尊重 Respect　协作 Collaboration

坚韧 Tenacity　创新 Innovation

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VMET

江苏先导微电子科技有限公司

Vital Micro-Electronics Technology（Jiangsu）Co.，Ltd.

宣传手册

Promotional Brochure

公司简介

VMET

江苏先导微电子科技有限公司（VMET）成立于2021年7月，专门从事薄膜技术和真空处理系统的开发、高端镀膜机及半导体设备的生产及销售，是广东先导科技集团在长三角战略布局中打造的国际化高端装备制造标杆企业，公司坐落于江苏徐州，总建筑面积220000㎡，现已汇聚450名行业精英，形成"技术研发-核心部件制造-整机装配-系统集成"的全链条闭环体系。

VMET深度整合德国FHR三十余年真空镀膜领域的技术积淀与先导集团全球领先的半导体材料产业链优势，构建起覆盖PVD/CVD//PECVD/ALD等全工艺流程的装备矩阵。VMET正以"技术先导、全球智造"为战略支点，持续吸引全球顶尖人才加入"真空镀膜技术革命"，致力于成为世界级真空装备解决方案的定义者与领导者，为全球高端制造业提供"中国智造"的新范式。

Vital Micro-Electronics Technology（Jiangsu）Co.，Ltd.(VMET) was founded in July 2021.It specializes in the development of thin-film technologies and vacuum processing systems, as well as the production and sales of high-end coating machines and semiconductor equipment.As a benchmark international high-end equipment manufacturer strategically established by Vital Materials Group in the Yangtze River Delta, VMET is located in Xuzhou, Jiangsu Province, with a total construction area of 220,000 square meters.The company now brings together 450 industry elites and has formed a full closed-loop industrial chain covering technology R&D, core component manufacturing, complete machine assembly, and system integration.

VMET deeply integrates the more than 30 years of technical expertise in vacuum coating from Germany’ s FHR with the globally leading semiconductor material industry chain advantages of Vital Materials Group, establishing an equipment matrix covering the full process flow including PVD, CVD, PECVD, ALD, among others.With “Technology Pioneer, Global Intelligent Manufacturing” as its strategic pillar, VMET continues to attract top global talent to join the “Vacuum Coating Technology Revolution” .It is committed to becoming the definer and leader of world-class vacuum equipment solutions, providing a new paradigm of “Intelligent Manufacturing in China” for the global high-end manufacturing industry.

Company Profile

FHR

FHR成立于1991年，超过35年历史，拥有15000㎡的一流厂区，150+员工，专门从事薄膜技术和真空处理系统的开发。产品包括在薄膜领域的系统工程和组装、溅射靶材和服务，产品基于模块化设计的设备平台，可根据不同应用进行组合。

自2019年12月起成为先导科技集团旗下子公司，先导科技集团是稀有金属材料和技术的市场领导者，通过收购德国高科技领域的中型企业，使集团进一步扩大了产品和服务组合。

FHR was founded in 1991, boasting a history of more than 35 years. It features a first-class manufacturing plant covering 15,000 square meters and a workforce of over 150 employees, and is specialized in the development of thin film technologies and vacuum processing systems. Its product portfolio includes system engineering and assembly for the thin film sector, sputtering targets as well as related services. The products are built on a modularly designed equipment platform that can be customized and combined for diverse applications.

FHR has been a subsidiary of Vital Materials Group since December 2019. As a market leader in rare metal materials and technologies, Vital Materials Group has further expanded its product and service portfolio through the acquisition of several medium-sized enterprises in Germany’ s high-tech sector.

发展历程

Development History

2019

先导集团以全资收购了德国FHR公司（全球领先的薄膜真空设备制造的供应商），拟建设半导体沉积及镀膜设备的国产化生产基地

Vital Group acquired German FHR (a globally leading supplier of thin-film vacuum equipment) through a full acquisition and plans to establish a domestic production base for semiconductor deposition and coating equipment

2021

广东先导稀材股份有限公司（持股比例 51%）与徐州高新国晟半导体有限公司(持股比例 49%）联合成立的合资公司江苏先导

Jiangsu Pioneer, a joint venture established by Guangdong Pioneer Rare Materials Co., Ltd. (holding 51% of the shares) and Xuzhou Gaoxin Guosheng Semiconductor Co., Ltd. (holding 49% of the shares)

2022

一期工程2022年1月份动工，6月底主体工程全面封顶

The first phase of the project will start in January 2022, and the main structure will be fully capped by the end of June

2022年10月正式投产，将填补国内半导体设备在中高端领域的空白

Formally put into operation in October 2022, it will fill the gap of domestic semiconductor equipment in the mid to high end field

2023-2024

2023年出货国内首台钙钛矿柔性生产线

Delivered China's first flexible perovskite production line in 2023

2024年出货100套PBN设备、40套沉积炉、100套MPCVD设备、首台钙钛250MW产线、首台卧式钙钛矿500MW产线、碲化镉试验线、大型双鼓卷绕设备等

In 2024, we delivered 100 sets of PBN equipment, 40 sets of deposition furnaces, and 100 sets of MPCVD equipment. Other milestones included the first 250MW perovskite production line, the first horizontal 500MW perovskite production line, a cadmium telluride pilot line, and large-scale double-drum winding equipment.

