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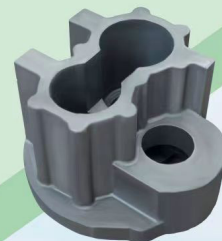
JUNE VOLUME 14 NUMBER 2

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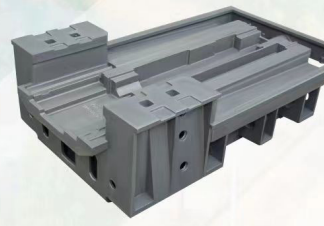
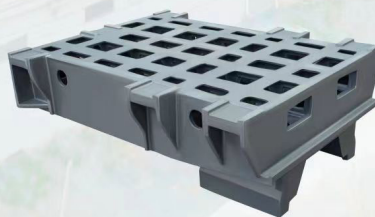
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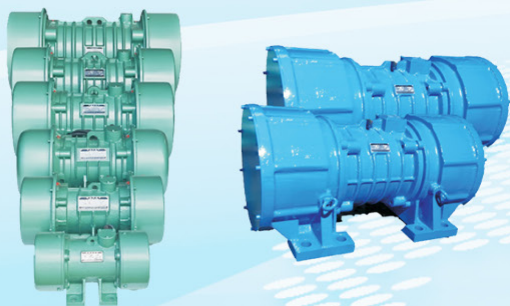
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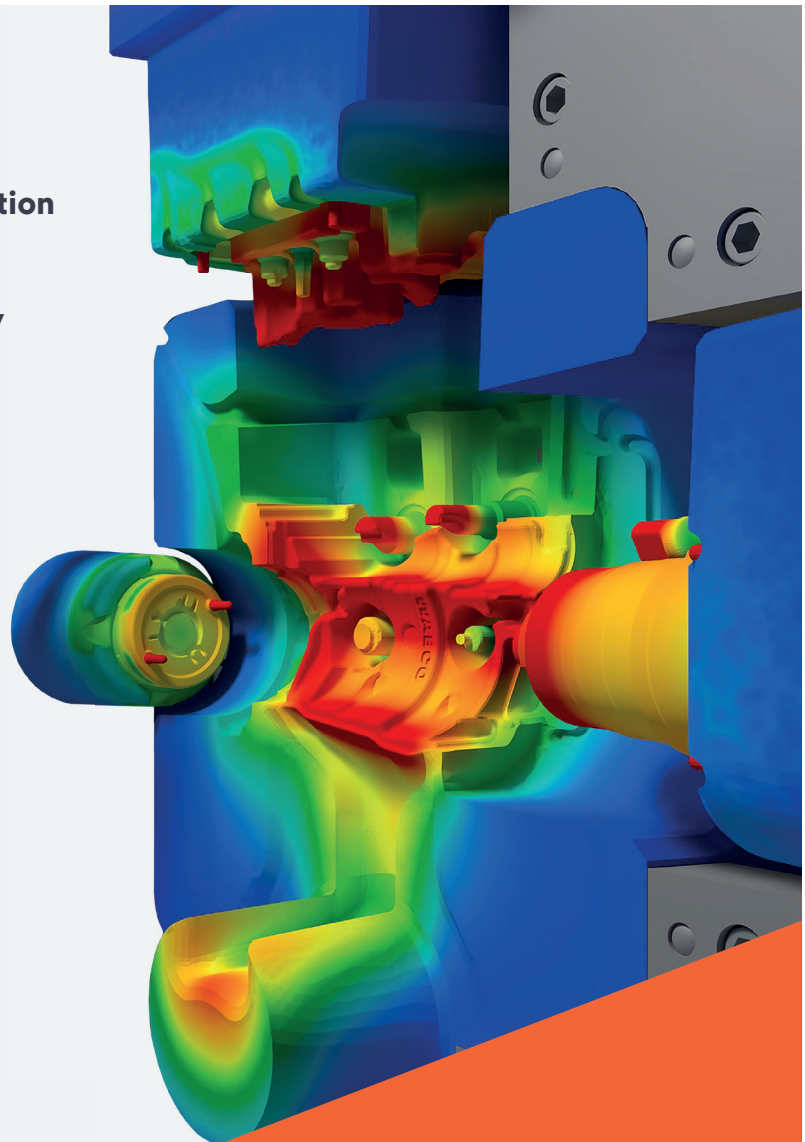
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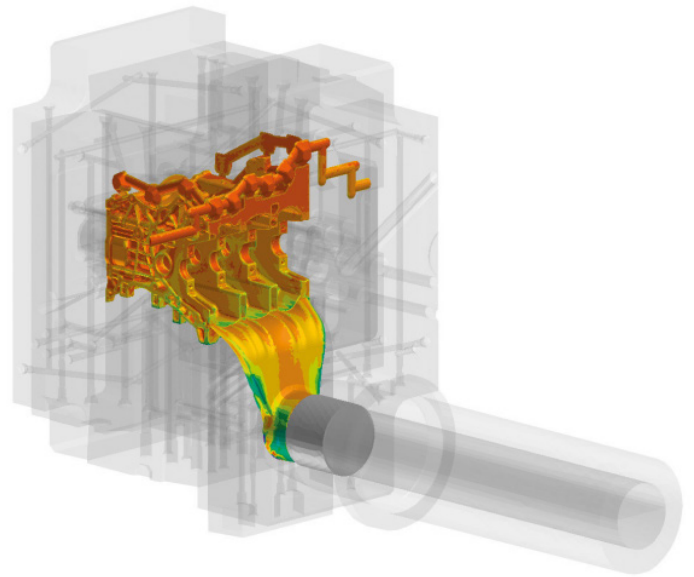
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RAY TECH (MALAYSIA), UNICOMP Technology's first overseas production base officially in operation to follow Belt and Road Initiative

日联科技首个海外生产基地 ——马来西亚工厂（瑞泰科技）开业

On April 25th, the inauguration ceremony of UNICOMP Technology's first overseas production base, RAY TECH (Malaysia) SDN. BHD., was held in Johor, Malaysia. This also marks the official commencement of operations for UNICOMP Technology's first overseas production base for its X-ray inspection machines.

UNICOMP Technology's Chairman, Dr. Liu Jun, and CEO, Mr. Ye Jun Chao, attended the opening ceremony. Dato' Onn Hafiz Bin Ghazi, the Chief Minister of Johor, Malaysia, Mr. Siva, Director of Malaysia Investment Development Authority (MIDA), and over a hundred partners from around the world also attended the ceremony, witnessing UNICOMP Technology's globalization strategy entering a new stage.

RAY TECH (Malaysia) SDN. BHD. is located in Johor Bahru, southern Malaysia, adjacent to Singapore. The factory is surrounded by 3 Airports and 3 freight ports, with a half-hour drive from Singapore. With a factory area of nearly 5000 square meters, it is mainly used for the production of AI-based intelligent X-ray inspection equipment in the fields of SMT EMS, Semiconductor, Automotive Die-casting, EV lithium battery, as well as food & beverage industry. After the factory is put into operation, it will significantly enhance the worldwide customer delivery and non-stop service capabilities.

Source: UNICOMP Technology. ■



2024 年 4 月 25 日，日联科技首个海外生产基地——马来西亚工厂 RAY TECH (Malaysia) SDN. BHD.（瑞泰科技）落成开业仪式在马来西亚·柔佛州举行，标志着日联科技首座海外生产基地正式投产。

日联科技董事长刘骏、CEO 叶俊超出席开业仪式。马来西亚柔佛州州长 Mr. MENTERI BESAR、马来西亚国家投资发展局局长 Mr. SIVA 和来自全球的近百名合作伙伴出席本次典礼，共同见证日联科技的全球化战略布局跨入全新阶段。

瑞泰科技坐落于马来西亚南部 Johor Bahru，紧邻新加坡；工厂周边环境环绕 3 个国际机场和 3 个货运海港，距新加坡车程仅半小时。工厂面积近 5000 平方米，主要用于集成电路及电子制造、新能源电池、食品异物等领域 AI 智能 X 射线检测装备的生产。工厂投产后，将大幅提升海外客户交付与一体化服务能力。

信息来源：日联科技。■

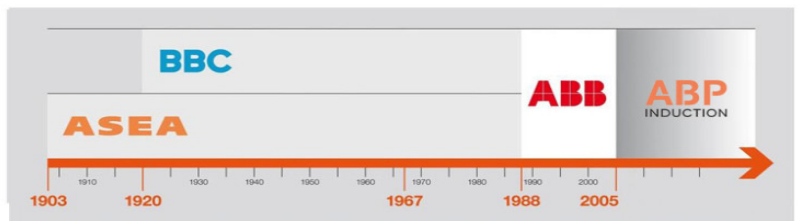


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ABP Induction Systems (Shanghai) Co.,Ltd. as a wholly owned subsidiary of ABP Induction Systems group in China. We are dedicated to the foundry, forging and steel industries, providing our customers with complete solutions for the melting, pouring and heating systems of ferrous and non-ferrous metals. ABP has a history of more than 120 years, which headquartered in Dortmund, Germany, our group has branches and offices in 16 countries around the world, now focusing on ten major industrial regions in the world: Germany, Sweden, Russia, USA, Mexico, Brazil, China, India, Thailand and Japan etc..

ABP induction group is a technical leader in the melting, holding and pouring of ferrous and non-ferrous metals and is certified by the German association of economic and sustainable development. More than 120 years ago, ABP built the world's first channel induction furnace, and over 100 years later, ABP successfully built the world's largest medium frequency induction furnace (65 t, 42000KW) in 2013. We have always maintained a strong and persistent love for molten metal in more than 120 years of service to the metal casting and forging industry..

In China, ABP dominates the high-end market in melting and heating applications. We have provided high-quality equipment and services for leading enterprises in engine, automobile parts, machine tools, wind power, steel and other industries, and has become a reliable partner for high-end customers such as Faw, DF, Foton, Weichai, Yuchai, CRRC, Kocel and Tisco. Our development goal is to become the world's best induction system solutions provider, we are rooted in China

埃博普感应系统（上海）有限公司（英文名称：ABP Induction Systems (Shanghai) Co.,Ltd），作为 ABP 感应系统集团在中国的独资子公司，我们一直专注服务于铸造、锻造和钢铁行业，为用户提供黑色及有色金属的熔化、浇注及加热系统的完整解决方案。ABP 公司有着 120 多年的历史，集团总部位于德国多特蒙德市，在全球 16 个国家均设有分公司及办事处，专注于全球十大主要工业区域：德国，瑞典，俄罗斯，美国，墨西哥，巴西，中国，印度，泰国和日本等。

ABP 感应集团是黑色及有色金属熔化、保温、浇注设备领域的技术领先者，并得到“德国经济与可持续发展协会”认证。120 多年前 ABP 建造了世界上第一台有芯沟槽式感应炉，而在一个多世纪后，2013 年 ABP 又成功建造了世界上最大的中频感应熔炼炉（65 吨，42000KW）。在服务于金属铸造和锻压成形行业 120 多年的历史中，我们对熔融金属始终保持着强烈而执着的热爱。

在中国，ABP 更是占据了熔化与加热应用领域的高端市场。为发动机、汽车配件、机床、风电、钢铁等行业领军企业提供了优质的设备和服务，成为一汽、二汽、北汽、潍柴、玉柴、中车、共享、太钢等高端客户值得信赖的合作伙伴。ABP 集团的发展目标是成为全球最优感应系统解

and will continue to provide high-quality and fast service for our VIP customers!

ABP will participate in the 17th China International Diecasting Industry Exhibition, from July 4-7, 2024, at National Exhibition and Convention Center, Shanghai. Welcome to visit us at Booth 2C13,2.1H.

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ABP 将于 2024 年 7 月 4-7 日参加“第十七届中国国际压铸工业展览会”，展位号：2.1H 馆 2C13，欢迎莅临参观、交流。

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Baoding Zhongda Make its Debut at Metal China 2024

中达公司亮相 2024 铸博会

Baoding Zhongda Casting Co., Ltd. is a large-scale private manufacturing enterprise integrating casting and mechanical machining, located in Tang County, Hebei Province. There are three plants, fixed assets of CNY400 million. There are 800 employees, including 120 professional management & technical personnel. The company covers an area of 80,000m² and the building area is 60,000m², with more than 550 sets of main production equipment. The main product of the company is manufacturing of ductile cast iron parts, ADI parts, and gray cast iron parts, the annual production capacity is more than 50,000 tons.

The main products are automobile components, agricultural machinery parts, compressor parts, and engineering equipment components. Such as gear housing, clutching housing, Diff housing cover, hub, front support, rear support, axle housing, fly wheel, compressor parts, etc. Our main customers include John Deere, Danfoss, Case CNHI, Carraro, Bongflogli, Tigercat, Same DEUTZ-FAHR, Poclain, Camso, Michelin, Mitsubishi, ZF, GK Drive, Buhler, Schonherr Teile-Vertrieb GMBH and so on. Our products are export to USA, Canada, Germany, France, Italy, and Mexico etc.

We insist on the business policy of "Fine Management, Lean Production, Skilled Operation, Precision manufacturing", over the years, the product quality has been continuously and

保定中达铸造有限公司是一个集铸造、机械加工于一体的大型民营制造企业。共有三个厂区，固定资产 4 亿元，公司员工 800 人，专业管理及技术人员 120 人。公司占地面积 8 万 m²，建设面积 6 万 m²，主要生产设备 550 余台。主要为球墨铸铁、ADI、灰铸铁类零部件的制造，年生产能力 50,000 吨。

公司主导产品有：汽车零部件、农机零部件、压缩机零部件、工程机械零部件。包括齿轮箱体、离合器箱体、变速箱体、轮毂、前支座、后支座，桥壳、飞轮盖、涡旋盘等。公司以“精细管理、精益生产、精心操作、精工制造”为经营方针，多年来，产品质量持续稳定提高，得到了国内外客户的一致认可。

公司已通过了 TUV 公司的 ISO9001 质量管理体系认证和 IATF16949 质量管理体系认证。2023 年通过了 ISO14001 环境管理体系认证和 ISO45001 职业健康安全管理体系认证。

目前，公司正在快速发展壮大，已与多家世界 500 强企业及世界知名企业配套生产。我们时刻以优质的产品和



steadily improved, and has been unanimously recognized by domestic and foreign customers.

