

# 智能制造在表面处理已成不可阻挡趋势 Intelligent Manufacturing: An Irresistible Trend in Surface Finishing



Reiner Schmid

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数字化技术快速发展使智能产品、服务、流程和工厂成为可能——「工业 4.0」就是指这一趋势。杜尔涂装系统工程(上海)有限公司首席执行官 Reiner Schmid 说:「数字化可最大限度地提高油漆车间效率和可用性。在汽车制造,我们对汽车生产流程了如指掌,而且我们知道什么重要。我们将这些专业知识与数字化技术结合起来,进一步优化生产流程。杜尔通过其 digital<sup>®</sup> DÜRR 数字化战略积极推动这一优化,确保旗下各业务做好迎接工业 4.0 准备。」


预防性维护是目前智能制造重要课题。Schmid 续说:「在杜尔数字工厂(一个跨部门软件中心),有 100 多名专家从事创新应用。在此,介绍一个数字维护助手名为『DXQ 设备维护』,它可帮助用户维护喷漆和涂胶机器人,并能显示当前维

护需求,同时提供近期待执行工作预览。此系统工作基于设备实际状态,确保长期高可用性。另一例子是分析软件『DXQ 设备分析』,它记录了喷漆过程中所有数据,为每个喷漆车身创建了一个『数字指纹』。它同时包含了一些信息,例如:机器人运动、油漆消耗及喷漆期间车身准确位置。如出现质量问题,可使用记录数据即确定原因。」

客户对套色喷涂要求越来越多种多样,智能制造如何在这一方面发挥作用? Schmid 解释道:「针对套色喷涂,杜尔开发了创造性 EcoPaintJet 工艺。除节省汽车制造商时间和能源,它还减少了浪费。在这种无过喷漆过程中,机器人准确地应用对比色或强调色,因此不会出现过喷现象,这就省去遮蔽车身其它区域的需要。另外,为满足定制化生产需求,杜尔推出自动导向车辆 (AGV),可最便捷地将车身和材料运送到相关加工站。」

Rapid development of digital technology has made smart products, services, processes and factories possible. The buzzword "Industry 4.0" refers exactly to this trend. "Digital technology can maximize efficiency and usability of a paint shop. We are no stranger to automotive manufacturing and the most important of all is we know what is important to the production. Combining this expertise with digital technologies, we have substantially optimized production. The digital<sup>®</sup> DÜRR, digitization strategy of Dürr, is to support this optimization, which is about making our businesses Industry 4.0-ready," said Reiner Schmid, CEO of Dürr Coating Systems Engineering (Shanghai) Co., Ltd.

Preventive maintenance is an important area in intelligent manufacturing. Schmid continued, "We have a Dürr's digital plant, a cross-departmental software center, where more than 100 researchers have engaged in innovative applications. Let me introduce the 'DXQ Equipment Maintenance', a digital maintenance application. It can help customers to maintain their painting and sealing robots. It can simultaneously indicate maintenance that is due now and in near future. The system can also base the need for maintenance on the plant's actual condition, therefore ensuring high availability over long term. Another example is the 'DXQ Device Analysis', an analytic software. It records all data from the painting process and creates a 'digital fingerprint' for every painted part. It also contains information such as robotic movement, paint consumption and exact position of the part during painting. Should there be any quality issue, one could locate the cause immediately from the recorded data."

Facing increasingly diverse customers' needs in color painting, how does intelligent manufacturing help resolve the challenge? Schmid explained, "for color painting, Dürr developed the EcoPaintJet system, which can precisely generate spraying to produce contrasting or accent colors with no overspray, therefore no need to shield other areas of the car body. It certainly saves time and energy during car painting, also reducing a lot of wastage. In addition, in order to meet the needs of customized production, Dürr introduced Automatic Guided Vehicle (AGV), which is the easiest way to transport the body and materials to relevant processing stations." 

