流系统,大幅降低微粒污染风险

Excellent Ceiling Height Adaptability: Optimized for legacy fab retrofit scenarios, requiring no extensive ceiling reconstruction and significantly lowering retrofit investment.

■ 运低震动防损伤:采用高可靠性结构设计,将搬运震动控制在 $\leq 0.5\text{G}$ (先进型号可至0.35G),配合耐磨卡槽,有效降低晶圆裂片和隐性损伤风险

Excellent Ceiling Height Adaptability: Optimized for legacy fab retrofit scenarios, requiring no extensive ceiling reconstruction and significantly lowering retrofit investment.

■ 无人化全自动运行:集成高精度机械臂(定位精度可达 $\pm 0.05\text{mm}$)与RFID/视觉识别,支持7×24小时不间断运行,彻底避免人员进出带来的污染风险

Streamlined System Design: Simplified overall architecture with fewer failure points ensures superior equipment stability and reliability.

■ 平衡产能差异:作为产线“缓冲池”,在前道(如光刻)与后道(如封装)工序间暂存物料,避免因产能波动导致设备停机或闲置。软硬深度协同:通过SECS/GEM协议与MES/MCS系统实时联动,数据驱动提前备料,配合OHT/AGV精准对接机台,最大化减少机台等待时间

Lightweight Vehicle Design: Reduced structural load requirements on the track system effectively minimize facility modification costs.

产品应用条件 PRODUCT APPLICATION CONDITIONS

■ 设备需安装在满足ISO Class 5/6或更高等级的车间内,工厂需具备或规划MES(制造执行系统)和MCS(物料控制系统;现场需预留符合SEMI标准的OHT天车口、AGV接口或人工操作口;设备需能兼容FOUP、FOSB、Cassette等标准载具,需满足物理空间与承重要求

The equipment must be installed in a cleanroom meeting ISO Class 5/6 or higher. The factory must have or plan to implement MES (Manufacturing Execution System) and MCS (Material Control System). The site must reserve SEMI-standard OHT docking ports, AGV interfaces, or manual operation ports. The equipment must be compatible with standard carriers such as FOUP, FOSB, and Cassette, and must meet the required physical space and load-bearing specifications.

升降驱动方式 Lifting-Drive Method	AC Servo Motor、Timing Belt
储位数 Store the Number	根据场地评估 Subject to Site Assessment / Customized per Site Evaluation
供电方式 Power supply	无线供电 Wireless Power Supply
通信方式 Communication	Serial RS-232、Parallel I/O、E84、SECSII/HSMS
洁净度等级 Cleanness	Class 100
动力需求 Utility requirement	三相380V, 30A 3-Phase 380V, 30A
每小时产能 WPH	>80
振动 Vibration	< 0.5 G

CASSETTE 晶圆自动存储系统

CASSETTE MASK STOCKER

产品介绍 PRODUCT INTRODUCTION

晶圆自动存储系统(是专为半导体晶圆厂设计的自动存储子系统,具备多层存放空间,用于自动化存储、提取和传送各种规格的晶圆料盒,以实现晶圆在不同工艺之间的流转。富创得Stocker可配套AMHS,降低人力盘点的需求,实现自动化的物流管理,实现物料的统一管理,提高工作效率的同时减少人为错误

The Wafer Automatic Storage System is an automated storage subsystem tailored for semiconductor fabs. With multi-tier storage spaces, it handles automated storage, retrieval, and transfer of various wafer carriers to enable seamless wafer flow between processes. Paired with AMHS, the Fuchuangde Stocker reduces manual inventory overhead, achieves automated logistics and unified material management, and improves efficiency while eliminating human error.