We have passed TUV ISO9001 (quality management system certification) and IATF16949 (quality management system certification), and we have passed ISO14001 (environmental management system certification) and ISO45001 (Occupational health and safety management system certification) In 2023.

Nowadays, the company is rapidly developing and growing, and has partnered with multiple Fortune 500 companies and world-renowned enterprises for production. We offer the best service to all the customers with high-quality and good business reputations at any time. Customer satisfaction is our eternal pursuit!

Welcome to visit us at Booth 4C12, METAL CHINA, July 4-7, 2024 at National Exhibition and Convention Center, Shanghai.

Website: <http://www.zdzz.com.cn>. ■

良好的商业信誉为客户服务，用户的满意是我公司的永恒的追求！

我司将参加 2024 年 7 月 4-7 日在上海举办的第二十二届中国国际铸造博览会，欢迎莅临中达展位 4C12 参观交流。

网址: <http://www.zdzz.com.cn> 更多信息，请访问
公司网站: <https://kbrcn.com/> ■



RCS Presents Resin Coated Sand Solutions for Foundry

马来西亚领先覆膜砂生产商 R.C.S. Manufacturing Sdn. Bhd. 首次亮相



R.C.S. Manufacturing Sdn. Bhd. will participate in the 22nd China International Foundry Expo (Metal China) and showcase resin coated sand product to the global foundry industry.

As a key material in the production process of metal casting within the foundry sector, the quality of resin coated sand directly affects the quality of products and production efficiency. As a leading producer and supplier of resin coated sand in Malaysia, our company has been committed to customizing and producing high-quality resin coated sand to meet the various needs and requirements of foundries domestically and globally. This exhibition will further demonstrate our professionalism and influence in this field.

At the exhibition, our company will showcase its main product line, which is the resin coated sand for metal casting production. This product is suitable for sand casting and shell mold casting processes, to produce shell core and shell mold with applications in casting aluminium alloy, grey iron, brass, copper, and stainless steel. In other words, it can meet the diverse needs of different customers, whether for precision casting, automotive components, or other specialized applications. Our customizable solutions are designed to enhance performance and reliability.

Join us at Booth 1F27 in Hall 1.1 and we will showcase our company's strong development capabilities and product advantages to the global foundry industry. Visitors to our booth will have the opportunity to explore our comprehensive range of customizable resin coated sand products and learn how we can collaborate to meet their unique material requirements.

We look forward to connecting with attendees and engaging with industry professionals and discussing how our customizable products can benefit their specific applications and fostering new

马来西亚 R.C.S. Manufacturing Sdn. Bhd. 公司将首次参加中国国际铸造博览会 METAL CHINA 2024，并向全球铸造行业展示覆膜砂产品及解决方案。

覆膜砂作为金属铸造工艺生产过程中的主要材料，其质量直接影响产品质量和生产效率。作为马来西亚领先的覆膜砂生产商与供应商，R.C.S. 公司一直致力于生产高品质定制化覆膜砂，以满足国内外铸造厂商的各种需求。此次参展将进一步展示公司在该领域的专业水平与影响力。

公司将展示主要产品系列，即铸件用覆膜砂。此产品适用于砂型铸造和壳型铸造工艺，生产壳芯和壳型，用于铸造铝合金、灰铸铁、黄铜、紫铜和不锈钢。换言之，无论是精密铸造、汽车零部件还是其他专业应用，它都能满足不同客户的多样化需求。公司的定制化方案是为了提高产品的性能与可靠性。

欢迎大家莅临公司位于 1.1 馆 1F27 的展位参观指导，公司将向全球铸造行业展示强大的开发能力和产品优势。期待与您建立联系并与业内人士交流公司的定制产品如何使客户受益，并期待与更多的铸造同仁建立新的合作伙伴关系。

感谢您对 R.C.S. Manufacturing Sdn. Bhd. 的关注和支持！

R.C.S. Manufacturing Sdn. Bhd.

电话：+606-985 9558/0420

网站：<https://rcsmsb.com/>。■

partnerships within the foundry sector.

Finally, thank you for your attention and support to R.C.S. Manufacturing Sdn. Bhd.!

R.C.S. Manufacturing Sdn. Bhd.

Contact: +606-985 9558 / 0420

Mobile: +6012-240 1688

Website: <https://rcsmsb.com/> ■



Shanghai Huiju Automation Provides One-stop Intelligent Solution

上海汇聚自动化提供一站式智能解决方案

Shanghai Huiju Automation Technology Co., Ltd. was established in 2013. It is a high-tech and specialized enterprise specializing in the research and development, production, and sales of precision mechanical equipment and software. The OMV equipment independently developed by the company has omnidirectional mobility, high precision, high payload, scalability, and can integrate various industrial equipment. It can achieve functions such as precision mechanical docking equipment, logistics automation, factory unmanned operation, and robot collaboration. The products developed by it are applied in intelligent factory fields such as military industry, aerospace, aviation, rail transit, nuclear power testing, casting and casting, wind energy blade polishing, new energy storage cabinet handling, logistics and warehousing.

The completed projects include: Airbus A320 landing gear assembly vehicle, high-speed rail car body automatic transfer robot; Automatic assembly robot for cables at the bottom of high-speed train carriages; Flexible transportation and assembly robots for new energy vehicle battery packs; Large tonnage

上海汇聚自动化科技有限公司成立于 2013 年，是专业从事精密机械装备及软件研发、生产和销售一体化的高新技术与专精特新企业。

公司自主研发的 OMV 设备，具有全向移动、高精度、高载荷，可扩展可集成多种工业设备，可实现精密机械对接装备、物流自动化、工厂无人化、机器人协同等功能。其研发的产品被应用于军工、航天、航空、轨道交通、核电检测、浇铸铸造、风能叶片打磨、新能源储能柜搬运、物流仓储等智能工厂领域。

完成项目有：空客 A320 起落架装配车，高铁车厢车体自动转运机器人；高铁车厢车体底部线缆自动装配机器人；新能源汽车电池包柔性转运、装配机器人；电力行业大吨位法兰盘螺帽自动对位机器人；地铁行业部件搬运、对接机器人；颠覆传统停车库的智能停车机器人；物流行业中的无人

关于汇聚

致力于数字化工厂解决方案

OMV 设备提供商



flange nut automatic alignment robot in the power industry; Robots for component handling and docking in the subway industry; Intelligent parking robots that subvert traditional parking garages; Unmanned forklifts in the logistics industry.

Combining MES, WMS, and AMS software systems, we provide customized solutions for the transportation, automatic warehousing, circulation, and flexible production lines of internal components in our factory, forming a comprehensive system service for unmanned chemical plants from solution design, product development, production, and after-sales service.

The company will participate at DIECASTING CHINA 2024, July 4-7, National Exhibition and Convention Center, Shanghai. Booth number: 2.1H, 2A16.

Website: <https://www.hictrl.com.cn> ■

化叉车等。

结合 MES, WMS, AMS 软件系统为客户定制化开发工厂内部件的转运、自动仓储, 流转, 柔性生产线等解决方案, 形成从方案设计、产品开发、生产及售后服务的全方位无人化工厂的系统服务。

公司将参加于 2024 年 7 月 4-7 日在国家会展中心 (上海) 举办的第十七届中国国际压铸工业展览会, 展位号: 2.1 号馆 2A16, 欢迎莅临参观。

Website: <https://www.hictrl.com.cn> ■



Supreium—Bridge the industrial logic using algorithm, making it lighter and faster.

适创科技——用算法桥接工业逻辑，让它更轻快

Integrated die-casting technology has revolutionized the automotive components industry. The integrated molding of complex, large, and high-precision parts also presents a series of challenges in design and production. As a representative supplier of intelligent solutions in the die-casting field, Supreium leverages its core competencies in high-performance CAE algorithms and intelligent design and optimization technologies. It has introduced SupreCAST—a cloud-native casting

一体化压铸技术使汽车零部件行业发生颠覆性的变革, 其复杂、大型、高精零件的一体化成型特点也带来了一系列设计、生产方面的难题, 作为压铸领域智能化解决方案供应商的代表, 适创科技凭借高性能 CAE 算法及智能设计与优化算法核心技术实力, 为行业带来了 SupreCAST 智铸超云——聚焦设计仿真的铸造云原生模拟软件产品, 以及

simulation software product focused on design simulation; And Supreium-DPB—a smart workshop solution for die-casting, establishing an L4 level benchmark for smart factories and accelerating the era of large-scale integrated die-casting.

I. SupreCAST

SupreCAST is a cloud-native casting simulation analysis platform entirely developed by Supreium, which provides full technical support. It offers low-cost, efficient, and intelligent simulation SaaS services for die-casting and mold companies. Users can simply register an account on SupreCAST to access the simulation software, which includes main functions such as filling simulation, solidification and cycle simulation, and stress deformation simulation. The software is user-friendly, providing accurate simulation results and comprehensive analysis reports.

From automotive components to various die-casting product fields, SupreCAST has gained over 7,000 clients, including major manufacturers like FAW, Zeekr, Changan, Chery, and enterprises of various sizes such as Ningbo Xusheng, Zhejiang Huiwang, Dalian Yaming, Dongguan Hongtu, Guangzhou Xingqiang. Its core technology has been appraised by the Chinese Mechanical Engineering Society as reaching an "internationally advanced level."

II. Supreium-DPB

Supreium-DPB aims to create a transparent, agile, and intelligent factory at the L4 level of smart manufacturing, achieving full automation of workshop operational decisions. Based on a digital factory and numerical simulation technology, it establishes empirical models and correction models through deep learning techniques to reduce waste, support stable production, and decrease energy consumption.

Core functions include:

Intelligent process monitoring—provides intelligent perception, decision-making, and control for optimizing on-site production processes and equipment parameters;

Intelligent mold temperature monitoring—connects mold temperature control systems, infrared, and other peripheral equipment within the die-casting island to achieve data aggregation, mold temperature anomaly detection, automatic process calculation, and distribution, realizing fully automated feedback control of mold temperatures;

Intelligent inspection—integrates Supreium ADR automatic defect detection software to perform real-time inspection

Supreium-DPB 智能工艺大脑——压铸智能车间解决方案，建立 L4 级智慧工厂行业标杆，让一体化压铸为核心的大压铸时代加速到来。

一、SupreCAST 智铸超云

SupreCAST 智铸超云是一款云原生铸造模拟仿真分析平台，由适创科技完全自主研发并提供全部技术支持，主要为压铸和模具企业提供低成本、高效率和智能化操作的模拟仿真 SaaS 服务。用户在「智铸超云」注册账号即可使用模拟仿真软件，主要功能包括充型仿真、凝固及循环仿真，以及应力变形仿真，软件操作简单，为用户提供准确的仿真结果和完整的分析报告。

从汽车零部件到各类压铸产品领域，SupreCAST 已收获包括一汽、极氪、长安、奇瑞等主机厂，以及宁波旭升、浙江辉旺、大连亚明、东莞鸿图、广州型腔等大中小规模企业客户超 7000 家，并被中国机械工程学会鉴定其核心技术已达到“国际先进水平”。

二、Supreium-DPB 智能工艺大脑

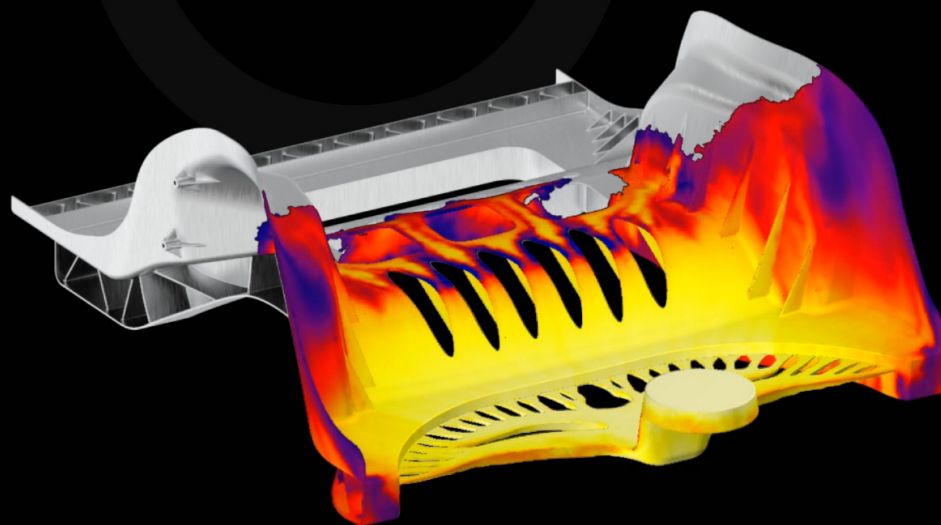
智能工艺大脑以打造智能制造 L4 等级的透明化、敏捷化、智能化工厂为目标，实现全车间操作决策自动化，以数



SUPREIUM 适创科技

超强算力 为一体化压铸仿真而生

3亿网格流体 | 144核并行 | 仅需42小时



字化工厂为基础，基于数值仿真技术建立经验模型、通过深度学习技术建立修正模型，实现降低废品率，支持稳定生产并降低能耗。

核心功能包括：

智能工艺监控——为现场生产工艺的优化，以及生产单元设备参数优化，提供智能感知、决策和控制；

智能模温监控——联通模温控制系统、红外以及其他压铸岛内周边设备，实现数据汇总、模温异常发掘、工艺自动计算与下发的功能，实现模具温度全自动化反馈控制；

智能检测——集成 supreium ADR 自动缺陷检测软件，对产品进行实时检测（毫秒级缺陷查找 - 缺陷评级 - 产品判废）及分拣，收集并分析产品缺陷及质量变化情况，优化生产工艺。

(millisecond-level defect detection - defect rating - product scrapping) and sorting, collecting and analyzing product defects and quality changes to optimize production processes.