2025

2025年出货半导体级单体磁控溅射设备、氮化钽薄膜电阻设备、半导体级ALD量产设备、钙钛矿100MW产线等

In 2025, we shipped semiconductor-grade standalone magnetron sputtering systems, tantalum nitride thin-film resistor equipment, semiconductor-grade ALD mass-production systems, and a 100MW perovskite production line, among others.

2026

未完待续……

Unfinished to be continued...

我们的优势

定位 Positioning

全球领先的薄膜沉积一体化解决方案提供商（设计-制造-组装-测试-应用-服务）

A world-leading provider of integrated thin film deposition solutions (Design - Manufacturing - Assembly - Testing - Application - Service)

客户 Clients

光伏、显示、玻璃、精密光学、半导体、新能源

Photovoltaic, display, glass, precision optics, semiconductor, new energy industries

目标 Goal

成为国内一流、全球领先的薄膜沉积系统解决方案提供商

To become a first-class domestic and world-leading provider of thin film deposition system solutions

战略 Strategy

聚焦专业定制+打造极致产品+保持高效交付+加速全球布局

Focus on professional customization + Build ultimate products + Ensure efficient delivery + Accelerate global layout

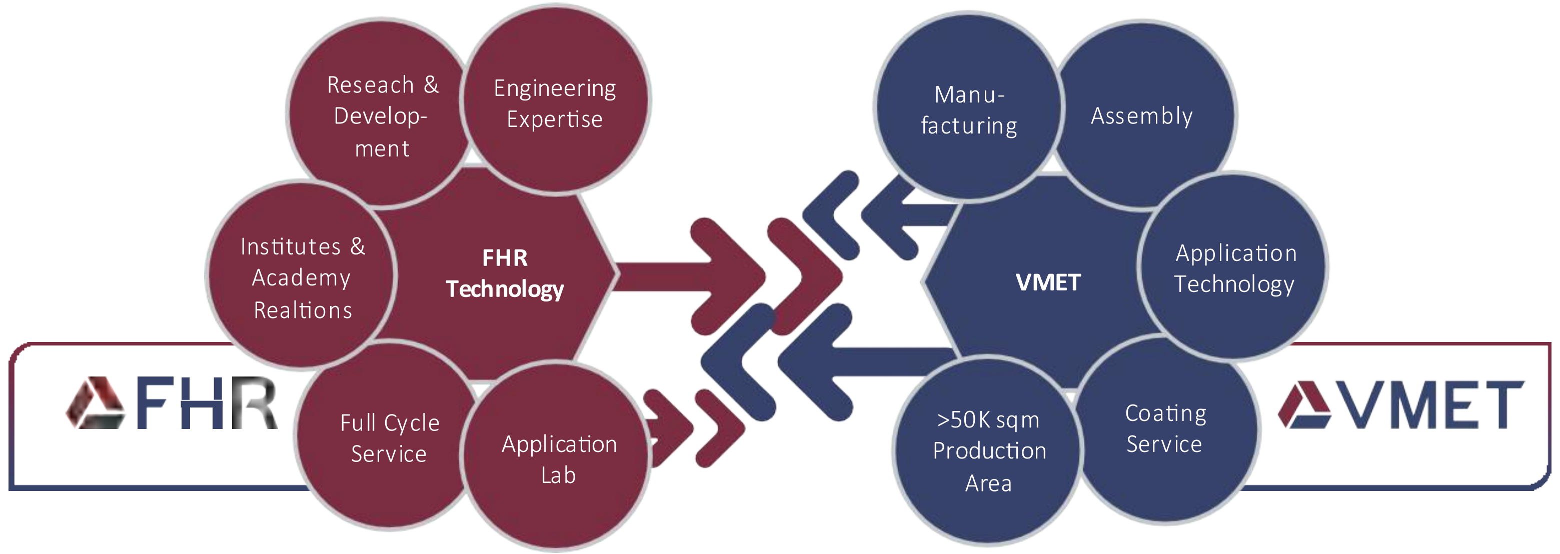
Our Advantages

中国制造：VMET作为设备制造商的佼佼者，专精于设备组装、集成、精密机械加工和制造全流程以及与客户应用的深度融合。同时拥有关键技术的自主开发能力。

Made in China：As a leading equipment manufacturer, VMET specializes in the entire process of equipment assembly, integration, precision machining, and manufacturing, as well as deep integration with customer applications. It also possesses the ability to independently develop key technologies.