规格参数 SPECIFICATIONS PARAMETER

载具类型 Carrier type	8寸 Open Cassette
载重 Payload	最大载重5公斤 Max 5 Kg
外形尺寸 Dimension	长×宽×高:102000X2713X3900MM L x W x H :10200x2713x3900mm
行走速度 Traveling - Velocity	最大行走速度1米/秒 Max 1m/s
行走加速度 Traveling - Acceleration	行走加速度1米/秒² 1 m/s²
行走驱动方式 Traveling - Drive Method	交流伺服电机、直线导轨+摩擦驱动 AC Servo Motor, LM-Guide + Friction Drive
升降速度 Lifting - Velocity	最大升降速度0.8米/秒 Max 0.8 m/s
升降加速度 Lifting-Acceleration	0.6 m/s²

产品特点 PECIFICATION PARAMETER

■ 高洁净度环境:可稳定维持Class 100 (≥0.5μm微粒≤100个/m³) 的超净环境, 部分型号通过非接触式供电和FFU层流系统, 大幅降低微粒污染风险

Excellent Ceiling Height Adaptability: Optimized for legacy fab retrofit scenarios, requiring no extensive ceiling reconstruction and significantly lowering retrofit investment.

■ 运低震动防损伤:采用高可靠性结构设计, 将搬运震动控制在≤0.5G (先进型号可至0.35G), 配合耐磨卡槽, 有效降低晶圆裂片和隐性损伤风险

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■ 平衡产能差异:作为产线“缓冲池”, 在前道(如光刻)与后道(如封装)工序间暂存物料, 避免因产能波动导致设备停机或闲置。软硬深度协同:通过SECS/GEM协议与MES/MCS系统实时联动, 数据驱动提前备料, 配合OHT/AGV精准对接机台, 最大化减少机台等待时间

Lightweight Vehicle Design: Reduced structural load requirements on the track system effectively minimize facility modification costs.

产品应用条件 PRODUCT APPLICATION CONDITIONS

■ 设备需安装在满足ISO Class 5/6或更高等级的车间内, 工厂需具备或规划MES(制造执行系统)和MCS(物料控制系统;现场需预留符合SEMI标准的OHT天车口、AGV接口或人工操作口;设备需能兼容FOUP、FOSB、Cassette等标准载具, 需满足物理空间与承重要求。

The equipment must be installed in a cleanroom meeting ISO Class 5/6 or higher. The factory must have or plan to implement MES (Manufacturing Execution System) and MCS (Material Control System). The site must reserve SEMI-standard OHT docking ports, AGV interfaces, or manual operation ports. The equipment must be compatible with standard carriers such as FOUP, FOSB, and Cassette, and must meet the required physical space and load-bearing specifications.

升降驱动方式 Lifting-Drive Method	AC Servo Motor、Timing Belt
储位数 Store the Number	508
供电方式 Power supply	无线供电 Wireless Power Supply
通信方式 Communication	Serial RS-232、Parallel I/O、E84、SECSII/HSMS
洁净度等级 Cleanness	Class 100
动力需求 Utility requirement	三相380V, 30A 3-Phase 380V, 30A
每小时产能 WPH	>135
振动 Vibration	< 0.5 G

光罩自动存储系统

MASK STOCKER

产品介绍 PRODUCT INTRODUCTION

晶圆自动存储系统(是专为半导体晶圆厂设计的自动存储子系统,具备多层存放空间,用于自动化存储、提取和传送各种规格的晶圆料盒,以实现晶圆在不同工艺之间的流转。富创得Stocker可配套AMHS,降低人力盘点的需求,实现自动化的物流管理,实现物料的统一管理,提高工作效率的同时减少人为错误

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规格参数 SPECIFICATIONS PARAMETER

载具类型 Carrier type	Mask 光罩片 MASK
载重 Payload	最大载重1公斤 Max 1 Kg
外形尺寸 Dimension	长×宽×高:根据需求定制 L x W x H :根据需求定制
行走速度 Traveling - Velocity	最大行走速度1米/秒 Max 1m/s
行走加速度 Traveling - Acceleration	行走加速度0.5 米/秒² 0.5 m/s²
行走驱动方式 Traveling - Drive Method	交流伺服电机、直线导轨+摩擦驱动 AC Servo Motor, LM-Guide + Friction Drive
升降速度 Lifting - Velocity	最大升降速度0.8米/秒 Max 0.8 m/s
升降加速度 Lifting-Acceleration	0.4 m/s²