III. Global Customers

Supreium-DPB has R&D centers and customer service centers across China, committed to focusing on customers, products, and industry cultivation, providing one-stop digital product solutions for nearly ten thousand enterprises worldwide. Representative domestic and international customers include GE-Baker Hughes, Aero Engine Corporation of China, CITIC Dicastal, FAW Foundry, Geely Automobile, Changan Automobile, as well as well-known upstream and downstream manufacturing enterprises such as Dalian Yaming, Ningbo Xusheng, Guangzhou Xingqiang, and Dongguan Hongtu.

Looking forward to meeting you at Diecasting China 2024, booth 2C09 at 2.1HALL of the National Exhibition and Convention Center, Shanghai.

Website: www.supreium.com. ■

三、全球客户

适创科技在全国分布研发中心和客户服务中心，坚持立足客户，聚焦产品，深耕行业，为全球近万家企业提供一站式数字化产品解决方案。国内外代表客户如 GE- 贝克休斯、中国航发航材院、中信戴卡、一汽铸造、吉利汽车、长安汽车等，以及大连亚明、宁波旭升、广州型腔、东莞鸿图等知名上下游制造企业。

适创科技将参加 2024 年 7 月 4-7 日在上海举办的第十七届中国国际压铸工业展览会，展位号：2.1 号馆 2C09，欢迎莅临、参观交流。

网址：www.supreium.com。■

China Machine Tool Casting Production Base--Wuhu Jiuhong

芜湖久弘重工——中国机床铸件生产基地



Wuhu Jiuhong Heavy Industry Co., Ltd. was established in October 2015, located in Suncun Town, Fanchang District, Wuhu City, in the Yangtze River Delta Economic Circle. It covers an area of 260 acres and has a construction area of 70000 square meters. It is close to Wuhu-Tongzhou Highway, Beijing-Fuzhou High-speed Railway, Ning'an High-speed Railway, and Shanghai-Chongqing Expressway, and the transportation is very convenient.

The company is a director of the China Foundry Association, Vice Chairman of the Machine Tool Casting Branch of the China Foundry Association, and Vice Chairman of the Anhui Foundry Association. It has been awarded many honors such as "Anhui Private Technology Enterprise", "Provincial Enterprise Technology Center", and "Provincial High-tech Enterprise". In July 2021, the company was recognized by the Ministry of Industry and Information Technology as the "Third Batch of National Specialized and New Small Giant Enterprises", and in September 2022, it was recognized by the China Foundry Association as the "China Machine Tool Casting Production Base".

The company produces 70,000 tons of castings annually, with the largest single casting weight of 50 tons. After years of dedication to the machine tool casting market segment, it has now grown into a domestic machine tool casting production base, providing large quantities of high-quality machine tool

芜湖久弘重工股份有限公司成立于2015年10月，坐落于长三角经济圈的芜湖市繁昌孙村镇境内，占地260亩，建筑面积70000平方米，紧邻芜铜公路、京福高铁、宁安高铁、沪渝高速，交通十分便捷。

公司是中国铸造协会理事，中国铸造协会机床铸件分会副理事长、安徽省铸造协会副会长，被授予“安徽省民营科技企业”“省级企业技术中心”“省级高新技术企业”等多项荣誉。公司2021年7月被工信部认定为“第三批国家级专精特新小巨人企业”，2022年9月被中国铸造协会认定为“中国机床铸件生产基地”。

公司年生产铸件7万吨，铸件最大单重50吨。成立多年来致力于机床铸件细分市场目前已经成长为国内机床铸件生产基地，为国内外知名机床企业提供了大批量优质机床铸件。公司主要为大型数控机床等重型机械行业提供各种优质铸铁件及机械加工。高强度灰铸铁和厚大断面球墨铸铁是公司特色产品。公司拥有员工460人，中高级职称技术人员二十名，各类专业技术人员四十余名，以及一大批从事铸造行业10年以上经验的熟练员工，同时企业在不断引进行业先进生产工艺和专业技术与管理人才。

castings for well-known machine tool companies at home and abroad. The company mainly provides various high-quality cast iron parts and mechanical processing for heavy machinery industries such as large CNC machine tools. High-strength gray cast iron and thick and large-section ductile iron are the company's featured products. The company has 460 employees, 20 technicians with middle and senior professional titles, more than 40 professional technicians of various types, and a large number of skilled employees with more than 10 years of experience in the foundry industry. At the same time, the company is constantly introducing advanced production processes and professional and technical and management talents in the industry.

The company adopts furan resin sand molding technology, medium frequency electric furnace melting, and various production equipment leading the industry, specializing in the production of large tonnage cast iron parts. Equipped with a dedicated physical and chemical laboratory, capable of analyzing and testing the mechanical properties and chemical composition of cast iron parts and various raw materials. The company has passed ISO9001 quality management system certification, ISO45001 occupational health and safety management system certification, and ISO14001 environmental management system certification. It has a strict quality management system and implements full process quality control for casting production. Since its establishment, the company has been committed to technological innovation and industrial transformation, actively responding to national policies on environmental protection, energy conservation and emission reduction, and carbon peaking. It has invested a large amount of funds in updating environmental protection equipment to achieve orderly emissions and environmental standards. The company has introduced advanced information technology software and adopted an information management model to organize research and production. It has achieved significant results in the field of technological innovation, new product development, and patented technology. At present, we have 21 invention patents, 33 utility model patents, 10 provincial-level high-tech products, 4 provincial-level scientific and technological achievements, participated in the formulation of 9 industry and national standards, and 1 provincial-level major scientific and technological special project.

Jiuhong Company will adhere to the business philosophy of "crafting high-quality products, strengthening services, and satisfying customers in everything", always adhere to the corporate purpose of quality first and customer first, fully carry forward the corporate spirit of diligence, pragmatism, responsibility, and cohesion, strive to pursue 100% customer satisfaction, continue to provide high-quality basic castings for the machine tool industry, and strive to become a leading domestic machine tool casting company.

Jiuhong will take part in METAL CHINA 2024, Booth number: 4.1H4C04, looking forward to your visit.

Website: <https://www.cnjiuhong.com/> ■

公司采用呋喃树脂砂造型工艺，中频电炉熔炼，各种生产装备行业领先，擅长于大吨位铸铁件生产。配备了专用理化实验室，具备铸铁件、各类原材料的机械性能和化学成份的分析检测。公司通过了 ISO9001 质量管理体系和 ISO45001 职业健康安全管理体系、ISO14001 环境管理体系认证，有严格的质量管理制度，对铸件生产实施全过程全流程质量控制。公司自成立以来立足于科技创新和产业转型，积极响应国家环境保护、节能减排、碳达峰等相关政策，投入大量资金用于环保设备更新，实现有序排放和环保达标。公司引进先进信息化软件，采用信息化管理模式组织研发及生产，在技术创新领域、新产品开发，专利技术等方面取得了较大成绩。目前拥有发明专利 21 项，实用新型专利 33 项，省级高新技术产品 10 项，省级科技成果 4 项，参与制定行业标准和国家标准 9 项，省级重大科技专项 1 项。

久弘公司将本着“琢精品，强服务，一切让客户满意”的经营理念，始终坚持质量第一、用户至上的企业宗旨，充分发扬勤勉、务实、担当、聚力的企业精神，努力追求 100% 的用户满意度，持续为机床行业提供优质基础铸件，努力成为国内机床铸件领军企业。

久弘公司将参加“第二十二届中国国际铸造博览会”，展位号：4.1H 馆 4C04，欢迎莅临参观。

网址： <https://www.cnjiuhong.com/> ■





Elebia Autohooks to Showcase Innovative Automatic Hooks at Metal China 2024

Elebia Autohooks 公司将在第二十二届铸博会上展示创新型自动吊钩

Anticipation is in the air as we gear up for the upcoming the 22nd China International Foundry Expo (Metal China 2024) at National Exhibition and Convention Center, Shanghai from July 4-7, 2024, an event set to bring together the best and brightest of the metal industry under one roof. Among the standout exhibitors is Elebia Autohooks, the undisputed leader in lifting technology and load handling, which has confirmed its participation in this prestigious fair.

Elebia Autohooks will not only be present at Metal China 2024 but will arrive laden with the latest in innovation: their state-of-the-art automatic hooks. These hooks, which have revolutionized the way heavy loads are handled worldwide, will be available for visitors to witness in action at the Elebia booth.

What makes Elebia's hooks so exceptional is their advanced functionality and cutting-edge design. Equipped with remote control technology, these hooks offer a safer, more efficient, and convenient way to lift and transport heavy loads. The ability to control the hooks from a safe distance not only increases productivity but also reduces the risk of accidents and injuries in the workplace.

What's even more impressive is that these hooks are not only industry leaders in terms of performance but also a testament to the excellent craftsmanship done in Spain. Manufactured to the highest standards of quality and precision, Elebia's hooks are recognized worldwide for their durability and reliability.

备受行业期待的第二十二届中国国际铸造博览会 (METAL CHINA 2024) 将于 2024 年 7 月 4-7 日在国家会展中心（上海）举办，此次盛会将汇集全球金属行业的精英翘楚。西班牙 Elebia Autohooks 公司是其中亮眼的参展商之一，公司在起重技术和货物装卸领域无可争议的领导者地位已经得到行业肯定。

Elebia Autohooks 将携带公司的创新产品亮相，即新锐自动吊钩。这些吊钩彻底改变了全球重型货物的搬运方式，观众可在 Elebia Autohooks 展位近距离观看其操作及应用。

Elebia Autohooks 公司的吊钩之所以如此出色，还要归功于其先进功能和尖端设计。这些吊钩配备了遥控技术，能够更安全、更高效、更便捷地运输重型货物。可以从安全距离控制吊钩，不仅能提高生产率，还能降低工作场所发生事故和人身伤害的风险。

更令人印象深刻的是，这些吊钩不仅在性能方面处于行业领先地位，而且还是西班牙精湛工艺的证明。Elebia Autohooks 的吊钩按照最高级别的质量标准与精密标准制造，可靠耐用、享誉全球。

Elebia Autohooks 在全球多个工业领域开展业



With a global presence in multiple industrial sectors, Elebia Autohooks has proven its worth time and time again, providing innovative solutions to lifting challenges in a variety of operational environments. From construction to manufacturing, Elebia's automatic hooks are the preferred choice of those looking to maximize efficiency and safety in their operations.

For those who want to experience firsthand the revolution in load handling offered by Elebia Autohooks, we cordially invite you to visit our booth at Metal China 2024 Shanghai. Join us at Booth 3B22 in Hall 3 as we demonstrate how our automatic hooks are redefining the standards of excellence in the metal industry.

Don't miss the opportunity to witness the future of load lifting at Metal China 2024 in Shanghai! Visit the Elebia Autohooks booth and discover why we are leading the way toward a safer and more efficient tomorrow.

Elebia Autohooks website: www.Elebia.com ■

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Commissioning Of The Fastest Modern Tight Flask Green Sand Moulding Line In India

by Olaf M. Kramer, Heinrich Wagner Sinto

印度最快的现代化湿型砂有箱造型线投入使用

AIA Engineering Ltd. operates a state-of-the-art foundry in Ahmedabad, India, primarily for the production of chrome steel crusher balls used in cement and mining industries.

AIA is the world market leader for these products. To meet the increasing demand, AIA ordered a new state-of-the-art moulding line in spring 2021 with a box size of 850x650x250/250 mm and a capacity of 200 complete moulds per hour.

With the delivery of this system, the first hybrid concept was implemented in cooperation with the HWS heavy-duty company Sintobharat (SBML) in Chennai, India. The plant concept was completely designed and constructed in Germany and the core components were supplied from Germany. The remaining assemblies were manufactured by HWS's sister company Sintobharat (SBML).

The core of the new system is a twin molding machine that produces an upper and a lower box mold at the same time.

Just as important as the modern and reliable plant technology is the service concept of the SINTOKOGIO Group. Again, AIA leaves nothing to chance. The service concept includes a 24/7 hotline service. If necessary, HWS technicians in Bad Laasphe can log into the control system of the molding line in order to carry out diagnostics or program changes.

In addition, a service contract has been concluded. This includes regular inspections of the system, needs-based training and an optimized stockpile of spare and wear parts.

The plant was commissioned as planned in late summer 2023. On the occasion of the IFEX 2024 trade fair, HWS Managing Director Andreas Klein visited the AIA foundry and thanked the Managing Director Mr. Bhadresh Shah, Business Head Mr. Chetan V. Shah as well as the entire AIA team, also on behalf of the entire SINTO team HWS and SBML for the excellent cooperation during the planning, production and assembly of the plant.

"The system is an AIA-SINTO system from a single source. Colleagues and customers have become friends.

AIA Engineering 有限公司在印度艾哈迈达巴德拥有一家先进的铸造厂，主要生产水泥和采矿业所需的铬钢磨球。

AIA 公司是这一产品的全球市场领导者。为了满足日益增长的需求，公司于 2021 年春季新购了一条先进造型线，砂箱尺寸为 850x650x250/250mm，每小时可生产 200 整型。

随着系统的交付，公司与印度钦奈的 HWS 重型装备公司 Sintobharat (SBML) 合作，共同实施了印度第一条合作供应的造型线。即设备布局和结构完全在德国设计，核心部分由德国提供。其余附线由 HWS 的姊妹公司 Sintobharat (SBML) 生产。

新系统的核心部分是可以同时生产上下箱砂型的双工位造型机。

装备技术的可靠性与现代化同样重要，一直是新东工业集团的服务理念。同样，AIA 公司也不会放过任何机会。新东公司的服务理念包括 24/7 的全天候的热线服务。必要时，位于 Bad Laasphe 的 HWS 技术人员可以登录造型线的控制系统进行诊断或程序变更。

此外，双方还签订了服务合同。其中包括对系统的定期检查、基于需求的培训以及备件和易损件的优化储备。

工厂按计划于 2023 年夏末投产。在 IFEX 2024 展会上，HWS 公司总经理 Andreas Klein 参观了 AIA 铸造厂，并向总经理 Bhadresh Shah 先生、业务主管 Chetan V. Shah 先生以及 AIA 整个团队表示了感谢。

“该系统是来自单一来源的 AIA-SINTO 系统。同事和客户都成了朋友”。他总结说：“每个人都因为创造了非常特别的东西而团结在一起”。

Everyone is united by the experience of having created something very special," he concludes.