德国技术：依托FHR德国的前沿技术，匠心打造半导体、光伏、光学、显示及数据存储等领域所需的尖端真空镀膜设备。

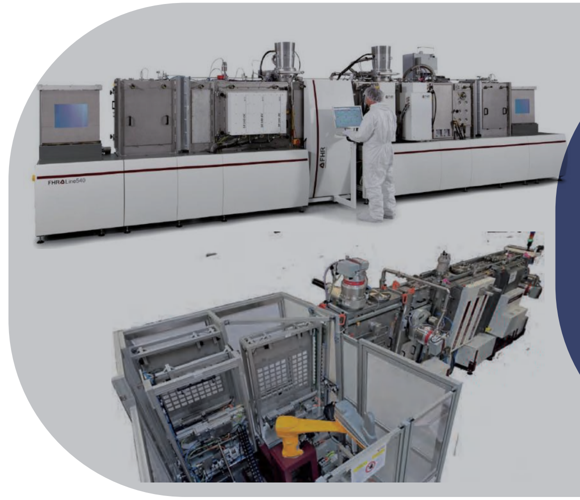
German technology：Relying on FHR Germany's cutting-edge technology, we meticulously create cutting-edge vacuum coating equipment required in the fields of semiconductors, photovoltaics, optics, displays, and data storage.



我们的产品

公司拥有连续线、光学单体机、卷绕以及STAR等产品系列，构建了覆盖 PVD（物理气相沉积）、CVD（化学气相沉积）、ALD（原子层沉积）等核心工艺技术的多元化产品矩阵，旗下高端镀膜系统、精密集群设备、智能模块化单元等系列产品线。

The company has product series including continuous lines, optical single machines, winding and STAR, and has built a diversified product matrix covering core process technologies such as PVD (physical vapor deposition), CVD (chemical vapor deposition), ALD (atomic layer deposition), etc., and its product lines include high-end coating systems, precision cluster equipment, intelligent modular units, etc



连续线产品系列 Continuous line product series

工业级的卧式和立式连续镀膜线，可应用于光伏，显示器，触摸屏等行业，可集成磁控溅射，PECVD，热蒸发等工艺。

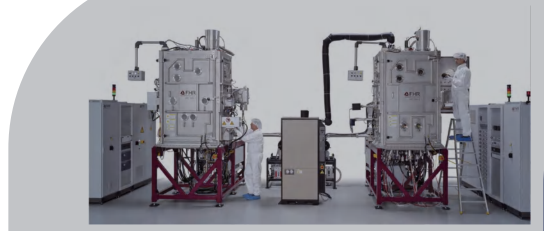
Industrial-grade horizontal and vertical continuous coating lines can be used in photovoltaic, display, touch screen and other industries, and can integrate magnetron sputtering, PECVD, thermal evaporation and other processes.

光学单体机产品系列
Optical stand-alone machine

Boxx产品系列&IAD产品系列

Boxx product series & IAD product series

Our Products



卷绕产品系列 Winding product series

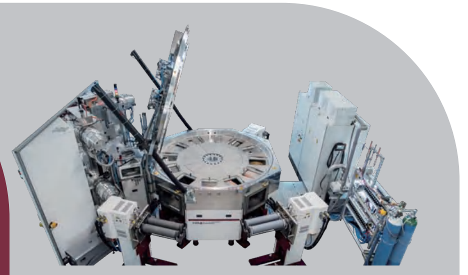
适于金属箔或聚合物膜等柔性基材的溅射、蒸发和等离子体增强化学气相沉积设备，应用于柔性光伏，窗膜，柔性电子元件，柔性显示，锂电池等许多领域，基材尺寸涵盖200mm-1900mm

Sputtering, evaporation and plasma-enhanced chemical vapor deposition equipment suitable for flexible substrates such as metal foil or polymer film. It is used in many fields such as flexible photovoltaics, window films, flexible electronic components, flexible displays, lithium batteries, etc. The substrate size covers 200mm-1900mm.

STAR产品系列 STAR Product Series

模块化枚叶式多功能设备，可自由选配PVD、 PECVD 、 ALD 、 RIE(反应离子刻蚀) 、 IBE(离子束刻蚀)、等离子清洗等模块组合；适用半导体，精密光学，功率器件等领域，基片尺寸3”- 8”，不同机型可满足实验和量产需要。

Modular cluster-type multifunctional equipment, with optional PVD, PECVD, ALD, RIE (Reactive Ion Etching), IBE (Ion Beam Etching), plasma cleaning and other module combinations; suitable for semiconductors, precision optics, power devices and other fields, with substrate sizes from 3" to 8", different models can meet the needs of experiments and mass production.



VMET.FHR.Star.100.PentaCo

配备进样室的共焦溅射设备，适于功能膜沉积

设备介绍 Equipment Introduction

VMET/FHR.Star.100-PentaCo设备为特殊设计、高度集成的溅射设备，适用于硅片类基片或基片承载器的工艺处理。设备构造包括一个配备机械手的进样室和一个最多可装配五个溅射源的工艺腔室。各源以共焦方式排列。沉积过程通过加热式旋转背板携带载片器共同运动方式执行。旋转台接入RF偏压。溅射源装配直径100 mm的平面阴极和气动控制式挡板，可实现依序沉积和共沉积两种工艺方式。此外，各源可沿轴向及横向进行位置调节，并且载片台也可将载片器提升起来。因此，可在不同靶基距条件下实现不同高度基片的膜层工艺。自动传输系统将载片器从进样室传输到工艺腔室。通过预先编辑好的工艺流自动实现基片依序沉积工艺 。

The VMET/FHR.Star.100-PentaCo is a specially designed, highly integrated sputtering system, ideal for processing silicon wafers or substrate carriers.Its configuration includes a load lock chamber equipped with a transfer robot, and a process chamber that can accommodate up to five sputtering sources. These sources are arranged in a confocal layout.The deposition process is performed by a heated rotating back-plate that moves in conjunction with the substrate carrier, with the rotation stage connected to an RF bias. Each sputtering source is fitted with a 100 mm diameter planar cathode and a pneumatically controlled shutter, enabling both sequential deposition and co-deposition processes.Additionally, each source can be adjusted axially and horizontally, and the substrate stage can lift the carrier. This allows film deposition on substrates of varying heights under different target-to-substrate distance conditions. An automated transfer system transports the substrate carrier from the load lock to the process chamber, and pre-programmed process recipes enable fully automated sequential deposition of substrates.