# 汽车涂装走向环保化、简约化、智能化 Automotive Coatings Application Becoming More Environmentally Friendly, Simplified and Smarter



王阳 Wang Yang

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据 MarketandMarkets 报道,全球涂装设备市场规模在 2018 年达到 204 亿美元,预计到 2023 年将超过 277 亿美元,期间复合年增长率为 6.3%。汽车制造商对材料、工艺及整个生产过程不断提出新需求,使涂装工艺技术需进一步提升,涂装线更环保和更智能化。

## 汽车涂装工艺规划新技术

在建立整车涂装线过程中,基本上以车身为对象进行涂装工艺可行性、车身结构防腐性和密封性等工艺分析;近年,在涂装线各个工艺环节模块化,较多采用工业 4.0 系统,实现在线监测、离线控制、可视化管理,集成跟踪系统,各平台协同效应,可最大程度自动化,并最大限度地提高控制过程效率。汽车涂装工艺规划新技术可循序渐进,比如可从一些工艺小模版开始新技术;通过监测涂装线实际工作时间来规划预防性维护计划,并指出需要进行日常维护操作。

## 用户对外观品质及使用年限要求提高

涂装技术指标越来越高,源于用户对外观品质及使用年限方面要求提高。近几年间,企业更是加快了优化涂装工艺,提升产品涂装质量,且越来越环保化、简约化、智能化。

- 环保化:各方各面处理磷化改造钝化/硅烷化,涂料为低 VOC 产品(如水性涂料、粉末涂料)、废气/废水/废渣等后处理环保要求提升。
- 简约化:如车身从 3C2B 到 3C1B,再到 B1B2 等发展过程,汽车零部件从双组分底漆+双组分面漆到底面合一漆,或一些中低要求涂层品质,从底+面配套工艺转化到单组分底面合一漆等,减少材料成本,节省空间、

- 降低能耗等。
- 智能化:近年更多工作流程和系统集成,还有更多模拟、模版化、数据分析等以改善及提升整体生产。

## 汽车涂料及涂装品质跟踪管理

近年,汽车涂料及涂装品质跟踪管理也是行业关注重点,通过过程跟踪分析,采集大数据,返归于生产材料选择、施工优化过程,利于提升涂料及涂装品质,更有利节约涂装成本。汽车涂装面对工业数字化越来越普及应用形势,用户越来越个性化需求及越来越严苛的环保政策和法规,汽车涂装服务商在各个层面上都需要做好充分准备以随时应对各种挑战,并进一步将挑战转化为商机。

According to MarketandMarkets, the global coatings equipment market was valued at US\$ 20.4 billion in 2018 and is expected to exceed \$27.7 billion by 2023, with a CAGR of 6.3%. Carmakers constantly look for better materials, processes and the entire production so as to step ahead of the curve. These demands have become driving forces for the advances in technologies of coatings application, as well as converting conventional coatings line into more environmentally friendly and intelligent ones.

## Novel Technologies in Automotive Coatings Line Planning

Developing the line basically requires feasibility studies of coatings application for various car parts as well as analyses of the anti-corrosion and sealing properties of the car body structure. In recent years, carmakers have more often adopted modular process design and the Industry 4.0 system in their coatings application line so as to achieve modular online monitor, offline control, visual management, integrated tracking systems, consequently synergizing different platforms, maximizing automation and control process efficiency. Employing new technology for automotive coatings application can be done steps by steps. It can start with a new piece of technology in a modular basis. Developing preventive maintenance schedules from one's actual work and time sheet and an effective daily maintenance for the coatings line.

## Users Demand for Better Aesthetics and Longer Lifespan


Demands for better aesthetics and longer lifespan of a product have put the coatings application technology forward. In



recent years, coatings application has been technologically advancing fast and also becoming more environmentally friendly, much simpler to operate and smarter.

- More environmentally friendly: converting pre-treatment phosphating into zirconium/silanization, adopting low VOCs coatings (e.g. waterborne coatings and powder coatings), more eco-friendly post-treatment of waste gas, waste water and waste solids.
- Simpler to operate. For instances, the car body topcoat consolidation switching from 3C2B to 3C1B, and then B1B2, automotive parts moving from "2K primer + 2K topcoat" to 1K paint. Not only does the coatings application get simpler, but also saves material cost and space, reduces energy consumption.
- Have been smarter as robots have engaged in many major operating steps in coatings line. In recent years, the whole workflow and systems have become highly integrated. In addition, there have been more simulations, modularization and data analyses for improving overall production.

## Automotive Coatings and Coatings Application Quality Tracking Systems

Recently, automotive coatings and coatings application quality tracking systems are becoming more important. By means of tracking analyses and big data, the systems can enhance material selection and optimize coatings application, improving quality of coatings and coatings application, consequently saving production costs. Facing increasing use of digital applications, growing demand for user customization, stricter environmental policies and regulations, automotive coatings application service providers have to always get well prepared for all these challenges, and even turn them into opportunities. 