Sintobharat Managing Director Arjun Bagri states: "We have grown with this task and are proud of what we have achieved. In this project, we were able to prove our capabilities.

AIA's Chetan Shah sums up: "We have high standards in terms of quality, productivity and speed. We manufacture products with sophisticated machines in large quantities. During the selection process, we were impressed by the technical solution and the service concept of the Sintokogio Group. During the project phase, the installation, the commissioning and now in the day-to-day business, the cooperation was and is excellent. Our expectations were more than met." ■

Sintobharat 董事总经理 Arjun Bagri 表示: “我们在这项任务中不断成长, 并为所取得的成就感到自豪。在这个项目中, 我们证明了自己的能力”。

AIA 公司总经理 Chetan Shah 先生总结道: “我们在质量、生产效率和速度方面都有很高的标准。我们使用精密的机器大批量生产产品。在选择过程中, 新东工业集团的技术解决方案和服务理念给我们留下了深刻印象。在项目阶段、安装、调试以及现在的日常业务中, 双方的合作都非常出色。我们的期望得到了极大的满足”。 ■



Omega Sinto Celebrates 15 Years Of Collaboration With Sane Equipment Pvt Ltd

Omega 新东公司庆祝与 Sane Equipment 公司合作 15 周年



The 15th anniversary of Omega Sinto Foundry Machinery joint venture with Pune based Sane Equipment PVT Ltd heralds a new era of local manufacturing.

“Being active in the Indian market since 1989, we always realised the need to have a local source of manufacturing”, Mark Fenyes states, Chairman of Omega Sinto. “Despite spending a lot of time looking for suitable partners over the years, we couldn’t find an organisation that embraced our values and vision for the future.”

The story began in 2009 when Omega Sinto acquired Richards Engineering Ltd. During the discussions it came out that Richards Engineering Ltd had an appointed licensee in India, which was Mr Nitin Sane, Sane Equipment PVT.

“On my next visit to India I met Mr Nitin, and I knew immediately that he was the right partner for our business”, Mark Fenyes explains. “Initially we manufactured a limited range of equipment locally to service those smaller foundries that were not capable of importing equipment from the UK, whilst at the same time we used the JV to support larger turnkey installations we were undertaking in India.”

When the time had progressed it was obvious that the JV should play a wider role in the market, and as such the range of machines that can be produced locally has been significantly increased.

“Nitin Sane, along with his son Siddarth, and the rest of

今年是 Omega 新东公司与位于浦那的 Sane Equipment 公司成立的合资企业 15 周年，预示着新东在印度本地的生产进入了一个新时代。

Omega Sinto 主席 Mark Fenyes 表示：“自 1989 年以来，Omega 公司一直活跃在印度市场，并一直意识到在当地建立制造基地的必要性。尽管多年来我们花了很多时间寻找合适的合作伙伴，但始终没有找到一家能够接受我们的价值观和未来愿景的公司。”

故事始于 2009 年，当时 Omega 新东公司收购了理查兹工程有限公司。在交流过程中，发现理查兹工程有限公司在印度有一个指定的许可证持有人，即 Sane Equipment PVT 公司的 Nitin Sane 先生。

Mark Fenyes 解释说：“在我接下来访问印度时，我见到了 Nitin 先生，我立刻意识到他是我们业务的最佳合作伙伴。起初，我们在当地生产的设备范围很有限，为那些无法从英国进口设备的小型铸造厂提供服务，与此同时，我们还利用合资公司为我们印度进行的大型交钥匙安装提供支持。”

随着时间的推移，合资公司显然应该在市场上发挥更广

his team, have done an outstanding job in manufacturing and supporting our commercial team through our partners Gargi Engineering who we have been associated with for nearly 40 years”, Fenyes concludes.

“With now over 400 installations in India, we wish Nitin and his team continued success for the next 15 years”, Mark Fenyes states, Chairman of Omega Sinto. ■

泛的作用，因此，本地生产的机器种类也大幅增加。

“Nitin Sane 和他的儿子 Siddarth 以及他的团队其他成员在生产方面做得非常出色，并通过与我们有近 40 年合作关系的合作伙伴 Gargi Engineering 为我们的商业团队提供支持”，Fenyes 总结道。

Omega 新东公司主席 Mark Fenyes 表示：“目前，我们在印度已安装了 400 多台设备，我们祝愿 Nitin 和他的团队在未来 15 年里继续取得成功”。■



Savelli Machinery India Pvt. Ltd. In The New Plant Of Gautam Casting Group In India

印度 Gautam 铸造集团新厂安装萨维利印度公司设备

Gautam Casting Group announced that Savelli Machinery India Pvt. Ltd. equipment was installed in the new plant at Rajkot in India. How this collaboration came about, the impact for Savelli Technologies S.r.l. of this step and the future outlook of the Indian sand plant industry—all here in this article.

The foundry industry in India is booming. And Savelli

Gautam 铸造集团宣布，萨维利机械印度有限公司的设备已经安装在印度拉杰科特的新工厂。这一合作是如何建立的，对萨维利公司的影响以及印度砂铸行业的未来前景都在本文中加以阐述。

印度的铸造业正在蓬勃发展，在此背景下，由意大利萨

Machinery India Pvt. Ltd., a company participated by Savelli Technologies S.r.l., ZETA, India, is running very well too. Recently, Gautam Casting Group (www.gautamcasting.com) announced the launch of the new plant at Rajkot, in presence of ONE Gautam Family. With a complete sand plant and return system as well as a new automatic horizontal flask molding line type F2, Savelli Machinery India Pvt. Ltd. was installed in this new foundry.

Gautam Casting has many Jolt squeeze lines in existing foundries but looking for a more modern molding process

«Gautam Casting was looking for high pressure flask for medium speed production for producing tractor and earth moving equipment castings. After the evaluation of the molding processes, the team decided to go with SAVELLI high pressure multi-pistons squeezing solution. Because they have many Jolt squeeze lines in the existing foundries», so Anand Chebbi, Managing Director of Savelli Machinery India Pvt Ltd to the question of how this collaboration came about.

40 tones per hour capacity of Sand mixing for productivity of 60 molds per hour

The plant, which is currently being built up, is designed for 40 tones per hour capacity of Sand mixing for productivity of 60 molds per hour. The management team of the new plant in Rajkot is mixed of seasoned foundry professionals from the first generation and Technical Savy experienced from the second generation.

«We are proud that Savelli Machinery India Pvt. Ltd. was chosen when they moved out of conventional line to High pressure line», so Chebbi.

The installation of flask line will open the gate for bigger size casting production

This step undoubtedly marks an important impact for Savelli. One reason for that is that Savelli Machinery India Pvt. Ltd. is a major player supporting Flaskless installation with sand plants and Cooling lines. Gautam group is a respected name in western area, and the installation of flask line will open the gate for bigger size casting production.

«We have another installation of Flask line coming in Gujarat, in Jamshedpur and in Mangalore. We are proud to mention that Lamina at Mangalore is a second line, under

维利公司, 印度 ZETA 集团共同设立的萨维利机械印度有限公司也运行的非常好。最近, Gautam 铸造集团 (www.gautamcasting.com) 宣布在拉杰科特的新工厂开工。萨维利机械印度有限公司在这个新的铸造厂安装整套的砂处理和砂再生系统, 以及新的 F2 型全自动水平有箱造型线。

Gautam 铸造厂现有多触头震动挤压造型线, 正需求更现代的造型线

Gautam 铸造公司正在寻找中速生产的高压有箱线, 用于生产拖拉机和工程机械设备铸件。在对造型工艺进行评估后, 该团队决定采用萨维利高压多触头挤压造型线。萨维利印度公司的总经理 Anand Chebbi 回答了这个问题, 因为铸造厂现在使用的就是多触头挤压造型线。

40 吨 / 小时的混砂能力, 生产能力为 60 整型 / 每小时

该工厂目前正在建设中, 设计混砂能力为 40 吨 / 小时的, 造型线为 60 整型 / 小时。拉杰科特新工厂的管理团队经验丰富的铸造前辈和技术人员组成。

“我们很自豪, 当客户从常规的生产线转向高压造型线时, 萨维利机械印度有限公司被选中了”, 总经理 Chebbi 如是说。

有箱造型线的安装将为更大规模的铸件生产开启大门

这一步无疑对萨维利产生了重要影响。其中一个原因是, 萨维利机械印度有限公司是无箱造型线和冷却线的主要参与者。Gautam 集团在西部地区享有盛誉, 有箱造型线的安装将为更大规模的铸件生产打开大门。

“我们将在古吉拉特邦、贾姆谢德布尔和芒格洛尔安装其他的有箱造型线。我们很自豪地提到, 芒格洛尔的 Lamina 是第二条生产线, 正在安装中。第一条线由萨维利公司交付, 运行了近 10 年。” 总经理 Chebbi 特别指出。

没有其他大型设备供应商能提供更高效率的砂处



installation. The first line was delivered by Savelli Technologies S.r.l. and running for almost 10 years», Chebbi stated.

No major equipment supplier who can provide higher efficiency in sand plant

Concerning the development of the Indian sand plant industry, Chebbi confirms that there is actually no major equipment supplier who can provide higher efficiency in sand reclamation and recycling. In the opinion of Chebbi the Indian foundry industry is primarily driven by rapid industrialization and urbanization with a big focus in infrastructure projects. India stood as one of the world's leading countries in vehicle production. In the financial year 2023, the total vehicle production in India reached around 25.93 million units, marking an increase from the previous year, as reported by the Society of Indian Automobile Manufacturers (SIAM).

Savelli Machinery India Pvt. Ltd. made a breakthrough with SAVELLI F2 and F3 molding systems

Consequently, there is an escalated demand for car parts necessary for automobile manufacturing. To address this growing demand for metal castings in India, foundries are investing in new technology and equipment. Savelli Machinery India Pvt. Ltd., being a new entrant, made a breakthrough in this area with SAVELLI F2 and F3 molding systems (F1 technologies mainly from Savelli Technologies S.r.l.). As Chebbi states, the Indian Foundry Market size is expected to grow at a CAGR of 10.30% during the forecast period (2024-2029). ■

理系统

对于印度砂型铸造的发展, Chebbi 证实, 实际上没有大型设备供应商能够提供更高效率的砂回收和循环利用。在 Chebbi 看来, 印度铸造业主要受到快速工业化和城市化的推动, 重点是基础设施项目。印度是世界汽车生产的主要国家之一。根据印度汽车制造商协会 (SIAM) 的报告, 在 2023 财政年度, 印度的汽车总产量达到约 2593 万辆, 比上一年有所增加。

Savelli 机械印度有限公司在萨维利 F2 和 F3 成型系统方面取得了突破

因此, 对汽车制造所必需的汽车零部件的需求不断上升。为了满足印度对金属铸件日益增长的需求, 铸造厂正在投资新技术和设备。萨维利机械印度有限公司作为新进入者, 凭借 Savelli F2 和 F3 成型系统 (F1 技术主要来自萨维利公司) 在这一领域取得了突破。正如 Chebbi 所说, 在预测期内 (2024-2029 年), 印度铸造市场规模预计将以 10.30% 的复合年增长率增长。” ■



Gas Injection In Practice - Aluwag On The Threshold Of Pre-Series Production

气体喷射实践——ALUWAG 公司论前期生产的门槛

The opportunity for development partners for innovative die casting solutions

The renowned Swiss die-casting company ALUWAG, based in eastern Switzerland, has been supplying technology leaders competently and reliably with sophisticated die-cast components for more than 50 years.

For around four years, the company has been developing gas injection technology in aluminium die casting as part of the EU research and innovation programme "Horizon 2020" and in collaboration with TIK, Magit, Surtechno and HS Aalen. The company can now put the process into practice with demonstrator components for various geometries with the aim of bringing components into series production.

The process, which has already proven itself in injection moulding, is now also to be used for series processes in die casting for molten metal.

During our on-site visit to Niederbüren, we were able to talk to Raphael Hutter and Damian Föllmi about the development of gas injection technology at ALUWAG before foundry manager Nihat Atik and team leader Sujivan Srikantharajah presented the process in practice by casting the demonstrator parts.

Die casting solutions for non-removable hollow channels in the component

The focus is on the production of component cavities using the aluminium die casting process. Using gas injection technology, complex structures and internal channels can be created during the casting process without the need for additional machining steps. Images 1 and 2

How stable is the process?

Together with the experts from ALUWAG, let's do the practical test and see how stable the process is and how the advantages can be summarised. Together with the project partners TIK, MAGIT, Surtechno and HS Aalen, the Swiss die casters were able to overcome many hurdles in advance. It is now possible to simulate the gas injection process with Flow 3D in terms of filling and solidification as well as the complete flow



为开发合作伙伴提供创新压铸解决方案的机会

总部位于瑞士东部的著名的压铸公司 ALUWAG, 50 多年来一直作为富有经验且值得信赖的技术领导者, 为客户提供精密压铸部件。

在大约四年的时间里, 作为欧盟研究和创新计划“地平线 2020”的一部分, 该公司一直在与 TIK、Magit、Surtechno 和 HS Aalen 合作开发铝压铸中的气体喷射技术。

该公司现在可以通过各种几何形状的演示部件将该过程付诸实践, 目的是将部件投入批量生产。该工艺已经在注塑成型中得到了证明, 现在也将用于熔融金属压铸的系列工艺。

在我们对 Niederbüren 公司的现场访问中, 我们与 Raphael Hutter 和 Damian Föllmi 就 ALUWAG 的气体喷射技术的发展进行了交谈, 然后铸造经理 Nihat Atik 和团队负责人 Sujivan Srikantharajah 通过铸造演示部件介绍了实践过程。

压铸解决方案——固定空心通道的部件

重点是使用铝压铸工艺生产工件型腔。使用气体喷射技术, 可以在铸造过程中创建复杂的结构和内部通道, 而无需额外的加工步骤。见图 1 和图 2

工艺是否稳定?