Confocal co-sputtering system with load lock for the deposition of functional layers

关键指标 Key data

设备尺寸(长x宽x高),重量 Dimensions (L×W×H), weight	L4100 mm x W2800 mm x H2700 mm (含电源架), < 2500 kg
基片最大尺寸 Maximum substrate size	直径 diameter 150 mm
载片台 Substrate carrier	直径 diameter 220 mm
进样室类别 Load lock type	单片式进样室，配备自动传输机械手 Single carrier load lock with automatic transfer robot
膜厚非均匀性 Non-uniformity of film thickness	± 3 %
设备构造1 System configuration 1	4 x FHR.SC100-DC/RF (溅射sputter) + 1 x FHR.IEC150-RF (刻蚀etching)
设备构造2 (替代方案) System configuration 2 (alternative)	5 x FHR.SC100-DC/RF (溅射(sputter))
极限真空(溅射腔室) Extreme vacuum (sputtering chamber)	5 x 10^{-5}Pa
电、水、压缩空气、气体 Power, water, compressed air, gases	规格和接口遵照技术标准 Specifications & connections according to applicabletechnical standards
工艺气体 Process gases	氩气(Ar), 氧气 (O_2), 其它种类按需提供 Ar, O_2, other gases on request

典型应用 Typical applications

- ✓ MEMS和传感器领域多层膜 Multilayered films for MEMS and sensor applications
- ✓ 微电和光电领域功能膜 Functional coatings for micro- and optoelectronics

适用工艺 Process

- ✓ 反应和非反应磁控溅射(DC模式) Reactive and non-reactive magnetron sputtering (DC)
- ✓ RF 溅射 RF sputtering
- ✓ 预处理(如，等离子刻蚀) Pre-treatment (e.g. plasma etching)
- ✓ 针对旋转式载片台实现共溅射 Co-deposition onto a rotating substrate holder

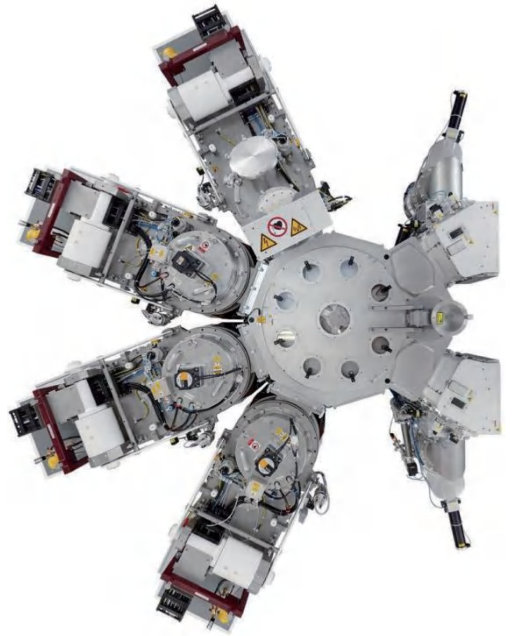
VMET.FHR.Star.300

适用于微电子和光学领域工业化生产的SEMI 标准-集成式薄膜工艺设备

设备介绍 Equipment Introduction

VMET.FHR.Star.300枚叶式设备用于晶片处理工艺，可处理直径最大200 mm (8 英寸) 的基材。设备由多个相连的腔室组成。中央区域作为传输腔室，配备重型机械手臂，可通过长方形端口连接高达八个模块。

如结构图所示，两个端口连接带盒式载片器的进样室，四个端口分别连接一个等离子体预刻蚀模块和三个溅射模块，通过直径为300mm的平面靶材实现DC、脉冲DC和反应DC工艺。基材装载通过 传输系统完成。通过编程工艺流程，按顺序自动实现基片在各个腔室的工艺处理。



The VMET.FHR.Star300 cluster - type equipment is used for wafer processing technology and can handle substrates with a maximum diameter of 200 mm (8 inches). The equipment consists of multiple connected chambers. The central area serves as a transfer chamber, equipped with a heavy - duty robotic arm, and can be connected to up to eight modules through rectangular ports.

As shown in the structure diagram, two ports are connected to the loading chamber with a cassette - type wafer carrier, and four ports are respectively connected to one plasma pre - etching module and three sputtering modules. DC, pulsed DC, and reactive DC processes are realized through a planar target with a diameter of 300 mm. Substrate loading is completed by the transfer system. Through programming the process flow, the sequential process treatment of the substrates in each chamber is automatically achieved.