## 环保成为推动电镀技术最大动力 Environmental Protection to Drive Electroplating Technologies Forward



**胡德新 Steve Hu**

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随着国家环保法规不断加强推进,其广度、深度持续扩大,各省市表面处理企业突发性关停并转现象时有发生。然而,作为制造业中不可缺少的一环,表面处理企业可持续、稳定生产,势必影响上游客户正常经营活动。

百富可 (美国) 公司上海代表处首席代表胡德新以公司产品打开话题。「作为一家成立于 1948 年研发型电镀添加剂企业,百富可在提供给客户优质、环保产品同时,一直秉持工艺技术不断更新和优化。目前,在中国推广无整合剂碱性镀锌 Merlin、高效率 Ziniloy 3028 碱性锌镍、无铍无硼

Niclipse C-NB 酸性锌镍,这些具环保优势的产品效率高、能耗低、废水易处理。」

胡德新透露公司如何推进先进环保技术:「我们客户遍及汽车、家具、卫浴、五金产品等行业,我们在客户开发前及日常服务时,对其生产涉及的环境危害、技术能力、设备可靠性等进行评估与监控,找出其中问题点共同改善,确保对环境危害影响降到最低,确保质量持续稳定,使整个活动持续进行。针对上游客户,我们通过举办技术交流、到访咨询,由美国技术中心提供强大技术支持资源,提供一揽子解决方案,在产品开发前期,结合表面处理特性进行新工艺、新产品开发方案。」

「据中国工信部,到 2020 年环保装备制造制造业产值达到 10,000 亿元,说明市场不断快速扩张。」

As China continues to reinforce environmental protection, more finishers who cannot meet the standards have to shutdown their facilities, restructure their business or even sell out their operations. However, being an essential component of the manufacturing industry, finishers have to offer stable and constant finishing services to the upstream manufacturers.

Steve Hu, Chief Representative of PAVCO (USA) Company Shanghai Rep. Office started with introduction of the company's products. "Established in 1948, PAVCO has

specialized in manufacturing eco-friendly electroplating additives. We continue to design products that can meet environmental challenges and fulfill various eco-requirements. In China, we introduced Merlin™, an alkaline zinc brightener system, containing no chelating agents; Ziniloy 3028, an alkaline zinc/nickel plating; Niclipse C-NB, an acid zinc/nickel plating offering exceptional corrosion resistance. All of these systems are ecofriendly, and they can provide high efficiency, low energy consumption and easy of wastewater treatment."

Hu continued, "Our customers can be found in various industries, such as automotive, furniture, bathroom ware and hardware products. We study the product development and daily operations of our customers, then evaluate their environmental hazards, technical capabilities, equipment reliability, etc. in order to locate any possible issues and offer immediate improvements. Therefore, we can help them minimize environmental impact, maintain stable high-quality production. In order to offer better services to upstream customers, we have constantly held technical seminars as well as regular technical consultancy. Together with strong resources from our HQs in the US, we can always offer most suitable solutions to customers before their product development."

"According to the Ministry of Industry and Information Technology of China, by 2020, output value of environmental protection equipment will reach 100 billion RMB, indicating the market is expanding fast."

## 本届展会为观众带来先进技术及创新解决方案 SFCHINA2019 will be Showing Advanced & Innovative Technologies to Visitors

要确保产业可持续发展,清洁生产、绿色革命、低碳环保等方向已成为表面处理行业主要目标。企业均需通过提升技术、改善工艺流程,掌握当前环保及废物处理法规要求,从而在激烈市场竞争中赢得优势而生存下来。发掘更多新技术及产品,请即登记参观「中国国际表面处理展」!

To ensure sustainable development, cleaner production, green revolution, low carbon and environmental protection have become important objectives for the industry. Technology upgrading, process improvement and understanding regulatory environmental requirements are decisive factors for enterprises to enhance competitive strengths in the



marketplace, and thereby to survive. Come and explore more on what's on display by visiting SFCHINA2019 Shanghai!