产品特点 PECIFICATION PARAMETER

■ 高洁净度环境:可稳定维持Class 100 (≥0.5μm微粒≤100个/m³) 的超净环境, 部分型号通过非接触式供电和FFU层流系统, 大幅降低微粒污染风险

Excellent Ceiling Height Adaptability: Optimized for legacy fab retrofit scenarios, requiring no extensive ceiling reconstruction and significantly lowering retrofit investment.

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产品应用条件 PRODUCT APPLICATION CONDITIONS

■ 设备需安装在满足ISO Class 5/6或更高等级的车间内, 工厂需具备或规划MES(制造执行系统) 和MCS(物料控制系统; 现场需预留符合SEMI标准的OHT天车口、AGV接口或人工操作口; 设备需能兼容FOUP、FOSB、Cassette等标准载具, 需满足物理空间与承重要求

The equipment must be installed in a cleanroom meeting ISO Class 5/6 or higher. The factory must have or plan to implement MES (Manufacturing Execution System) and MCS (Material Control System). The site must reserve SEMI-standard OHT docking ports, AGV interfaces, or manual operation ports. The equipment must be compatible with standard carriers such as FOUP, FOSB, and Cassette, and must meet the required physical space and load-bearing specifications.

升降驱动方式 Lifting-Drive Method	AC Servo Motor、Timing Belt
储位数 Store the Number	600
供电方式 Power supply	无线供电 Wireless Power Supply
通信方式 Communication	Serial RS-232、Parallel I/O、E84、SECSII/HSMS
洁净度等级 Cleanness	Class 10
动力需求 Utility requirement	三相380V, 30A 3-Phase 380V, 30A
每小时产能 WPH	>120
Vibration	< 0.5 G

产品介绍 PRODUCT INTRODUCTION

NTB(Near-Tool Buffer, 近机台缓存),属于晶圆厂AMHS 自动化物料搬运系统的核心配套设备,部署在工艺机台(光刻、刻蚀、薄膜、测试机)旁边,作为OHT 空中天车与工艺机台 Load Port 之间的中转缓存枢纽,解决产线物流“最后一米”瓶颈

NTB (Near-Tool Buffer) is a core supporting component of the AMHS (Automated Material Handling System) in wafer fabs. Deployed adjacent to process equipment—including lithography, etch, thin film deposition, and test systems—it serves as a transfer buffer hub between the OHT (Overhead Hoist Transport) vehicles and the equipment Load Ports, addressing the "last-meter" logistics bottleneck on the production line.



◆ 3X3 NTB



◆ 2X2 NTB

规格参数 SPECIFICATIONS PARAMETER

载具类型 Carrier type	12寸FOUP
额定负载 Payload	Max 15 Kg
外形尺寸 Dimension	L x W x H :2435x760x3179mm
行走速度 Traveling Velocity	Max 1m/s
行走加速度 Traveling Acceleration	1 m/s2
行走驱动方式 Traveling Drive Method	Linear Motor
升降速度 Lifting Velocity	Max 0.7 m/s
升降加速度 Lifting Acceleration	0.4m/s2

产品特点 PECIFICATION PARAMETER

■ 预缓存 FOUP 晶圆盒:OHT 提前把待加工晶圆盒放到 NTB 暂存;机台加工完,成品盒先存入 NTB,不用等待 OHT 实时到场,消除机台等料等待时间,提升机台稼动率

Excellent Ceiling Height Adaptability: Optimized for legacy fab retrofit scenarios, requiring no extensive ceiling reconstruction and significantly lowering retrofit investment.