让我们与 ALUWAG 的专家一起进行实际测试, 看看该工艺的稳定性以及如何总结其优势。与项目合作伙伴 TIK、AGIT、Surtechno 和 HS Aalen 等公司一起, 瑞士压铸企业能够提前克服许多障碍。现在可以用 Flow 3D 模拟气体喷射过程, 包括填充和凝固以及熔体的完整流动。

与客户共同确定部件的质量特性, 并根据截面、壁厚



of the melt.

The quality characteristics for the component are determined together with the customer and defined in terms of cross-section, wall thickness distribution, residual dirt, tightness and bore.

The injection process at the die casting cell runs smoothly with experienced employees at the gas injection unit with expert operation of the gate valve to inject the nitrogen.

The targeted injection of gas into the melt during the casting process creates cavities that reduce the weight of the components and at the same time improve their strength. It enables more efficient and cost-effective production of high-quality components with complex geometries. Optimised material properties, higher mould filling and a reduction in distortion and porosity are further advantages of the process.

The result is high-quality aluminium die-cast parts with cavities and/or internal channels.

Gas-injection Housing latest casting.

The advantages are obvious, especially for components in power electronics, but also for media-carrying components or when it comes to targeted weight reduction, because the part produced with gas injection usually replaces an entire assembly and saves on tools or additional welding processes.

Together with its research partners, ALUWAG has worked intensively on this topic and can

分布、残余污垢、密封性和内径进行定义。

压铸单元的注射过程顺利进行，有经验丰富的员工在气体注射单元，专家操作闸阀注入氮气。

在铸造过程中，有针对性地向熔体中注入气体会产生空腔，从而减轻部件的重量，同时提高它们的强度。它能够更高效、更经济地生产具有复杂几何形状的高质量部件。优化的材料性能，更高的模具填充和减少变形和孔隙率是该工艺的进一步优势。

其结果是高质量的铝压铸零件与腔和 / 或内部通道。

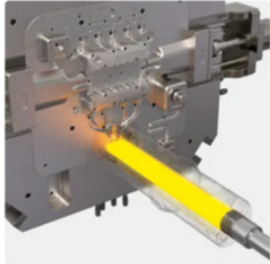
气体喷射壳体的最新铸件。

这种技术的优势是显而易见的，尤其是对于电力电子元件，同时也适用于承载介质的元件或目标减重，因为用气体喷射生产的部件通常会取代整体组件，从而节省了工具或



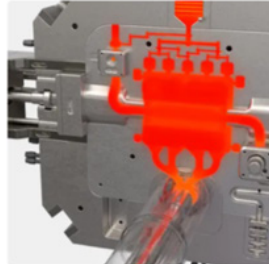
PROZESSSCHRITTE

Bei dieser Technologie wird während der Abkühlphase die noch flüssige Schmelze im Inneren des Bauteiles mithilfe von Gasinjektion in eine sich öffnende Nebenkavität verdrängt – somit bildet sich im Bauteil ein Hohlkanal. Der grosse Vorteil dieser Technologie liegt darin, dass Kanäle mit Umlenkungen (→ herkömmlich nicht entformbar) hergestellt werden können. Das Verfahren eignet sich sowohl für medienführende als auch für gewichtseinsparende Hohlkanäle.



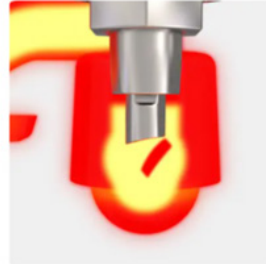
Prozess-Schritt 1:

Die flüssige Schmelze wird im Standard-Druckgiessverfahren in den Formhohlraum geschossen.



Prozess-Schritt 2:

Das Material erstarrt in der Form. Im Kern des Bauteiles ist die Schmelze noch flüssig.



Prozess-Schritt 3:

Die Erstarrung der Schmelze in der Druckgussform erfolgt von aussen nach innen. Der Injektor verschafft sich durch einen Einstich Zugang zur

sonstigen Schmelze.

ALUWAG mit seinem Forschungsteam zusammen, in diesem Bereich tiefer zu forschen, um die Möglichkeit der Serienproduktion mit der Gasinjektionstechnik zu untersuchen. Im Vergleich zu anderen Verfahren, bei denen Werkzeuge, Materialien und Bearbeitungskosten eine Rolle spielen, bietet die ALUWAG-Technologie erhebliche Vorteile, die zu optimalen Lösungen für die richtigen Komponenten führen.

关于 ALUWAG:

ALUWAG ist ein Unternehmen, das für die Herstellung von Aluminiumdruckgusskomponenten bekannt ist. Es bietet kundenspezifische Druckgusslösungen für die Automobilindustrie und andere Branchen. Das Unternehmen ist bekannt für seine Fähigkeit, komplexe Geometrien herzustellen, die mit anderen Verfahren nicht möglich wären.

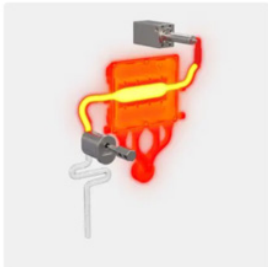
Erfahrung, Fachwissen und Leidenschaft bilden die Grundlage für innovative Druckgusslösungen.

ALUWAG verfügt über ein vollständiges Qualitätsmanagementsystem und ist nach folgenden Normen zertifiziert: ISO 9001, IATF 16949, ISO 14001/45001.

Die Maschinen verfügen über unterschiedliche Spannkräfte (in Tonnen gemessen), die für den praktischen Einsatz geeignet sind.

Modell: 400 530 800 1'200 1'800 2'200. ■

PROZESSSCHRITTE



Prozess-Schritt 4:

Durch das Öffnen des Sperrschiebers wird die noch leere Nebenkavität geöffnet.



Prozess-Schritt 5:

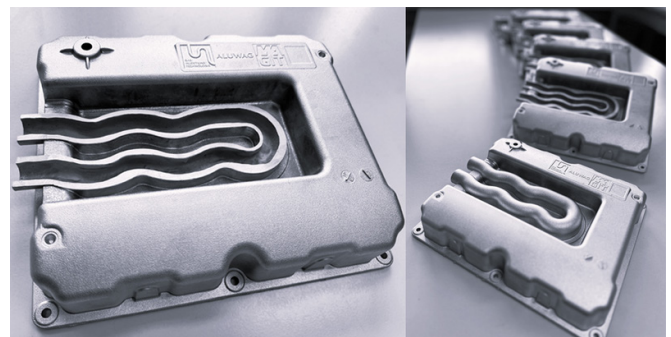
Die flüssige Schmelze wird durch die Gasinjektion in die Nebenkavität verdrängt. Es entsteht ein Hohlraum entlang der Kanalgeometrie.



Prozess-Schritt 6:

Das überschüssige Restmaterial wird abgetrennt.

now use its practical experience and accumulated expertise to establish that series production using gas injection processes is a serious possibility. Compared to other processes, the potential savings in tools, materials and machining costs open up enormous advantages that lead to optimal solutions for the right components. ■



GF Casting Solutions Leipzig GmbH Leverages Exone's Sand 3D Printing Technology In The Foundry's Operations

GF 集团莱比锡铸造有限公司使用 Exone 公司砂型 3D 打印技术

Georg Fischer in Leipzig produces large and heavy casting components weighing up to 1.1 tons for commercial vehicles and the off-highway segment including construction equipment, agricultural and forestry machinery, regenerative energy, engine technology and general engineering. Up to 60.000 tons of iron castings are produced annually and the demand is continuing to grow.

In the production process, the foundry creates green sand molds fully automatically with the aid of pattern plates, which serve as negatives for the subsequent casting contour. Cores, shot in the cold box process, form the inner cavities of the castings. Due to the high initial expenditures such as for models and core boxes as well as for the production of prototypes, the production process involved a lot of costs and time.

Usually, it can take months for foundries to produce a single prototype. This increases the time to market for the customer. As times changed, the requirements for early delivery and complexity of such prototypes became more and more demanding, which could hardly be realized by conventional means.

"We were facing different challenges producing small quantities due to high pattern and core box costs caused by our big molding line. That's why we investigated 3D printing," explained Lukas Blumenauer, the Head of Additive Manufacturing at GF Casting Solutions Leipzig GmbH.

Thus, the foundry decided in 2017 to invest in a 3D sand printer from ExOne, the S-Max®, to produce rapid prototypes as well as complicated cores for series production. Thanks to the 3D printer, the foundry can fabricate complicated component geometries within a very short time without having to produce patterns and core boxes. Furthermore time-consuming assembly steps of complicated core structures can be avoided.

GF Casting Solutions Leipzig GmbH continuously explores new applications to be realized with additive manufacturing. The foundry has witnessed that the 3D sand printing technology has developed and spread significantly in recent years, leading to wider acceptance and thereby increased demands by foundries. The company has been following this development closely, especially in the field of 3D printing with Cold Hardening Phenol (CHP) binder. In addition to that, the company has driven a cooperation with ExOne in order to be fit for the future. For this reason,

GF (乔治费舍尔) 在莱比锡生产重达 1.1 吨的大型和重型铸件，用于商用车和非高速公路设备，包括建筑设备，农业和林业机械，可再生能源，发动机技术和一般工程。根据统计每年生产铸铁件多达 6 万吨，并且需求还在持续增长。

在生产过程中，铸造厂使用型板全自动创建粘土砂铸型，作为后续铸造的外形。砂芯，用冷芯盒工艺制造，构成铸件的内腔。由于铸型和芯盒以及原型的生产等初始支出较高，生产过程涉及大量成本和时间。

通常，铸造厂可能需要几个月的时间来生产一个原型。这增加了客户从生产到进入市场的时间。随着时代的变化，这种原型的尽早交付的要求和铸件复杂性要求越来越高，使用传统工艺已经难以满足新的要求。

"对于我们的适用于大批量生产的造型线来说，小批量生产的产品较高的模具和芯盒的分摊成本，是我们面临的不同挑战。这就是我们研发 3D 打印的原因，" GF 铸造解决方案莱比锡有限公司增材制造主管 Lukas Blumenauer 解释道。

因此，铸造厂在 2017 年决定购买 ExOne 公司的 S-Max®3D 砂型打印机，以生产快速原型以及用于批量生产的复杂砂芯。由于有了 3D 打印机，铸造厂可以在很短的时间内生产复杂的几何形状的铸件，而不必生产模具和芯盒。避免了复杂砂芯结构耗时的装配步骤。

GF 铸造解决方案莱比锡有限公司不断探索新的应用，以实现增材制造。铸造厂见证了近年来 3D 砂型打印技术的显著发展和普及，使其被更广泛的接受，从而使铸造厂的需求得以增长。该公司一直密切关注这一发展，特别是在使用冷硬化苯酚 (CHP) 粘合剂的 3D 打印领域。除此之外，为了适应未来，该公司还与 ExOne 展开了合作。目前基于各种考虑，该公司已在 2023 年 6 月增加第二台 ExOne 打印机 S-Max®Pro。

这家铸造厂采用的 3D 打印技术已经大大扩展，使其能够从生产 5 公斤的铸件开始，一直到 1100 公斤的铸件。

the company has taken the step of adding a second ExOne printer, the S-Max® Pro, to its production in June 2023.

The foundry's adoption of 3D printing technology has expanded, enabling it to produce parts from 5 kg to 1,100 kg starting at one piece. As the CHP sand printing process is suitable for steel and aluminum castings as well, partnerships have been established to offer those materials to its customers, too.

Sand cores for hydraulic rotary transmissions

The core for the rotary transmission is an example of a very complicated core that GF Casting Solutions Leipzig GmbH produces. When the foundry still produced the cores conventionally, 12 partial cores were needed to form undercuts and thin channels. The core assembly was time-consuming and error-prone.

Thanks to the design freedom of 3D printing, the foundry can produce the cores for the hydraulic transmission in one piece only. The quality of the cores has improved significantly and the laborious manual assembly and subsequent fettling work is reduced.

Lukas Blumenauer shared that sand 3D printing has positively affected the foundry's entire workflow.

"After the casting, grinding and fettling work is drastically reduced, as the CHP binder leads to very good surfaces, even using uncoated printed cores. Conventionally made cores need to be coated to meet the customer requirements. This helps to reduce the labor times. The elimination of the core assembly itself saves labor time as well. Furthermore, the tolerances are reduced because of the elimination of assembly inaccuracies." ■

由于 CHP 砂型打印工艺也适用于钢和铝铸件，因此铸造厂已经对外建立了多个合作伙伴关系，为相关客户提供这些材料。

液压旋转传动铸件用砂芯

旋转传动铸件的砂芯是 GF 铸造解决方案莱比锡公司生产的非常复杂的砂芯的一例。当铸造厂仍以传统工艺生产砂芯时，需要 12 个局部的砂芯来形成凹槽和薄壁通道。这使得砂芯组装耗时且容易出错。

由于 3D 打印技术使得设计更加自由，铸造厂可以只生产一个液压传动的砂芯。芯的质量得到了显著的提高，减少了手工组装和随后的修整工作。

Lukas Blumenauer 分享说，砂型 3D 打印对铸造厂的整个工作流程产生了积极的影响。“浇注完成后，打磨和精整工作大大减少，因为 CHP 粘合剂可以产生非常好的表面，即使使用不刷涂料的打印芯。常规制造的砂芯需要刷涂料以满足客户的要求。而 3D 打印的砂芯有助于减少劳动时间。砂芯组装本身的消除也节省了劳动时间。此外，由于简化了装配环节，误差也减小了。” ■



I Trust In Magnesium Die Casting

我看好镁合金压铸

Thomas Fritsch, Chief Editor of Foundry-planet
Foundry-planet 主编 Thomas Fritsch

Hartmut Fischer, Plant Manager of the STIHL die-casting foundry, talks to Foundry-Planet about the benefits, sustainability, and future of magnesium die-casting.

Hartmut Fischer likes to think back to EUROGUSS 2024, because the mood was positive and that is particularly important for the German and European economy right now.