SEMI Standard-compatible thin film process platform for industrial manufacturing of microelectronics and optics

关键指标 Key data

设备尺寸(长x宽x高),重量 Dimensions (L×W×H), weight	L3220 mm x W4200 mm x H2080 mm, 6321 kg
工艺模块数量 Number of Process Modules	6 (最多 Max)
进样室数量 Number of Loading Chambers	2
基片尺寸(晶片直径) Substrate Size (Wafer Diameter)	100 mm (4 英寸 inches), 150 mm (6 英寸inches), 200 mm (8 英寸inches)
膜厚不均匀性 Film Thickness Non - Uniformity	± 3 %
溅射源 Sputtering Sources	FHR.SC300-DC and others
刻蚀源 Etching Sources	FHR.IEC150-RF and others
极限压强 Ultimate Pressure	5 x 10^{-5}Pa
电、水、压缩空气、气体 Power, water, compressed air, gases	规格和接口遵照技术标准 Specifications & connections according to applicabletechnical standards
工艺气体 Process gases	氩气(Ar), 氧气 (O_2), 其它种类按需提供 Ar, O_2, other gases on request

典型应用 Typical applications

- ✓ SiC电力器件 SiC power devices
- ✓ 传感器 Sensors
- ✓ MEMS
- ✓ 光电子 Optoelectronics
- ✓ 高端光学膜 High - end optical films

可选工艺模块 Optional Process Modules

- ✓ 磁控溅射(DC 或RF模式) Magnetron Sputtering (DC or RF mode)
- ✓ 等离子体刻蚀(PE) 或反应离子刻蚀(RIE) Plasma Etching (PE) or Reactive Ion Etching (RIE)
- ✓ 热蒸发或电子束蒸发 Thermal Evaporation or Electron Beam Evaporation
- ✓ 等离子体增强化学气相沉积(PECVD) Plasma - Enhanced Chemical Vapor Deposition (PECVD)
- ✓ 原子层沉积(ALD) Atomic Layer Deposition (ALD)
- ✓ 快速闪光灯退火(FLA) Flash Lamp Annealing (FLA)

VMET.FHR.Star.400x300.SALD

用于高通量生产的空间ALD系统

设备介绍 Equipment Introduction

FHR.Star.400x300.SALD旋转式空间ALD试验线，可在各种表面上快速形成均匀涂层。可处理。400x300mm基材；基片在腔室内部进行旋转，可实现快速镀膜，可以通过安装离子源启用PEALD工艺；进行离子增强镀膜。

The VMET.FHR.Star 400x300 SALD is a rotary spatial ALD pilot line that can quickly form uniform coatings .on various surfaces. It can process substrates of 400x300mm; the substrates rotate inside the chamber, enabling rapid coating.The PEALD process can be enabled via variable excitation plasma; ion - enhanced coating can be carried out.

典型应用 Typical applications

- 光学涂层 Optical coatings
- 保护层 Protective layers
- 装饰层 Decorative layers
- 光伏发电 Photovoltaic power generation

可选工艺模块 Optional Process Modules

- 额外的气体管路 Additional gas lines
- 尾气处理 Exhaust gas treatment
- 离子清洗模块 Ion cleaning module

Spatial ALD System for High - Throughput Production

关键指标 Key data

设备尺寸(长x宽x高) Dimensions (L×W×H)	L4100mm x W4600mm x H3200m
基板尺寸 Substrate Sizes	φ200 mm(MAX 12片pieces) & φ300 mm(MAX 8片pieces) & 400 x 300 x 10 mm2(MAX 4片pieces)
工艺温度 Process Temperature	室温至200℃ Room temperature to 200℃
前驱体 Precursors	最多可配置3套有机前驱体 Up to 3 sets of organic precursors can be configured
气体管路 Gas Lines	2套气体管道：氮气（N_2），臭氧（O_3）2 sets of gas lines: Nitrogen (N_2), Ozone (O_3)
可用工艺 Available Processes	Al_2O_3, TiO_2, SiO_2, ZnO, SnO, HfO_2
膜厚均匀性 Film Thickness Uniformity	±1.5%
沉积速率指标 Deposition Rate Indicator	典型氧化铝工艺 沉积速率6 nm/min（可达10 nm/min）Typical aluminum oxide process: Deposition rate 6 nm/min (up to 10 nm/min)

特殊指标 Typical applications

- 超快的沉积速率 Optical coatings
- 优秀表面一致性 Protective layers
- 优秀的均匀性 Decorative layers
- 基片加热模块 Photovoltaic power generation

客户优势 Customer benefits

- 可与FHR团簇式溅射系统兼容（传送，料仓，溅射等） Compatible with FHR cluster sputtering systems (transfer, magazine, sputtering, etc.)
- 膜层均匀性极佳，对基片表面形状几乎无要求 Extremely good film uniformity, with almost no requirements for the surface shape of the substrate
- 全自动过程控制 Fully automatic process control
- 自动维护程序 Automatic maintenance program