### ZONE 1 区

## 电镀及精饰技术 Electroplating & Finishing Technology

展馆 Hall: E1

### 01 施洛特 PCB 电镀产品 Schlötter PCB Plating Products

展台号 Booth No.: E1.B17

施洛特提供符合 RoHS 环保要求、适用于挂镀滚镀及连续镀的锡、锡合金电子电镀工艺。施洛特工艺操作范围宽,能根据不同客户要求,调整电流密度,同时避免锡须产生。哑光锡 SLOTOTIN 40/SLOTOTIN 60、光亮锡 SLOTOTIN 70/SLOTOTIN 30-1, 155°C 老化 16 个小时后,镀锡层依然有非常好的可焊性。



Dr.-Ing. Max Schlötter offers RoHS-compliant tin plating and continuous tin/ tin alloy plating electronic plating. The company can provide customers a wide range of operating solutions, such as adjusting electric current density so as to avoid tin from whiskering. For examples, Matte tin SLOTOTIN 40/SLOTOTIN 60, bright tin SLOTOTIN 70/SLOTOTIN 30-1, after aging at 155°C for 16 hours, the tin plating layer still maintains high solderability.

### 02 宏正碱性无氰锌镍合金技术 Ekem Chemical Alkaline Cyanide-Free Zinc-Nickel Alloy Plating

展台号 Booth No.: E1.G15

解决了镀层镍含量均匀性、镀液稳定性、操作范围窄等难题,经本色钝化后耐腐蚀性提高两倍(中性盐雾实验 3,000

小时以上不出现红锈,福特汽车只要求 1,000 小时),沉积速度比传统工艺提高一倍,大大提高产能。

Ekem Chemical can handle challenges, such as an uneven mixed nickel content in a plating layer, an unstable plating solution and a narrow operating range, etc. After stainless passivating, corrosion resistance is improved by two folds (no red rust after over 3,000 hours neutral salt spray test, while test duration required by Ford is 1,000 hours). Precipitation rate doubles compared to the conventional process, consequently greatly increasing productivity.



### 03 百富可弱酸性锌镍合金 Niclipse C NB 工艺 PAVCO Weak Acid Zinc-Nickel Alloy Niclipse C NB

展台号 Booth No.: E1.F11

Niclipse C NB 产品只使用三种添加剂,易于操作和管控;使用低浓度镍金属,减少配槽和镍的带出成本及废物处理费用和难度;在低温下操作,可降低溶液中锌的增长速度及添加剂分解速度;溶液浊点超过 100°C,避免盐对添加剂排斥。



The Niclipse C NB products use only 3 additives, therefore easy to operate and control. Products use low concentration nickel metal solution to reduce cost of dispensing, nickel and waste disposal, as well as decrease operation difficulty. They are operated at low temperature to reduce formation rate of zinc in the solution and decomposition rate of the additive. The cloud point of the solution exceeds 100°C, therefore preventing salt rejection to additives.

### 04 金川镍、铜、钴、铂族贵金属 Jinchuan Group Nickel, Copper, Cobalt and Platinum

展台号 Booth No.: E1.G05

金川生产镍、铜、钴、铂族贵金属及有色金属压延加工产品、化工产品、有色金属化学品、有色金属新材料等。拥有世界第三大硫化铜镍矿床,是中国镍钴生产基地、铂族金属提炼中心和北方地区最大的铜生产企业。



Jinchuan Group produces nickel, copper, cobalt, platinum as well as non-ferrous metal calendaring products, chemical products, non-ferrous metal chemicals, new materials. It owns the world's third largest copper-nickel sulfide mine. It is also a nickel-cobalt production base, platinum group metal refining center and the largest copper producer in northern China.



ZONE 1 区

展馆 Hall: E1

电镀及精饰技术  
Electroplating & Finishing Technology

05 菲希尔 XDL® 系列测量仪器  
Fischer XDL® Series Measuring Instruments

展台号 Booth No.: E1.D08

凭借电机驱动(可选)与自上而下的测量方向, XDL® 系列测量仪器能进行自动化批量测试。提供 X 射线源、滤波器、准直器及探测器不同组合多种型号, 从而能根据不同测量需求选择最适合 X 射线仪器, 完成各种测量任务。



With motor drive (optional) and top-down measurement orientation, the XDL® series measuring instruments enable automated batch testing. A variety of models is available in different combinations of X-ray sources, filters, collimators, and detectors to select most suitable X-ray instruments for different measurement needs.