When it comes to magnesium, the entrepreneur goes into raptures and says quite openly: "I am fighting for the competitiveness of magnesium die casting. It must not be jeopardised by political frameworks and constraints."

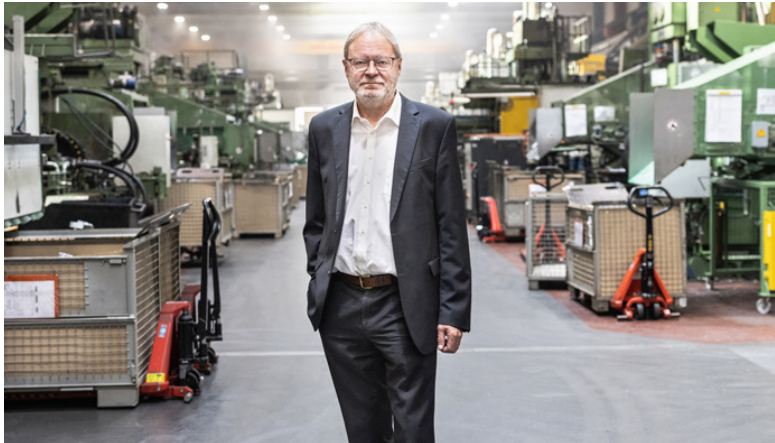
The competitiveness of magnesium die casting must not be jeopardised by politics

As head of the STIHL magnesium foundry in D4, Fischer is familiar with the different energy costs in Europe, the excessive bureaucracy, the pressure of wage and ancillary labour costs through to the Supply Chain Act and the associated documentation requirements. "These are the conditions that make it particularly difficult for industry, especially in Germany, and that is why we are appealing to those responsible in politics and society not to place an undue burden on industry and to stop new regulations," Fischer states.

STIHL, which operates worldwide, is committed to its location in Germany and intends to continue investing in the future. This is about the advantages of the location, the expertise, and the well-trained employees, which must be maintained and strengthened at all costs. "However, Germany as a business location must become much more competitive in order to improve the attractiveness of investing here," emphasises Fischer.

How is magnesium currently doing?

At the end of 2021, magnesium was in the headlines due to supply bottlenecks, when there were sometimes shortages in some companies and prices skyrocketed. "This all normalized long ago," emphasises Fischer, even though the price level has



STIHL 压铸公司的工厂经理 Hartmut Fischer 向 Foundry-planet 《铸造星球》讲述了镁合金压铸的好处、可持续性和未来。

Hartmut Fischer 回顾了 2024 年 EUROGUSS 展会，认为当时的行业氛围是积极的，这对目前德国和欧洲

经济尤为重要。

谈到镁，这位企业家欣喜若狂，坦率地说：“我在为镁合金压铸的竞争力而奋斗。它绝不能受到政治框架和限制的损害。”

镁合金压铸件的竞争力绝不能受到政治因素的影响

作为 D4 STIHL 镁铸造厂的负责人，菲舍尔先生熟悉欧洲不同能源的成本，过度的官僚主义，工资压力和辅助劳动力成本，以及供应链法案和相关文件要求。菲舍尔先生说：“这些条件使工业尤其困难，特别是在德国。这就是为什么我们呼吁那些在政治和社会上负责任的人不要给工业施加不适当的负担，并减少产生新的规定。”

STIHL 在全球运营，致力于其在德国的位置，并打算在未来继续投资。这是关于地理位置、专业知识和训练有素的员工的优势，必须不惜一切代价保持和加强。“然而，德国作为一个商业地点必须变得更有竞争力，以提高在这里投资的吸引力，”菲舍尔强调。

镁的现状如何？

2021 年底，由于供应瓶颈，镁成为头条新闻，当时一些公司有时出现短缺，价格飙升。“这一切在很久以前就已经常态化了，”菲舍尔强调，尽管价格水平已经稳定在更高的水平。

settled higher.

There are now various new magnesium extraction projects around the world, including in Europe. This means that there is a wider supply, including magnesium from Europe, so that the disadvantages can no longer have such a strong impact.

What makes magnesium such an attractive material for castings?

Magnesium die casting is used in a wide variety of industrial sectors and offers the following advantages over aluminium and steel, depending on the specific requirements (among others):

Weight saving: magnesium is the lightest structural metal, which leads to significant weight savings, crucial for example in the automotive or motorbike industry. Recently, e-bikes are a good example.

High specific strength: Magnesium alloys offer a good combination of strength and weight, 30% less weight compared to aluminium

Good thermal conductivity: Magnesium has a high thermal conductivity

Mouldability: Magnesium alloys have good castability and can achieve complex geometries with thin wall thicknesses

Electromagnetic shielding: Magnesium offers high shielding to minimise electromagnetic interference

These are advantages that are particularly important in lightweight construction in the automotive industry, aerospace, electronics, sports and work equipment and medical technology.

At STIHL, the leading manufacturer of chainsaws and motorised garden and landscape equipment, the use of magnesium die casting plays a special role. The weight saving makes a lot of sense, especially for components that are installed in end products for mobile use.

STIHL-D4 2022:

Around 40 million die-cast parts / approx. 900 employees / remelting capacity 4500 tonnes / CO₂-neutral Scope 1 and 2

High vertical range of manufacture. All production processes in-house, from casting to powder coating, machining and pre-assembly

Mg hot chamber specialist: 30 casting machines up to 1000 tonnes clamping force

How sustainable is the use of magnesium die casting?

Thanks to the purchase of offset certificates, STIHL is already CO₂-neutral in terms of its Scope 1 and Scope 2 emissions and is relaxed about the climate regulations. Magnesium is a material that can be optimally recycled and impresses with its durability and efficiency.

As a lightweight material (30% less than aluminium), it contributes per se to reducing fuel consumption and emissions.

Where is the future of magnesium die casting heading?

"Magnesium is the brilliant material that never quite made the big breakthrough," Fischer admits. However, it can certainly

现在世界各地都有各种新的镁提取项目，包括在欧洲。

这意味着有更广泛的供应，包括来自欧洲的镁，这样劣势就不会再产生如此强烈的影响。

是什么让镁成为如此有吸引力的铸造材料？

镁合金压铸件广泛用于各种工业部门，根据具体要求（以及其他要求），与铝和钢相比，镁压铸件具有以下优势：

重量更轻：镁是最轻的结构金属，可以显著减轻重量，这在汽车或摩托车行业中至关重要。最近，电动自行车就是一个很好的例子。

高比强度：镁合金提供了强度和重量的良好结合，与铝相比重量减轻 30%

导热性好：镁具有很高的导热性

可塑性：镁合金具有良好的浇注性，可以实现薄壁的复杂几何形状

电磁屏蔽：镁提供高屏蔽，最大限度地减少电磁干扰

这些优点在汽车工业、航空航天、电子、体育和工作设备以及医疗技术的轻量化结构中尤为重要。

在 STIHL，作为链锯、电动园林和景观设备的领先制造商，镁压铸件的使用起着特殊的作用。重量的减轻是很有意义的，特别是对于安装在移动使用的最终产品中的零件。

大约 4000 万个压铸零件 / 大约 900 名员工 / 重熔能力 4500 吨 / 二氧化碳中性范围 1 和 2

高垂直制造范围。所有生产过程，从铸造到粉末喷涂，机加工和预组装

镁合金热室专家 :30 台铸造机，最大锁模力 1000 吨

使用镁压铸件的可持续性如何？

由于购买了抵消证书，STIHL 公司在第一类和第二类排放方面已经达到了二氧化碳中和，并且对气候法规也有所放松。镁是最佳的可回收材料之一，其耐用性和效率令人印象深刻。

作为一种轻质材料（比铝少 30%），它本身就有助于减少燃料消耗和排放。

镁合金压铸的未来走向何方？

“镁是一种从未取得重大突破的杰出材料，”费舍尔承认。然而，它肯定可以与铝和钢铁竞争。

镁在汽车领域具有巨大的潜力。但对于电动自行车、航空工业和其他专门使用这种材料的地方来说，这种材料也

compete with aluminium and steel.

Magnesium has great potential in the automotive sector. But there are also advantages for e-bikes, the aircraft industry and everywhere else where the material is specifically used. In China, Fischer sees a completely different drive in the use of magnesium in lightweight construction, for example in the truck sector, which is why it is worth having a look at the China from time to time.

When it comes to drives for chainsaws and other power tools, Hartmut Fischer is a pragmatist. "Electric motors are clearly on the rise and also offer a good range of performance, but the further away you are from the nearest power socket, the more sophisticated combustion engines are recommended."

This fits in with the fundamental attitude of the man, who is in favour of the competitiveness of his material magnesium and wants an open-minded approach to technology for important future issues.

About STIHL:

The STIHL Group develops, manufactures, and sells power tools for forestry and agriculture as well as for landscape maintenance, construction, and private garden owners. The product range is complemented by digital solutions and services. The products are generally sold via service-providing specialist dealers and STIHL's own online shops, which will be expanded internationally over the next few years - with 42 own sales and marketing companies, around 120 importers and more than 55,000 specialised retailers in over 160 countries.

STIHL produces in seven countries worldwide: Germany, USA, Brazil, Switzerland, Austria, China, and the Philippines. STIHL has been the world's best-selling chainsaw brand since 1971. The company was founded in 1926 and is headquartered in Waiblingen near Stuttgart. STIHL achieved a turnover of 5.49 billion euros in 2022 with 20,552 employees worldwide. ■

有好处。在中国，费舍尔看到了镁在轻量化结构中使用的完全不同的推动力，例如在卡车行业，这也是他认为值得关注中国的原因。

当谈到链锯和其他电动工具的驱动器时，哈特穆特·费舍尔是一个实用主义者。“电动马达显然在不断发展，也提供了很好的性能范围，但你离最近的电源越远，建议使用更复杂的内燃机。”

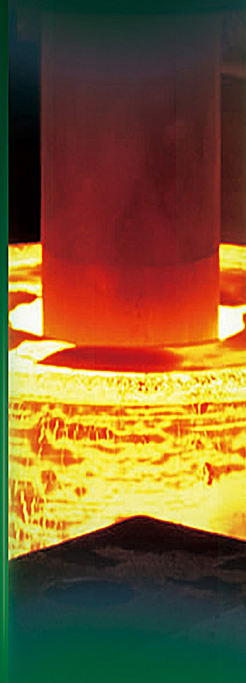
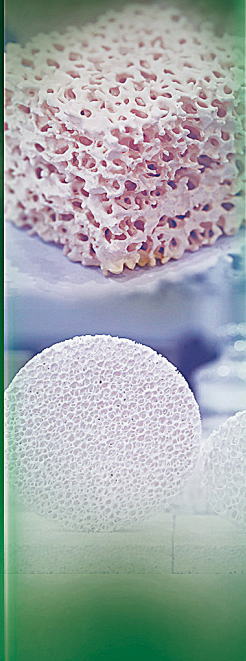
这符合他的基本态度，他支持镁材料的竞争力，并希望以开放的态度对待未来重要问题的技术。

关于 STIHL 集团:

STIHL 集团为林业和农业以及景观维护、建筑和私人花园业主开发、制造和销售电动工具。产品范围也涵盖了数字解决方案和后续服务。这些产品通常通过提供服务的专业经销商和 STIHL 自己的网上商店销售，未来几年将向国际扩张——在 160 多个国家拥有 42 家自己的销售和营销公司，约 120 家进口商和 55,000 多家专属零售商。

STIHL 在全球七个国家生产：德国、美国、巴西、瑞士、奥地利、中国和菲律宾。自 1971 年以来，STIHL 一直是世界上最畅销的链锯品牌。该公司成立于 1926 年，总部位于斯图加特附近的怀布林根。STIHL 在 2022 年实现了 54.9 亿欧元的营业额，在全球范围内拥有 20552 名员工。 ■





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中国焊接协会
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新机遇 新动能

NEW OPPORTUNITIES, NEW MOMENTUM

METAL THAILAND 2024 HIGHLIGHTS 展会亮点

- **4** 家国家级行业协会主办
Sponsored by 4 National-level Industry Organizations
- **200** 余国内外展商，串联热加工基础工艺产业链
200+ exhibitors linking the whole manufacturing industrial chain



铸造、冶金类 压铸、有色合金及特种铸造类 热处理及熔炼技术与设备类 机床和金属加工类 智能化、自动化设备及技术；锻压、热处理、焊接装备技术与产品。

Casting, diecasting, non-ferrous, heat treatment, machine tools, intelligent, automated technology, forging, welding equipment.

- **10+** 亚洲国家机械行业组织深度参与
10+ Asian machinery organizations participation
- **10+** 泰国本土机械类行业组织全力支持和组团参观
10+ Thai machinery organizations support and participation



汽车、摩托车、农机、矿冶重机等领域的政府领导、行业组织及采购代表、市政建设、大学院校、科研单位、专业媒体等。

·Automobiles, motorcycles, agricultural machinery, mining and heavy machinery, municipal construction, industry organizations, government, universities, research institutions, media, etc..

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- **21** 个国家和地区的 12148 专业观众 visitors
- **12** 场同期活动 Concurrent programs
- 工厂参观和考察 Plant visits



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ANKIROS 2024 | Powered by "The Bright World of Metals"

ANKIROS 2024 | 主题为 " 闪亮的金属世界 "

Eurasia's largest Metallurgy Platform, ANKIROS 2024, will be organized in a new fairground with TURKCAST-Casting Products Special Section, ANNOFER-Non-Ferrous Metallurgy Technologies Special Section and STEEL Special Section at Istanbul Expo Center between 19-21 September 2024.

Supported by TUDÖKSAD -Turkish Foundry Association, TÇÜD-Turkish Steel Producers Association and UCTEA Chamber of Metallurgical and Material Engineers, ANKIROS 2024, which is the only meeting place in Turkey for companies seeking high quality in the metallurgy industry, aims to bring new markets, new customers, and international relations to its exhibitors. It is a unique platform to introduce the Turkish Metallurgy World to international companies that want to develop, promote their products to target audiences, protect and strengthen their current sales and business connections, create competitive conditions, and invest in the Turkish market!