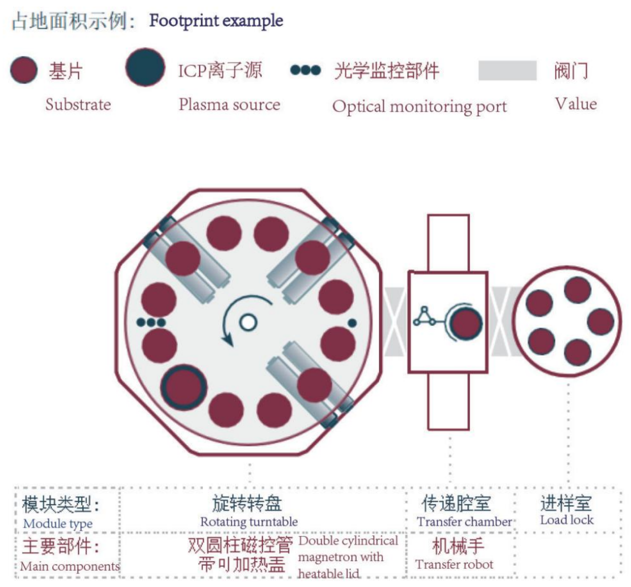
VMET.FHR.Star500^{EOSS}

用于以最高精度沉积光学叠层的工业磁控管溅射系统

设备介绍 Equipment Introduction

VMET.FHR.Star500$^{EOSS®}$ 磁控管溅射系统设计用于制造光学干涉涂层。 这是一套专门开发的真空镀层系统，用于沉积多重光学层，可满足有关层厚一致性和可再现性的最高要求。它选用了向上溅射配置以改善层质量。该溅射系统适用于加工直径达 200 毫米的平整和弯曲基片。配备基片加热器。

The magnetron sputtering system FHR.Star.500-EOSS® was designed for the manufacture of optical interference coatings. It is a specially developed vacuum coating system for the deposition of multiple optical layers that meet highest demands on layer thickness uniformity, and reproducibility.A sputter-up arrangement was chosen to improve the layer quality.The sputtering system is suited to process flat and curved substrates up to 200 mm in diameter. It features substrate heaters.



VMET

Industrial magnetron sputtering system for the deposition of optical layer stacks at highest precision

关键指标 Key data

设备尺寸(长x宽x高)，重量 Dimensions (L×W×H)，weight	L5000mm × W5000mm× H3200mm, 12 t
工艺模块数量 Number of processing stations	4
基片 (单个) Substrate (single)	直径Diameter：最大 max200 mm, 厚度 thickness：最大max50 mm, 重量weight:最大 max3.5kg
每批基材数量(12个载片器)Substrates per batch (12 carriers)	12 × 8" or 12 × 6'' or 24 × 4'', 其它尺寸按需提供 other dimensions on request
盒式装载 Magazine load lock	20 个托盘位置位置 20 carrier positions
膜厚均匀性误差 Layer thickness uniformity error	± 0.25 %
层厚控制 Layer thickness control	时间控制、宽光谱光学检控 Time control, optical broad band monitoring (UV-VIS-IR)
加工站 1 - 3 Processing station 1 - 3	双圆柱形磁控管，阴极长度500 mm Double cylindrical magnetron, cathode length 500 mm
加工站4 Processing station 4	ICP离子源 RF plasma source
基片加热 Substrate heating	可根据要求提供 Available on request
电源、水、压缩空气 Power, water, compressed air, gas	气体连接符合适用的技术规定 Connections in accordance with applicable technical regulations
加工气体 Process gases	氩气 (Ar)、氧气 (O_2)、氮气 (N_2)、其他气体 Ar, O_2, N_2 other gases on request

工艺 Process

- ✓ 使用圆柱形磁控管进行溅射沉积 (DC或MF模式) Sputtering deposition using cylindrical magnetrons (DC or MF mode)
- ✓ 用于金属层氧化的等离子体源 Plasma source for the oxidation of metallic

典型应用 Typical applications

- ✓ 抗反射 (AR) 涂层 Anti-reflection (AR) coatings
- ✓ 带通滤波器 Bandpass filters
- ✓ 边缘滤波器 Edge filters
- ✓ 陷波滤波器 Notch filters
- ✓ 电介质镜 Dielectric mirrors
- ✓ 二向色镜 Dicroics
- ✓ 分束器 Beam splitters
- ✓ 偏光器 Polarizers

VMET.FHR.Star600^{EOSS}

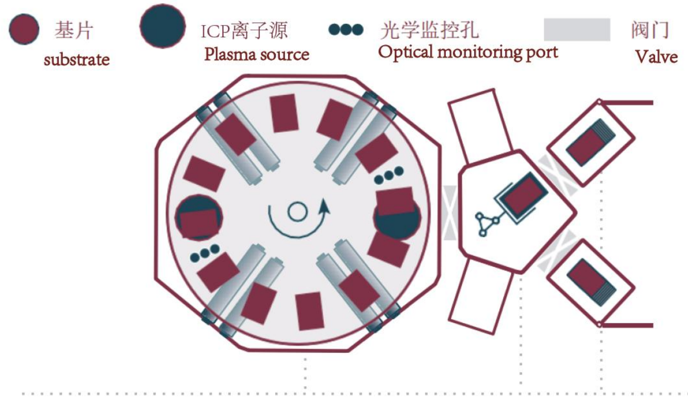
用于在具有平整和弯曲表面的大型基片上沉积光学干涉涂层的溅射系统

设备介绍 Equipment Introduction

VMET.FHR.Star600^{EOSS}® 磁控溅射系统设计用于制造光学干涉涂层。 这是一套专门针对多种沉积光学层而开发的 真空镀膜系统，可满足对层厚均匀性性和可重复性的最高要求。它选用了向上溅射配置以改善层质量。该溅射系统适用于加工直径达 300 mm 或 280 x 330 x 50 mm3的平整和弯曲基板, 它具有多个基片加热器。