■ 缓冲 OHT 拥堵:OHT 流量高峰时,NTB 承担临时存储,避免天车排队堵点,平衡物流压力

Excellent Ceiling Height Adaptability: Optimized for legacy fab retrofit scenarios, requiring no extensive ceiling reconstruction and significantly lowering retrofit investment.

■ 自动化无人工干预:减少人工搬运 FOUP,降低颗粒污染风险,适配无尘车间生产要求

Streamlined System Design: Simplified overall architecture with fewer failure points ensures superior equipment stability and reliability.

■ 扩展机台接口:部分工艺机台 Load Port 端口少,NTB 可扩展物料出入口,一台机台对接多盒晶圆周转

Lightweight Vehicle Design: Reduced structural load requirements on the track system effectively minimize facility modification costs.

升降驱动方式 Lifting Drive Method	AC Servo Motor Ball Screw
缓存容量 Store the Number	OHT Port:2个 ; Buffer: 6个
通信方式 Communication	Serial RS-232、Parallel I/O 、E84 、CSII/HSMS
洁净度等级 Cleanness	Class 100
公用工程需求 Utility requirement	三相220V, 10A
作业周期 / 循环节拍 Cycle time	30s
振动等级 / 振动指标 Vibration	< 0.5 G

自动搬运机器人

FRONT LOAD AUTOMATED MOBILE ROBOT (AMR)

电子货架

ELECTRONIC SHELF

产品介绍 PRODUCT INTRODUCTION

富创得AMR自动搬运机器人专为洁净室内晶圆或FOUP全自动搬运设计,可在机台、缓存与仓储间安全高效转运,完美融入现有产线,实现无人化晶圆运输

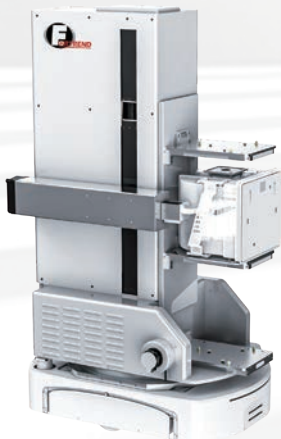
Fortrend AMHS Automated Mobile Robot is purpose-built for fully automated wafer or FOUP handling in cleanrooms, enabling safe, efficient transfers between tools, buffers and storage while integrating seamlessly into existing lines to achieve unmanned wafer transportation.



◆ 8寸6轴AMR



◆ 8寸人形AMR



◆ 12寸人形AMR

产品特点 PRODUCT FEATURES

■ SLAM激光导航设计与自定义地图导航系统,实现无轨道自由导航,轻松应对各种复杂路况,更便捷、更灵活

SLAM laser navigation with custom map system enables track-free navigation, easily handling complex routes for greater convenience and flexibility.

■ 自主研发的FTC和MCS调度派遣、交通管制系统,算法更优,可快速完成全厂AGV运输规划

Self-developed FTC and MCS dispatching & traffic-control algorithms provide superior performance, rapidly planning AGV transport across the entire fab.

产品介绍 PRODUCT INTRODUCTION

专为半导体晶圆厂、封测厂、器件仓库与 SMT 车间设计的智能物料存储与可视化管理单元,融合 RFID 自动识别、电子墨水屏 ESL、工业传感与 WMS/MES 系统对接,实现 FOUP / 料盒 / 晶圆 / 芯片 / 湿化学品的全流程可追溯、零差错、洁净安全、无人化仓储管理

A smart material storage and visual management unit specifically designed for semiconductor wafer fabs, packaging and testing facilities, component warehouses, and SMT production floors. It integrates RFID auto-identification, E-ink ESL (Electronic Shelf Labels), industrial sensing, and seamless WMS/MES system connectivity to deliver end-to-end traceability, zero-error operations, clean and safe handling, and fully automated unmanned warehouse management for FOUPs, material carriers, wafers, chips, and wet chemicals.