06 风帆无镍枪黑色电镀 C 盐工艺  
Fengfan Nickel-Free Gun Black Plating C Salt

展台号 Booth No.: E1.B11



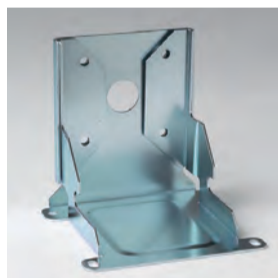
此添加剂对人体皮肤没有伤害, 且产品已通过 SGS 无镍认证, 可在光亮镍或光亮镀铜层上获得特殊典雅的电镀层, 具有特殊装饰效果; 获得的枪黑色镀层, 硬度高、耐磨性好、工艺稳定, 既可挂镀也可用于滚镀。

The additive has no harm to human skin, and has passed the SGS nickel-free certification. It can obtain a special elegant plating layer on the bright nickel or bright copper plating layer, providing special decorative effects. The gun black coating is of high hardness and resistance. It can be done by either rack plating or barrel plating.

07 海科顺 HKS® 无氰碱锌系列  
Haikeshun HKS® Cyanide-free Alkaline Zinc Series

展台号 Booth No.: E1.E31

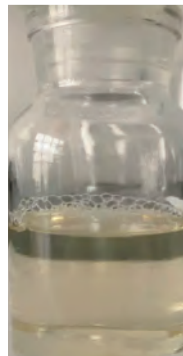
该工艺可获得光亮镀锌层, 镀层厚度分布均匀, 可用三价铬蓝钝化得到均匀一致美观的蓝色钝化膜。镀层延展性好, 无脆性, 可用于高电流密度电镀, 可满足 220°C、30 分钟烘烤无起泡、三价铬彩色钝化后不发雾的要求。适用于吊镀及滚镀, 镀液稳定性好, 不存在分解产物问题。



It can achieve a bright zinc coating layer with uniform thickness, and can also passivate with trivalent chromium blue to obtain a uniform and beautiful blue passivation film. The coating is good ductile and of no brittle, and it can be used for high current density plating. It can meet the requirements of 220°C, 30 min baking without blistering, and no fogging after trivalent chrome color passivation. The plating solution is stable and contains no decomposition.

08 吉和昌除油剂 CL-226S  
Jadechem Degreaser CL-226S

展台号 Booth No.: E1.E01



吉和昌除油剂 CL-226S 是碱性金属清洗剂, 适用于钢铁、不锈钢等金属; 可用于浸泡、超声波、电解除油; 除油力强, 使用寿命长。

Jadechem's Degreaser CL-226S, an alkaline metal cleaning agent, is suitable for steel, stainless steel and other metals. It can be applied in soaking, ultrasonic, electric de-oil. It has strong degreasing properties and long service life.

09 杭州赛德克 SurTec883 XT 高性能三价铬工艺  
SurTec883 XT High-performance Trivalent Chromium Process

展台号 Booth No.: E1.D03

赛德克开发 SurTec 883 XT 新型高性能三价铬工艺, 可在颜色、功能和品质方面 100% 替代六价铬, 不需额外冷却和废水处理系统。工艺镀层通过了所有常见测试, 包括抗腐蚀性能、硬度、食品接触和耐磨等。



SurTec 883 XT, a new high-performance trivalent chromium process developed by SurTec, is 100% replacement for hexavalent chromium in terms of color, functionality and quality. No additional cooling and wastewater treatment systems are required. SurTec 883 XT has passed all essential testing, including corrosion resistance, hardness, food contact and wear.

10 安捷焊接防飞溅剂  
Achem Welding Anti-splash Agent

展台号 Booth No.: E1.F11

焊接时会产生飞溅物, 极易落在焊缝附近金属表面, 当其冷却后就会粘结在金属表面。焊接工作要作进一步表面处理时, 如刷涂料、磷化、电镀等, 存在的焊渣会对其造成一定影响。使用德国 BIO-CYCLE 公司焊接防飞溅剂是防止这一问题出现的有效办法。

Spatters generated while welding are highly likely to fall on the metal surface near the weld. They will bond to the metal surface when cooled. Such spatters will affect various subsequent surface treatments, such as brushing, phosphating, electroplating, etc. The welding anti-splash agent, made by the Germany BIO-CYCLE Company, is an effective solution to prevent this problem.