The magnetron sputtering system FHR.Star600^{EOSS} was designed for the manufacture of optical interference coatings. It is a specially developed vacuum coating system for the deposition of multiple optical layers that meet highest demands on layer thickness uniformity, and reproducibility.
A sputter-up arrangement was chosen to improve the layer quality.The sputtering system is suited to process flat and curved substrates up to 300 mm in diameter or 280 x 330 x 50 mm³. It features substrate heaters.

占地面积示例：Footprint example



模块类型： Module type	旋转转盘 Rotating turntable	传递腔室 Transfer chamble	2 个进样室 2Load locks
主要部件： Main components	双圆柱磁控管带可加热盖 Double cylindrical magnetron with heatable lid	机械手 Transfer robot	基片盒 Substrate magazine

Sputtering system for the deposition of optical interference coatings on large substrates with flat and curved surfaces

关键指标 Key data

尺寸(长×宽×高)，重量 Dimensions(L×W×H), Weight	L7600mm × W5100mm × H4140mm, 14 t
工艺模块数量 Number of processing stations	6
基片 (单个) Substrate (single)	直径Diameter：最大 300mm/280mmx330mm, 厚度 thickness：最大max50 mm, 重量weight:最大 max9.5kg
每批基材数量Substrates per batch (12个托架carriers)	12×Ø300mm/12×280×330mm²,, 其它尺寸按需提供 other dimensions on request
盒式装载 Magazine load locks	2 × 15 个托盘位置位置 2 × 15 carrier positions
层厚 膜厚均匀性误差 Layer thickness uniformity error	± 0.25 %
层厚控制 Layer thickness control	时间控制、宽光谱光学检控 Time control, optical broad band monitoring (UV-VIS-IR)
加工站 1-4 Processing station 1 - 4	双圆柱形磁控管，阴极长度600 mm Dual cylindrical magnetron, target length: 600 mm
加工站5-6 Processing station 5 - 6	ICP离子源 RF plasma source
基片加热 Substrate heating	可根据要求提供 Available on request
电源、水、压缩空气Power, water, compressed air, gas	气体连接符合适用的技术规定 Connections in accordance with applicable technical regulations
加工气体 Process gases	氩气 (Ar)、氧气 (O2)、氮气 (N2)、其他气体 Ar, O_2, N_2 other gases on request

工艺 Process

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- ✓ 二向色镜 Dicroics
- ✓ 分束器 Beam splitters
- ✓ 偏光器 Polarizers

VMET.FHR.Boxx.400-LL

箱式磁控溅射膜层沉积设备

设备介绍 Equipment Introduction

Boxx 系列也称为箱式镀膜溅射设备为小批量生产中沉积大量基材的任务提供了一种具有成本效益的解决方案。 Boxx.400-LL 配备了一个负载锁室，基板被手动放置在旋转的圆柱形滚筒上。与单室箱式镀膜机相比，矩形闸阀将系统分为一个工艺模块和一个带有单独泵送的负载锁定/预清洁模块。沉积鼓可以在这些腔室之间穿过，因此工艺模块保持在真空状态，从而降低了形成颗粒和碎片的可能性。通过在负载锁室内启动滚筒的旋转，可以通过等离子蚀刻对基材进行预处理。还提供用于基材脱气的可选加热装置。当工艺腔室内的滚筒旋转开始时，基板被驱动通过不同的溅射部分，允许从多个来源进行顺序沉积。

The Boxx series, also known as box-type coating sputtering equipment, provides a cost-effective solution for the task of depositing a large number of substrates in small-batch production. The Boxx.400-LL is equipped with a load lock chamber, and substrates are manually placed on a rotating cylindrical drum. Compared with single-chamber box-type coating machines, a rectangular gate valve divides the system into a process module and a load lock/pre-cleaning module with separate pumping. The deposition drum can pass between these chambers, so the process module remains in a vacuum state, thereby reducing the possibility of forming particles and debris. By starting the rotation of the drum in the load lock chamber, the substrate can be pre-treated by plasma etching. An optional heating device for substrate degassing is also available. When the rotation of the drum in the process chamber starts, the substrate is driven through different sputtering sections, allowing sequential deposition from multiple sources.