Concurrent Congresses;

"22nd International Metallurgy and Materials Congress" organized by METEM – UCTEA Chamber of Metallurgical Engineers Training Center

"12th International Casting Congress" organized by TUDÖKSAD – Turkish Foundry Association

TURKCAST Special Section

The increase in the production figures of the Turkish casting industry with the advantage of its geographical location, its up-to-date technology and rapidly developing knowledge show how important Türkiye is in casting exports. TURKCAST, being the meeting point of the Turkish Casting Industry, has reached to an important point in the world, offers its visitors the opportunity to gather with reliable Turkish foundries.

STEEL Special Section

In addition to the international suppliers, the leading producers of the iron and steel industry and steel service centers will have the opportunity to exhibit their developing technologies, services and products in the special iron and steel hall. Do not miss the opportunity to be in this unique meeting point, which is the heart of the Turkish steel industry.

ANNOFER Special Section

Non-Ferrous metals section focuses on the facilities and equipment required for the production and forming of non-ferrous metals. All kinds of machinery and equipment needed for metallurgical facilities, rolling mills and raw material processing will be displayed in this area. ■

欧亚大陆最大的冶金展会 ANKIROS 2024 将于 2024 年 9 月 19-21 日在伊斯坦布尔展览中心新展馆举办，其中包括 TURKCAST- 铸件专区、ANNOFER- 有色金属冶金技术专区和 钢铁专区。

在土耳其铸造协会 (TUDÖKSAD)、土耳其钢铁生产商协会 (TÇÜD) 和土耳其冶金和材料工程师协会 (UCTEA) 的支持下, ANKIROS 2024 是土耳其冶金行业追求高品质的公司的聚会平台, 旨在为参展商带来新市场、新客户和国际关系。作为独特的平台, 向希望在土耳其市场发展、向客户推广产品、维护和加强现有销售和业务联系、创造竞争条件和进行投资的国际公司介绍土耳其冶金世界!

同期大会

"第 22 届国际冶金和材料大会", 由土耳其冶金和材料工程师协会培训中心组织。

"第 12 届国际铸造大会", 由土耳其铸造协会组织

铸件专区

土耳其铸造业凭借其不断增长的铸件产量, 优越的地理位置、最新的技术和蓬勃发展的知识, 显示了该国在铸件出口方面的重要性。TURKCAST 展会作为土耳其铸造业的聚会地, 已成为一个重要节点, 它为参观者提供了与可靠的土耳其铸造厂相识的机会。

钢铁专区

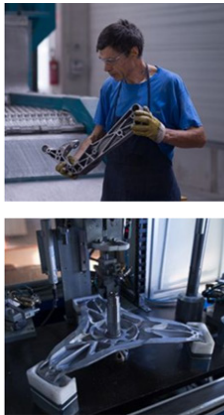
除国际供应商外, 钢铁行业的主要生产商和钢铁服务中心也将有机会在钢铁专区展示其开发的技术、服务和产品。千万不要错过这个独特的聚会地点, 它是土耳其钢铁工业的核心。

有色金属专区

有色金属专区重点展示有色金属生产和成型所需的设施和设备。冶金、轧辊和原材料加工所需的各种机械和设备都将在该展区展出。■

Huge Investment At Csabacast Ltd. For An E-Mobility Project With 3200T DC Cells

Csabacast 公司投资 3200T 压铸单元开展电动汽车项目



去年年底，CSABAcast 公司获得了一家德国知名 OEM 的订单，这是该公司历史上最大的一笔订单。

新订单是电动汽车的电气结构外壳。该外壳将被装配到不同型号的平台，用于未来的电动汽车。该项目开启了公司的新纪元，使得 CSABAcast 公司成为电动汽车领域的主要参与者。

在新项目中，公司准备将现有生产车间再扩建 6000 m²，并投资建设

新的压铸单元和全自动化生产线。有了新的生产车间和全自动化投资，公司将有机会和空间赢得更多电动汽车项目。

多年来，CSABAcast 公司不断努力和投入，以保持其在铝压铸市场的领先地位。在发展技术的同时，公司还十分重视可持续发展。公司正在开发第二座太阳能发电厂，到 2025 年，公司用电量的 30% 以上将来自自产的可再生能源。

新生产车间的建设已于去年开始，新生产设备的主要供应商也已选定。公司将投资 6 台全新的 3200t 全真空压铸单元，由 OMS 提供动力。整条自动化生产线将包括加工、清洗、测试和包装，由 Fill 公司提供。■

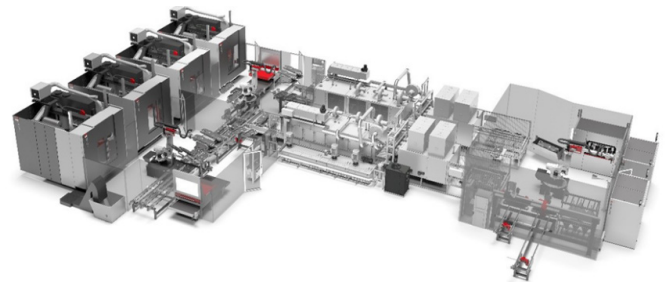
End of last year CSABAcast Ltd. has won the largest order in the company's history from a well-known German OEM.

The new order is an electric structural housing for e-vehicles. The housing will be assembled into different versions of platforms for future electric cars. With this project, a new era has started in the company's life and CSABAcast became a major player of e-mobility segment.

For the new project, the company will expand the existing production hall with +6000m² and invest in new die cast cells and complete automated production lines. Thanks to the new production hall and investment in full automation, the company has the opportunity and space to win further e-mobility projects.

CSABAcast Ltd. made great efforts and investments in previous years to maintain its market leading position in aluminum die casting. In parallel with technology developments, the company also places great emphasis on sustainability. The company is developing its second solar power plant, thanks to which more than 30% of its electricity consumption will be own-produced renewable energy by 2025.

The construction of the new production hall already started last year and the main suppliers for the new production equipment are already chosen. The company will invest in 6 units of brand new 3200t full vacuum die cast cells powered by OMS. The complete automatic production line will include machining, washing, testing, packaging and will be supplied by company Fill. ■



Induction Furnace Specialist: Fomet Srl

感应炉专家：Fomet Srl

Since its inception in 1963, Fomet has established itself as a cornerstone in the foundry industry, offering unparalleled expertise in the design and manufacture of induction furnaces. With a rich heritage rooted in Italian engineering excellence, Fomet prides itself on delivering innovative solutions that enhance efficiency, reliability, and performance for foundries across the globe.

Our Products

Fomet's product range is designed to meet the diverse needs of the foundry industry, including:

Furnaces for cast-iron, aluminium, bronze, brass, and copper alloys, ensuring optimal melting processes for a variety of materials.

Advanced furnace equipment and devices, enhancing operational effectiveness and safety.

Cutting-edge refractory materials, providing superior durability and heat management.

Sophisticated furnaces automation systems, enabling seamless integration into existing production lines for enhanced control and productivity.

Global Recognition and References

Our commitment to excellence is reflected in our global footprint, with prestigious references and partnerships in key industrial markets. Fomet's dedication to quality and innovation has garnered the trust of industry leaders, cementing our position as a preferred partner for foundry solutions worldwide.

Fomet boasts collaborations with leading names in the industry, underscoring its esteemed position on a global scale. These partnerships serve as a testament to our reliability, quality, and advanced technological solutions, solidifying our reputation among the world's most respected foundries. For more detailed information on Fomet's references and global partnerships, please visit our website: <https://www.fomet.com/our-references>

Innovation and Sustainability

At Fomet, we are driven by a commitment to innovation and sustainability. Our R&D team continuously works on advancing our technologies to not only meet the current demands of the foundry industry but also to anticipate future challenges, ensuring our clients stay ahead in a rapidly evolving market. ■

自 1963 年成立以来，Fomet 公司已成为铸造行业的基石，在感应炉的设计和制造方面提供了无与伦比的专业知识。Fomet 拥有扎根于意大利卓越工程技术的丰富传统，以提供创新解决方案、提高全球铸造厂的效率、可靠性和性能而自豪。

我们的产品

Fomet 公司的产品系列旨在满足铸造业的各种需求，其中包括：

用于铸铁、铝、青铜、黄铜和铜合金的熔炉，确保各种材料的最佳熔炼工艺。

先进的熔炼设备和装置，提高操作效率和安全性。

最先进的耐火材料，提供卓越的耐久性和热量管理。

先进的熔炼自动化系统，可与现有生产线无缝集成，从而提高控制能力和生产率。

全球认可和案例

我们追求卓越的承诺体现在我们的全球足迹中，我们在主要工业市场中拥有享有盛誉的客户和合作伙伴。Fomet 公司致力于质量和创新，赢得了行业领导者的信任，巩固了我们作为全球铸造解决方案首选合作伙伴的地位。

Fomet 公司与业内领先企业的合作，彰显了其在全球范围内备受推崇的地位。这些合作关系证明了我们的可靠性、质量和先进的技术解决方案，巩固了我们在全球最受尊敬的铸造厂中的声誉。有关 Fomet 的参考资料和全球合作伙伴关系的详细信息，请访问我们的网站：<https://www.fomet.com/our-references>。

创新和可持续性

在 Fomet，我们致力于创新和可持续发展。我们的研发团队不断改进技术，不仅满足当前铸造业的需求，而且预测未来的挑战，确保我们的客户在快速发展的市场中保持领先地位。■

Navigating the future of global industries--GIFA, METEC, THERMPROCESS and NEWCAST worldwide

Interview with Bernd Jablonowski, Executive Director and board member at
Messe Düsseldorf GmbH

引领全球工业的未来 —— 全球 GIFA、METEC、THERMPROCESS 和 NEWCAST 展会

对杜塞尔多夫展览有限公司执行董事兼董事会成员 Bernd Jablonowski 先生的采访



In an era of unprecedented technological and market-driven changes the world-leading trade fairs GIFA, METEC, THERMPROCESS and NEWCAST present the forward-looking innovations of their exhibitors and stand by the foundry, metallurgy and thermoprocessing industries as a partner. Thomas Fritsch, editor-in-chief at Foundry-Planet, talks to Bernd Jablonowski, Executive Director and board member at Messe Düsseldorf GmbH, about the strategic vision of the “Bright World of Metals”, the impact of trade fairs in the global arena and tomorrow’s trends. Come with us on a journey into the

在前所未有的技术和市场驱动变革的时代，世界领先的 GIFA、METEC、THERMPROCESS 和 NEWCAST 展览会不仅展示了其参展商的前瞻性创新，并作为铸造、冶金和热加工行业的合作伙伴陪伴左右。铸造星球（Foundry-Planet）总编辑 Thomas Fritsch 与杜塞尔多夫展览公司执行董事兼董事会成员 Bernd Jablonowski 探讨了“闪亮的金属世界”博览会的战略愿景，在全球舞台上的影响以及未来的发展趋势。请与我们一道，以杜塞尔多夫展览公司举办

future of the global industry seen through the lens of the GIFA, METEC, THERMPROCESS and NEWCAST events of Messe Düsseldorf.

Mr Jablonowski, after a successful Bright World of Metals in June 2023, which scored points with high international attendance and numerous technological innovations presented by around 2,200 exhibitors from 56 countries, the world-leading trade fairs GIFA, METEC, THERMPROCESS and NEWCAST with their global events are a mainstay for the foundry, metallurgy and thermoprocessing industries. In view of the dates in 2024 and 2025 – which include events in Bangkok, Jakarta, Istanbul, Shanghai, Mexico City, Africa, the Middle East and Mumbai – what is the strategic vision of Messe Düsseldorf and where does the global growth in these industries take us?

The global energy transition, circular economy, labour and skilled labour shortages, AI and innovative production technologies are Hot Topics discussed at the Bright World of Metals. We try to do justice to them as part of our ecoMetals Campaign, where we enable our exhibitors to present themselves in such a fashion that they can introduce their sustainable trends and highlights to an international expert audience. Some 20 players from the metallurgical industry took part in the ecoMetals campaign at GIFA, METEC, THERMPROCESS and NEWCAST 2023. At their exhibition stands visitors were able to experience live and direct not only the innovation of the participating companies but also their use of energy-efficient and resource-saving production processes. Incidentally, Messe Düsseldorf has already supported these industries in changing their energy-intensive image to a more sustainable one since 2011. In the meantime, we have also rolled out the ecoMetals campaign to other industrial trade fairs now such as wire and Tube or glasstec from 22 to 25 October. In addition, the Hot Topics are reflected in the side events accompanying the trade fair and in the forums of the Bright World of Metals.

A key component of our strategy is to further expand our leading role in the metallurgy and foundry sectors and to position it internationally where growth markets are emerging. In this context a look at the countries you mentioned plays a decisive role. Turkey and Egypt, for instance, have developed into strong economic partners in the fields of infrastructure expansion, energy and automotive over the past years. We have responded to this and initiated cooperations for new exhibition events like GIFA and METEC Middle East Africa with established, regional partners. GIFA and METEC Middle East Africa were held concurrently with wire and Tube Middle East Africa in Cairo in September; the event was staged as part of a participation deal at METAL & STEEL EGYPT, a trade fair that has been well-established for 13 years. We are expanding our metalflow ALLIANCE to include GIFA in Saudi Arabia and will be represented there at the METAL & STEEL Saudi Arabia in Riyadh for the first time from 7 to 9 January 2025.