11 中国电科二所高速镀锡自动生产线  
CETC High-Speed Tin Plating Automatic Production Line

展台号 Booth No.: E1.E73

中国电科二所开发了系列标准化电镀生产线, 用于极大规模集成电路封装外引脚全镀锡生产, 全线自动控制、封闭生产, 解决了 QFN 和 LQFP 集成电路封装中外引脚镀锡生产线自动上下料、镀槽阳极屏蔽、掉料保护等关键问题, 突破了 QFN 直线单边工作防止料片弯曲技术, 以提高镀层厚度均匀性技术。



The China Electronics Technology Group has developed a series of standardized electroplating production lines, which is used for large-scale, close-systematic and automatic IC packaging with external pins tin plating. The production line can resolve issues of QFN and LQFP IC packaging, including material transfer, anode shielding and unused materials, also for the QFN unilateral production, it can avoid bending the materials, therefore improving coating thickness uniformity.

ZONE 2 区  
展馆 Hall: E1

环境保护、安全及  
个人保护设备  
Environmental, Safety & Protection

01 荣强 RQ-225 环保型易漂洗非离子表面活性剂  
Rongqiang Ecofriendly Nonionic Surfactant

展台号 Booth No.: E1.D41

常温或加温使用, 粘度低, 在固体中有很好的分散性, 低温冷水溶解性, 极优异漂洗性, 生物降解性好, 脱脂清洗力优于 NP、OP 耐表面活性剂, 耐酸碱, 与常规助剂配制高性能环保型脱脂剂清洗剂的优秀表面活性剂。

The surfactant can be used at room temperature or heating. It has low viscosity, disperse well in solids, soluble at low temperature water, easy to rinse, highly biodegradable. It's degreasing power is higher than NP and OP surfactants. In addition, it is acid-alkali resistant, therefore a better surfactant over conventional additives for formulating high-performance eco-friendly degreaser.

02 纳森废液浓缩减量设备  
Ninesuny Water Treatment Chemical-Liquid Waste Reduction Equipment

展台号 Booth No.: E1.D65

主要针对电镀、线路板重金属废液、乳化液、切削油、热处理、印刷、油性油墨、显影液、高浓度有机废液等危险废液进行高效浓缩、减量处理。采用全封闭低温浓缩、强制循环、全自动控制、可控浓缩比技术, 可使废液减少 80% 以上, 实现废水零排放。

It is used for treating high concentration and hazardous liquid wastes, such as electroplating, circuit board heavy metal liquid wastes, emulsion, cutting oils, printing ink and organic liquid wastes. It is equipped with a fully enclosed low temperature concentration, forced circulation, automatic control. It can reduce up to over 80% liquid wastes and achieve almost zero discharge of wastewater.

03 青风环境第六代变频磁悬浮离心机  
Kingfit Environment 6th Generation Variable Frequency Magnetic Suspension Centrifugal Machine

展台号 Booth No.: E1.B48

磁悬浮轴承技术: 运动部件无机摩擦, 无需润滑系统。变频驱动: 压缩机最高转速 48,000rpm, 10~100% 变频调节。高效节能: 无油系统, 无油膜热阻, 可提高换热效率 15%。可 24 小时远程管理。



Magnetic suspension bearing technology: no mechanical friction in moving parts, therefore no lubrication systems required. Variable frequency drive: The compressor's maximum speed is 48,000 rpm, and the frequency adjustment is 10-100%. High efficiency and energy saving: Oil-free systems, therefore no oil film thermal resistance, improving heat exchange efficiency by 15%. Can be controlled remotely at any time.

04 雷德废气洗涤塔  
Leide Exhaust Scrubbers

展台号 Booth No.: E1.C55

针对不同气源, 无锡雷德选择不同废气处理工艺, 如: 酸碱废气净化塔、电镀厂废气治理工程、废气净化处理系统、PP 塑料酸碱雾废气吸收净化塔等。



Leide offers various solutions, such as acid-alkali exhaust scrubbers, electroplating plant waste gas treatments, exhaust gas purification systems, PP acid-alkali mist absorption purification towers, etc.



## ZONE 3 区

# 涂装及涂料产品 Coating Applications & Coating Products

### 01 诺信 SC-350 选择性雾化涂覆头 Nordson ASYMTEK SC-350 Select Coat Spray Applicator

展台号 Booth No. : E2.B11

SC-350 涂覆头适合需要精确边缘清晰度和均匀喷涂 100% 固含量材料及溶剂基材料的应用。雾化结构设计拓展了高粘度材料雾化应用,如硅树脂、丙烯酸树脂、和聚氨酯,同时减少涂层材料在空气中固化时产生「蛛网效应」。范围涵盖 30 厘泊至 3,500 厘泊的流体粘度可被有效地使用,同时可减少溶剂使用。

The SC-350 is ideal for applications that require precise edge definition and uniform passes for 100% solids as well as solvent-based materials. An innovative airflow extension optimizes atomization of high-viscosity materials, such as silicones, acrylics, and urethanes, and reduces the "cobwebbing effect" that occurs when coating materials cure in air. Viscosities ranging from 30 cps to more than 3,500 cps, can be handled efficiently while reducing solvent use.