◆ 6/8寸电子货架



◆ 12寸电子货架

产品特点 PRODUCT FEATURES

■ 洁净安全,守护晶圆良率:减少人员进出与手动操作,显著降低洁净室污染

Cleanliness & Safety, Safeguarding Wafer Yield: Minimizing personnel access and manual handling to significantly reduce cleanroom contamination.

■ 零差错管理,杜绝生产停线:自动校验料号 / 批次 / 工艺 / 工位,错放即时拦截

Zero-Error Management, Eliminating Production Downtime: Automatically verifying part numbers, batch/lot IDs, processes, and workstations, with instant interception of any misplacement.

■ 效率提升,降本显著:盘点从小时级降至分钟级,人力节省 70% 以上找料时间缩短 80%,库存周转与空间利用率提升,无纸化、少维护,长期运营成本更低

Dramatic Efficiency Gains & Cost Reduction: Inventory cycle counting reduced from hours to minutes; labor savings exceeding 70%, material retrieval time shortened by 80%; enhanced inventory turnover and space utilization; paperless, low-maintenance operations deliver lower long-term operating costs.

■ 柔性适配:兼容 FOUP/8/12 英寸晶圆、芯片托盘、SMT 卷料、湿化学品柜

Flexible Adaptability: Compatible with FOUPs, 8-inch/12-inch wafers, chip trays, SMT reels, and wet chemical cabinets.

E-RACK 电子货架

FRONT LOAD AUTOMATED MOBILE ROBOT (AMR)

CV传输线

ELECTRONIC SHELF

产品介绍 PRODUCT INTRODUCTION

充氮气 E-Rack 电子货架是面向半导体晶圆厂 FAB 的氮气保护型智能电子储位货架, 在标准 E-Rack 智能物料管理基础上集成氮气吹扫 / 密闭充氮控湿控氧功能, 主要用于存放 FOUP、Reticle 光罩盒、Cassette 晶圆载具等对水汽、氧气敏感的半导体物料

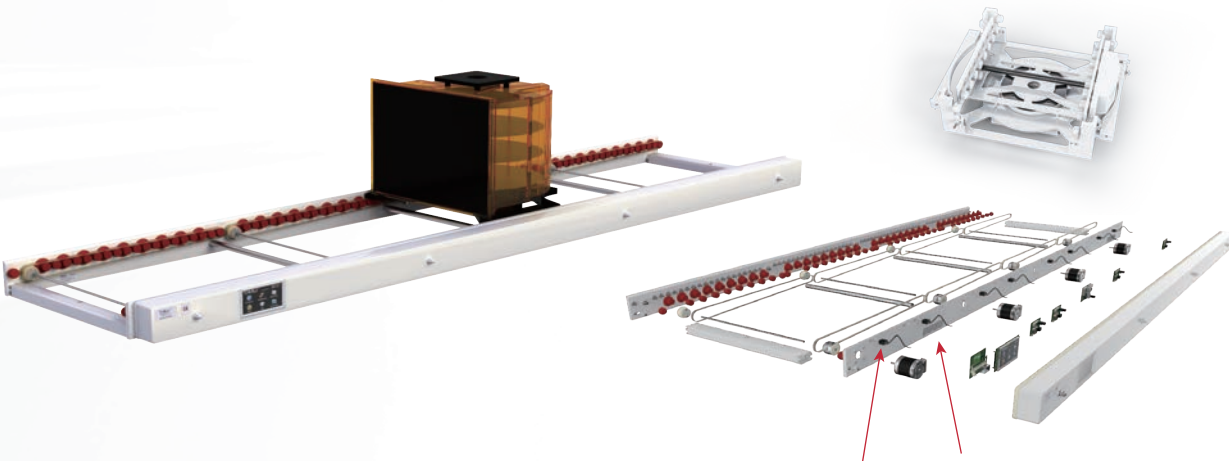
The Nitrogen-Purged E-Rack is a nitrogen-protected intelligent electronic storage rack designed for semiconductor fabrication plants (FABs). Building upon the standard E-Rack intelligent material management system, it integrates nitrogen purge and sealed nitrogen-filling functions for humidity and oxygen control. It is primarily used for storing semiconductor materials sensitive to moisture and oxygen, such as FOUPs, Reticle pods, and Cassette wafer carriers.