Box-type Magnetron Sputtering Film Deposition Equipment

关键指标 Key data

设备尺寸(长x宽x高)， 重量 Dimensions (L×W×H)，Weight	L7600mm×W4400mm×H2500mm，4300kg
进片腔膜层沉积模块 Film deposition modules in the loading chamber	5MAX
工艺腔膜层沉积模块 Film deposition modules in the process chamber	5MAX
基片最大尺寸 Maximum substrate size	φ150mm；156×156mm^3
承载数量 Loading quantity	Max. 24 pcs（4”)/ 12 pcs (6”)
溅射单元 Sputtering unit	FHR.SR400-DC or FHR.SR400-RF
刻蚀单元 Etching unit	FHR.IER400-RF or ion source IonS.400-DC
溅射电源 Sputtering power supply	规格和连接方式按相关技术标准执行 Specifications and connection methods are implemented

可选配置 Optional Process Modules

- ✓ 进片腔室 Loading chamber
- ✓ 4个额外的工艺沉积模块 4 additional process deposition modules
- ✓ 额外的溅射源 Additional sputtering sources
- ✓ 衬底加热器 Substrate heater

典型应用 Typical applications

- ✓ MEMS和传感器领域多层膜Multilayer films in the field of MEMS and sensors
- ✓ 钙钛矿电池层 Perovskite battery layers
- ✓ 装饰层 Decorative layers
- ✓ 光伏发电 Photovoltaic power generation

VMET.FHR.IAD.1300-离子束蒸发(Ion Beam Evaporation)

离子束蒸发系统，主要运用于精密光学的镀膜沉积工艺设备

设备介绍 Equipment Introduction

IAD1300 是一款离子束辅助蒸发沉积设备，工件架最大尺寸φ1200mm，配备高品质真空系统，稳定电子束蒸发源，大口径高能射频离子源与光学膜厚仪等高端核心零部件。智能化控制系统可更好的提供用户界面，方便客户进行工艺参数编辑、监控与数据分析。设备运行具有稳定性良好，维护方便，良率高等优良特性。可适用于通用型精密光学镀膜领域。

IAD1300 is an ion beam - assisted evaporation deposition equipment. The maximum size of the workpiece holder is φ1200mm. It is equipped with a high - quality vacuum system, a stable electron beam evaporation source, a large - aperture high - energy radio frequency ion source, and an optical film thickness gauge and other high - end core components. The intelligent control system can better provide a user interface, facilitating customers to edit, monitor, and analyze process parameters. The equipment operates with good stability, convenient maintenance, and high yield. It is applicable to the general - purpose precision optical coating field.

VMET

Ion Beam Evaporation System, Mainly Used for Coating Deposition Process Equipment in Precision Optics

关键指标 Key data

设备尺寸(长x宽x高)，重量 Dimensions（L×W×H），Weight	L6000mm×W5800mm×H2800mm （(including maintenance space))
载片盘尺寸 Size of Substrate Holder	φ1200 mm 球形伞架（Spherical Umbrella Frame)
蒸发材料 Evaporation Materials	SiO_2、TiO_2、Ta_2O_5、HfO_2、MgF_2、AFS 以及各类金属材料等(and various metal materials, etc)
温度性能 Temperature Performance	300℃以下，均匀性±10℃以内 Below 300°C, Uniformity within ±10°C
工艺气体 Process Gases	Ar、O_2
抽气速率 Pumping Speed	10 分钟以内达到5x10^{-3}Pa（室温、清洁、无负荷状态下）Reach 5x10^{-3}Pawithin 10 minutes (at room temperature, clean, no - load state)
真空度 Vacuum Degree	优于5x10^{-5}Pa 以下 （室温、清洁、无负荷状态下）Better than 5x10^{-5}Pa（at room temperature, clean, no - load state)
真空漏率 Vacuum Leak Rate	优于5×10^{-9}Pa.L/s Better than 5×10^{-9}Pa.L/s

可选配置 Optional Process Modules

- 定制伞架，翻转式、自公转式、分割式等 Custom Umbrella Frame, such as Flip - type, Self - revolving Type, Split Type, etc.
- 射频离子源VRF12/VRF24、霍尔离子源 RF Ion Source VRF12/VRF24, Hall Ion Source
- 阻抗蒸发，六点旋转阻抗蒸发系统 Impedance Evaporation, 6 - Point Rotating Anti - evaporation System
- 坩埚形式定制 Crucible Form Customization
- 卤素灯加热系统 Halogen Lamp Heating System
- 干泵、低温泵、扩散泵等排气系统 Dry Pump, Cryopump, Diffusion Pump and other Exhaust Systems

典型应用 Typical applications

- 光通信用光学薄膜（如NBPF 等）Optical films for optical communications (such as NBPF, etc.)
- 手机、安防、车载系统用光学薄膜（如(such as)AR、IR-Cut、IR-BPF、AFS、ND-Filter 等 Optical films for mobile phones, security, and vehicle - mounted systems
- LED 用光学薄膜（如(such as)DBR、ODR 等）Optical films for LEDs
- 医疗设备用光学薄膜（如AR、IR-Cut、HR 等） Optical films for medical equipment（such as AR, IR - Cut, HR, etc.)
- 成像设备用光学薄膜（如PBS、IR-Cut 等）Optical films for imaging equipment (such as PBS, IR - Cut, etc.)