### 02 杜尔 EcoSupply P 特殊涂料供给系统 Durr EcoSupply P Special Paint Supply System

展台号 Booth No. : E2.D21



EcoSupply P 利用清管技术进行涂料回收和清洗。小批量涂料可喷涂 15、30 或 60 个一组车身。在喷漆同时,第二个系统开始进行下一次涂料更换。杜尔也供应系统可视化装置及控制单元,帮助实现现有设备和机器人系统通信。

The EcoSupply P uses pig technology for paint recovery and cleaning. The small-batch colors are painted in batches of 15, 30, or 60 car bodies. While painting process is underway, a second system is already performing the next paint change. Dürr also supplies system's visualization function and control unit that will in future communicate with existing plant and robot systems.

### 03 固瑞克 E-Flo SP 电动供料泵 Graco E-Flo SP Electric Supply Pumps

展台号 Booth No. : E2.D01

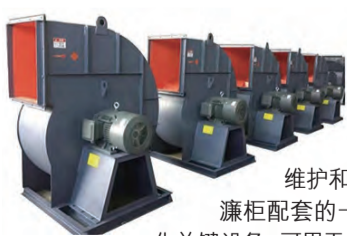


E-Flo SP 电动供料泵,在工业密封胶和粘合剂涂敷中使用电动驱动器提供动力,实现了集成式实时闭环流量控制。相对于恒压系统中气动供料泵,固瑞克 E-Flo SP 推动了控制策略由恒定压力向可变流量的演化。

E-Flo SP electric supply pump is designed for industrial sealants and adhesive coatings. It features integrated real-time closed-loop flow control. Comparing with conventional pneumatic supply pumps, Graco E-Flo SP has transformed the control from a constant pressure system to a variable flow system.

### 04 尚阳风机 SY-SXT-2 Shangyang Blower SY-SXT-2

展台号 Booth No. : E2.D25



特点:风量大,静压区平稳,其传动方式为直连传动,可制作为带底座和不带底座形式,结构紧凑,体积小且风叶可随电机旋开,方便维护和清理油漆杂物。用途:专为水漆柜配套的一种排油雾风机,是水漆柜净化关键设备。可用于 UV 烤炉送风、排气。

Features: Large air volume flow, stable static pressure zone, direct connect transmission mode, base or no base version available, compact structure, small size and fan blades easy to be removed, therefore making maintenance and cleaning easier. Application: Specially designed for spray booth as a key equipment for spray booth air purification, as a ventilation fan for UV curable ovens.

### 05 阿耐思特岩田 W-200 喷枪 Anest Iwata W-200 Spray Gun

展台号 Booth No. : E2.D29



阿耐思特岩田 W-200 喷枪将喷涂空气压力(喷枪手柄处)降低 0.05MPa,不仅减轻了飞溅现象,喷涂作业时空气噪音值也降低约 5dB(A)。生产线喷涂用 W-200-122P 具有高微粒化喷幅,便于涂装操作。W-200-182S 作为新机种,适用于汽车修补、木工等各种用途。

Anest Iwata's W-200 spray gun reduces the spray air pressure (at the gun handle) by 0.05 MPa, consequently decreasing any splashing, and also lowering noise during spraying by about 5 dB (A). The W-200-122P can provide a high-micronized spray therefore easy coating operations. As a new model, W-200-182S is suitable for various applications, such as car refinishes and wood coating, etc.

### 06 瓦格纳供粉中心 PXE Wagner PXE Powder Center

展台号 Booth No. : E2.B05



PXE 可在机身触摸屏上集中控制喷枪、往复式、供粉中心和回收系统,无需再使用其它额外控制模块,喷涂操作更为简便。此外,最新 PXE 供粉中心打破常规,可直接将粉末在原粉箱流化后输送至喷枪。

The WAGNER PXE solution provides complete control of all different components in one central unit: Spray guns, moving devices, powder feeder, booth and filter. The PXE powder center fulfills all requirements for the powder supply of an automatic coating system, with integrated vibrating and fluidizing unit to feed directly from the powder box.