产品介绍 PRODUCT INTRODUCTION

线性驱动导轨采用电动驱动滑轮来推动箱体作为载荷沿直线运动, 可串联连接以适应长距离输送需求。这些导轨的长度规格为: 标称值 (*) 均为500毫米的整数倍 (500、1000、1500及2000毫米), 亦可提供定制长度; 导轨上设有可变数量的“区段”, 用于同一线性驱动导轨上多个箱体的SOFT缓冲™功能; 对于充当缓冲作用的导轨而言, 其“区段”密度通常为仅用于运输箱体的导轨的两倍

The Wafer Automatic Storage System is an automated storage subsystem tailored for semiconductor fabs. With multi-tier storage spaces, it handles automated storage, retrieval, and transfer of various wafer carriers to enable seamless wafer flow between processes. Paired with AMHS, the Fuchuangde Stocker reduces manual inventory overhead, achieves automated logistics and unified material management, and improves efficiency while eliminating human error.



- ◆ 所有类型的托盘输送机输送带已划分为多个区域任意区域大小
- ◆ 一个开始sensor, 也一个结束sensor。

产品特点 PRODUCT FEATURES

■ 密闭充氮环境: 独立储位 / 整体腔体氮气吹扫, 实时控制内部氧含量、湿度, 抑制晶圆氧化、受潮, 有效延长 Q-Time, 减少物料报废风险

Sealed Nitrogen Environment: Independent storage slots or full-chamber nitrogen purge, with real-time control of internal oxygen content and humidity levels to suppress wafer oxidation and moisture absorption, effectively extending Q-Time and reducing material scrap risk.

■ 气体智能管控: 支持氮气流量、氧浓度、湿度实时监测; 可设置阈值报警, 氧湿超标触发告警; 支持连续吹扫 / 间歇节能模式, 节约氮气消耗

Self-developed FTC and MCS dispatching & traffic-control algorithms provide superior performance, rapidly planning AGV transport across the entire fab. Intelligent Gas Management: Real-time monitoring of nitrogen flow rate, oxygen concentration, and humidity; configurable threshold alarms triggered by oxygen or humidity exceedance; supports both continuous purge and intermittent energy-saving modes to optimize nitrogen consumption.

■ 洁净密闭结构: 镜面不锈钢腔体, 洁净等级满足 Class10-100 洁净室标准, 防微粒子产生, 适配半导体无尘车间

Clean Sealed Structure: Mirror-finish stainless steel chamber with cleanliness levels meeting Class 10-100 cleanroom standards, preventing particle generation and suitable for semiconductor dust-free manufacturing environments.

■ 安全联锁: 舱门 / 载具在位检测, 开门自动切断充氮, 防止氮气外泄, 具备缺氧安全告警。

Safety Interlock: Door and carrier presence detection with automatic nitrogen cutoff upon door opening to prevent nitrogen leakage; equipped with oxygen-deficiency safety alarms.

产品布局 PRODUCT LAYOUT

■ 高洁净度、低振动值等特点

High cleanliness and low vibration levels, among other features.

■ 可扩展性强, 安装便捷

Highly scalable with easy and convenient installation.

■ 驱动轨与从动轨采用精密加工制成, 可精准定位从动轮与驱动轮, 确保产品输送过程顺畅

The drive rail and driven rail are precision-machined to accurately align the drive wheels and driven wheels, ensuring smooth and reliable product conveying.

■ 白色粉末涂层兼具美观与防静电双重功能

The white powder coating offers both an aesthetic finish and anti-static (ESD) protection.