### 07 帝业化学 ECT-8061 前处理在线分析仪 EmpireChem ECT-8061 Industrial Process Online Analyzer

展台号 Booth No. : E2.C11



ECT-8061 工业过程在线分析仪可实现涂装前处理在线分析及补加功能、实时数据分析与管理、在线自动取样、自动校准、自动分析、自动清洗、自动加药,生产过程稳定。自动过程管控有效减少化学品消耗及废液排放,降低综合成本、提升环保水平。

ECT-8061 industrial process online analyzer can achieve pretreatment online analysis, and also enable real-time data analysis and management. It can be used for online automatic sampling, calibration, analysis, cleaning and dosing, allowing stable production process. Automatic process control can effectively reduce chemical consumption and waste liquid discharge, thereby reducing overall cost and improving environmental protection.

### 08 美施联科涂装过滤与防护 Maxlink Coatings Filtration and Protection

展台号 Booth No. : E2.C29



萨塔具有油漆喷涂所需压缩空气必备空气过滤装备:油水分离器,单节、双节和三节三种型号,改装带活性炭滤芯,可吸附压缩空气中油蒸汽和有机气体;具有高过滤效能,坚固耐用特点。

Sata is equipped with all necessary air filtrations for compressed-air paint spraying, including oil-water separator, single/double/triple-section models, activated carbon filter cartridges to absorb oil vapor and organic gases from compressed air. It features high filtration efficiency and durability.

### 09 Q-SUN Xe-3 氙灯 Q-SUN Xe-3 Xenon Test Chamber

展台号 Booth No. : E2.B64



美国 Q-SUN Xe-3 全功能光稳定性、色牢度及耐旋光性试验箱,采用三根独立氙灯灯管,滑出式样品托架尺寸为 451mm x 718mm,在曝晒立体零件或大部件时非常方便。Xe-3 试验箱提供湿度控制功能,可选喷淋、双喷淋、背喷及低温功能。

The US-made Q-SUN Xe-3 test chamber is a full-featured lightfastness, colorfastness, and photostability chamber. It utilizes three separate xenon lamps for a large capacity. The Q-SUN Xe-3 tester's slide out specimen tray is 451mm x 718mm and is useful for exposing large, three-dimensional parts or components. The Xe-3 tester offers standard humidity control, and optional spray, back spray and chiller features.

### 10 萨麦丝客牡林 Accubell 709 EVO 机器人旋杯 Sames Accubell 709 EVO Robotic Rotary Atomizer

展台号 Booth No. : E2.A01



Sames Accubell 709 EVO 把原来机器人手臂内换色工作移至外部,类似于弹匣式,但外部结构复杂性又远低于弹匣式。机器人按喷涂需要接受外部清洗和油漆注射,在喷涂时外部完成新注射。采用高速「双涡轮」驱动,注射器注入速度可控制在四至五秒。该技术没有外加电「爪子」,上漆率高,适合复杂部件静电喷涂。

Sames Accubell 709 EVO's color change block is placed outside the booth, similar to a magazine, but the external structure is much less complex than any magazine. The robot receives external cleaning and fast paint fills as needed for spraying, at the same time the next color is filling the transfer tank during painting. With a high-speed "double-turbine" drive, the fill speed can be done within four or five seconds. It is suitable for electrostatic spraying of complex parts. Accubell 709 EVO is a compact internal charge bell with a docking station fixed on the booth wall, therefore achieving high accurate paint flow rate.

### 11 金马 AP01 粉泵技术 Gema AP01 Application Pump Technology

展台号 Booth No. : E2.B01

集成 AP01 粉泵技术的金马喷枪系统,在精确粉末路径中进行持续稳定粉末输出,解决因长距离传输导致吐粉现象,不仅确保均匀膜厚且减少粉末浪费。机器人轨迹控制技术,全面实现了自动喷涂一体化升级。为达到最佳喷涂效果,可针对不同工件喷涂情况随时修改设置参数。

The Gema spray gun system with integrated AP01 application pump technology provides continuous and stable powder output in a precise powder path, resolving the powdering phenomenon caused by long-distance transmission. Not only does it keep uniform film thickness but also reduces powder waste. Also it adopts the robot trajectory control technology to achieve automatic spraying. It allows to modify setup parameters at any time for different spray conditions in order to obtain optimum spray outputs.