Earlier this year we expanded our global network in the growth market that is Turkey, established a new subsidiary there and enlisted new strong events for our global metal trade fair portfolio with ANKIROS/TURKAST and ALUEXPO, the leading Eurasian

的 GIFA、METEC、THERMPROCESS 和 NEWCAST 展览会的视角，来展望全球工业的未来。

Jablonowski 先生，在 2023 年 6 月成功举办了 " 闪亮的金属世界 " 展会之后，来自 56 个国家的约 2200 家参展商展示了大量技术创新成果，为该展会加分不少，世界领先的 GIFA、METEC、THERMPROCESS 和 NEWCAST 展会及配套的全球活动是铸造、冶金和热加工行业的支柱。鉴于 2024 年和 2025 年的展会日期（包括在曼谷、雅加达、伊斯坦布尔、上海、墨西哥城、非洲、中东和孟买举办的展会），杜塞尔多夫展览公司的战略愿景是什么？以及这些行业的全球性增长将把我们带到哪里呢？

全球能源转型、循环经济、劳动力和熟练劳动力的短缺、人工智能和创新生产技术和是本次展会上讨论的热点话题。作为生态环保金属（ecoMetals）活动的一部分，我们努力对这些话题进行公正的讨论，使我们的参展商能够以这样一种方式向国际专业观众介绍他们可持续发展的趋势和亮点。约有 20 家冶金工业企业参加 GIFA、METEC、THERMPROCESS 和 NEWCAST 2023 的生态环保金属活动。在他们的展台上，参观者不仅可以现场直接体验参与企业的创新，还可以看到他们使用节能和节约资源的生产工艺。自 2011 年起，杜塞尔多夫展览公司就一直在支持这些行业将其能源密集型形象转变为更可持续的形象。与此同时，我们还将生态环保金属活动推广到其他工业博览会上，比如 10 月 22 日至 25 日举行的管线材展（wire and Tube）或玻璃展（glasstec）。此外，热点话题还反映在展会的配套活动和 " 闪亮的金属世界 " 论坛中。

我们战略的一个重要组成部分是进一步扩大我们在冶金和铸造展会领域的领先地位，并将其定位于国际新兴增长市场。在这方面，您提到的那些国家起着决定性的作用。例如，在过去几年，土耳其和埃及在基础设施扩建、能源和汽车领域已发展成为强大的经济合作伙伴。我们对此做出了回应，并与该地区成熟的合作伙伴发起了新的展览活动，如 GIFA 和 METEC 中东非展等。GIFA 和 METEC 中东非展与管线材中东非展于 9 月在开罗同期举行；该展会被定位为与中东（埃及）国际金属及钢铁展（一个已有 13 年历史的贸易展览会）合作的一部分。我们正在扩大金属展会联盟的范围，将沙特阿拉伯的 GIFA 纳入其中，并将首次参加 2025 年 1 月 7 日至 9 日在利雅得举行的沙特阿拉伯金属及钢铁展览会。

今年早些时候，我们扩大了在土耳其这个增长型市场的全球网络，在那里建立了新的子公司，并与 ANKIROS/

trade fairs for the metallurgy, foundry and aluminium industries. The strategic expansion relates to new markets but alongside steel and ferrous metals we are also and increasingly focusing on the area of NF-metals thereby strengthening key mechanical engineering segments such as die casting.

Mexico has increasingly gained in importance in Central and North America and has become an important growth market for the metallurgy industries. Demand for cast products is rising particularly fast in the Mexican automotive industry; a key reason for us to enter the Mexican market this year, holding GIFA MEXICO in Mexico City from 16 to 18 October. Beyond this, we continue to look to our events in China, India, Indonesia and Thailand; locations where the technology solutions of our industries are significant economic and growth factors.

Considering the geographic coverage of The Bright World of Metals – events in 2024 and beyond – how do you think the foundry and metal industries will benefit from these trade fairs on a global scale specifically in view of technological, economic and sustainable development?

With their high international appeal GIFA, METEC, THERMPROCESS and NEWCAST are the world-leading events of their industries. In 2023 the trade fair quartet scored points with a strong attendance from overseas with a 69% international audience. Investment, spontaneous business deals as well as avid exchange between all parties involved made for a dynamic atmosphere in the exhibition halls. 78% of visitors from 114 countries planned concrete investment over the coming two years, meaning that The Bright World of Metals continues to be the central business event despite challenging times. It is not only a showcase for technological progress but also a meeting point for knowledge transfer and fruitful dialogue on cross-border challenges and solutions aimed at promoting economic development and exploring sustainable approaches within the industry. In this sense, the trade fair quartet plays a crucial role in shaping the future of our industry. It serves as a catalyst, so to speak, for innovation and as a forum for the exchange of best practices that contribute to technological, economic and sustainable development on a global scale.

Messe Düsseldorf is involved in the organisation of all these high-calibre international trade fairs. Which benefits and opportunities does Messe Düsseldorf bring its exhibitors and visitors?

With our engagement on all important markets of these industries we offer unique reach and access to an international audience, which is indispensable to companies of all sizes seeking to act as global players and develop new markets. Messe Düsseldorf serves as a hub enabling exhibitors to introduce their innovations, products and services to a broad and diversified visitor base; not only via the presentations on site but also by forging long-term business relations and strengthening existing networks. In this role we want to make a decisive contribution to the global success of our customers.

Innovation is always centrestage at GIFA, METEC, THERMPROCESS and NEWCAST trade fairs. Considering the speedy development of technology and sustainability

TURKAST and ALUEXPO(欧亚领先的冶金、铸造和铝行业贸易展览会) 一起为我们的全球金属贸易展览会组合增添了新的强大活动。战略扩张涉及新市场, 但除了钢铁和黑色金属外, 我们还越来越多地关注有色金属领域, 从而加强了压铸等关键机械工程领域。

墨西哥在中美洲和北美洲的重要性与日俱增, 已成为冶金工业的重要增长市场。墨西哥汽车行业对铸件产品的需求增长尤为迅速, 这也是我们今年进入墨西哥市场的一个重要原因, 我们于 10 月 16 日至 18 日在墨西哥城举办 GIFA MEXICO 展会。除此之外, 我们还将继续关注在中国、印度、印度尼西亚和泰国举办的展会; 在这些国家, 我们行业的技术解决方案是重要的经济增长因素。

考虑到 2024 年及以后的闪亮的金属世界展会的地理覆盖范围, 您认为铸造和金属行业将如何从这些全球规模的贸易博览会上受益, 特别是在技术, 经济和可持续发展方面?

GIFA、METEC、THERMPROCESS 和 NEWCAST 展会具有极高的国际吸引力, 是各自行业的世界顶级盛会。2023 年, 这四个展会的海外观众比例高达 69%, 为展会加分不少。投资、自发的商业交易以及各方之间的热切交流使得展馆内气氛活跃。在来自 114 个国家的参观者中, 78% 的人计划在未来两年内进行具体投资, 这意味着尽管时局充满挑战, 但 " 闪亮的金属世界 " 仍将是一场核心商业盛会。它不仅是技术进步的展示窗口, 也是知识转让和就跨境挑战和解决方案进行富有成效的对话的交汇点, 旨在促进经济发展和探索行业内可持续发展的方法。从某种意义上说, 这四个展会在塑造我们行业的未来方面发挥着至关重要的作用。可以说, 它既是创新的催化剂, 也是交流最佳方案的平台, 促进了全球范围内的技术、经济和可持续发展。

杜塞尔多夫展览公司参与组织了所有这些高水准的国际贸易博览会, 这为参展商和观众带来了哪些好处和机会?

杜塞尔多夫展览公司在这些行业的所有重要市场都有参与, 因此我们能够提供独特的影响力和接触国际观众的渠道, 这对于寻求成为全球参与者和开发新市场的各种规模的公司来说都是不可或缺的。杜塞尔多夫展览公司作为一个枢纽, 不仅通过现场展示, 还通过建立长期业务关系和加强现有网络, 向广泛和多样化的观众群体介绍其创新、产品和服务。我们希望以此为客户在全球取得成功做出决定性的贡献。

创新始终是 GIFA、METEC、THERMPROCESS 和 NEWCAST 展会的核心。考虑到技术的飞速发展和

requirements, where do you see the strongest trends that will characterise the next generation of trade fairs?

The core topics and progressive manufacturing technologies, which were in focus in 2023, reflect the industry's current challenges and opportunities and will definitely also shape the next generation of metal trade fairs. By being consistently oriented towards these key topics the trade fairs set a clear focus on the future of the foundry, metallurgy and thermoprocessing industries.

This interview with Bernd Jablonowski makes it clear that GIFA, METEC, THERMPROCESS and NEWCAST under the umbrella of Messe Düsseldorf are more than just trade fairs: they are catalysts for innovation, networking and global industrial growth. With strategic foresight and its commitment to top performance Messe Düsseldorf GmbH shapes the future of the foundry, metallurgy and thermoprocessing industries and fosters an environment where technology, sustainability and international cooperation merge. We thank Bernd Jablonowski for his revealing insights and look forward to the coming events worldwide. ■

可持续发展的要求，您认为下一届展会的最大趋势是什么？

2023 年重点关注的核心主题和先进制造技术反映了该行业当前面临的挑战和机遇，也必将影响下一届金属贸易展览会。通过始终以这些关键主题为导向，展会明确了铸造、冶金和热加工行业的未来发展方向。

对 Bernd Jablonowski 先生的采访清楚地表明，杜塞尔多夫展览公司旗下的 GIFA、METEC、THERMPROCESS 和 NEWCAST 不仅仅是贸易展览会，它们还是创新、网络和全球工业增长的催化剂。杜塞尔多夫展览公司以其战略远见和对最高性能的承诺塑造了铸造、冶金和热加工行业的未来，并营造了一个技术、可持续发展和国际合作相融合的环境。我们感谢 Bernd Jablonowski 先生的独到见解，并期待着即将在全球范围内举办的活动。■

Power-To-Heat Technology For Sustainable Industrial Processes

奥托容克 Otto Junker 技术 | 用于可持续工业流程的电转热技术

Green heat by OTTO JUNKER SOLUTIONS

OTTO JUNKER SOLUTIONS offer pioneering solutions which can handle the challenges presented by the energy transition. In view of the urgent necessity to switch from conventional technologies to CO2 neutral and green energy sources, the company has developed an innovative Power-to-Heat system which allows a sustainable and efficient energy production across all branches of industry.

For a successful energy transition, a change from conventional technologies which are mainly based on the combustion of fossil fuels towards new, more efficient technologies based on CO2 neutral and green energy sources, is indispensable. The most popular energy source of this kind is power from renewable sources such as wind power and photovoltaic. It is therefore logical to push forward technological development on that basis.

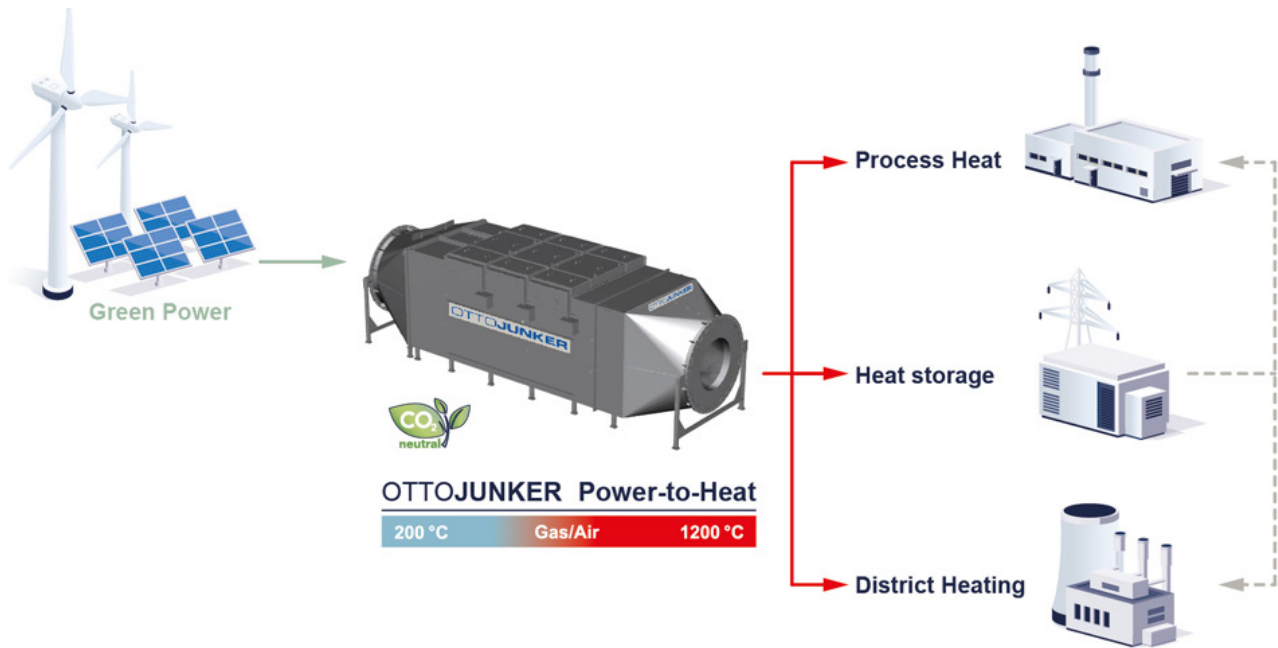
In order to achieve CO2 neutrality, an electrification of the transport, construction, industry and agricultural sectors is

奥托容克为您提供获得绿色热能的解决方案

OTTO JUNKER SOLUTIONS 提供可应对能源转型挑战的开创性解决方案。鉴于从传统技术转向二氧化碳中与绿色能源的迫切需要，OTTO JUNKER SOLUTIONS 已开发出一种创新的“电转热”系统，可为各行各业提供可持续和高效的能源生产。

要成功实现能源转型，就必须改变以燃烧化石燃料为主的传统技术，转而采用以二氧化碳中性和绿色能源为基础的更高效的新技术。这类能源中最受欢迎的是风力发电和光伏发电等可再生能源。因此，在此基础上推动技术发展是合乎逻辑的。

为了实现二氧化碳零排放，必须实现交通、建筑、工业和农业部门的电气化。虽然热泵取代了燃油加热器并使建筑行业电气化，电动汽车开始取代汽油和柴油发动机，但仍有



necessary. While heat pumps replace oil heaters and electrify the construction sector and E mobility starts replacing petrol and diesel engines, the industrial sector still produces 72 % of process heat by means of fossil fuels, mainly gas.

OTTO JUNKER SOLUTIONS have addressed this challenge and developed a Power-to-Heat plant which, by means of electrical resistance, manages to heat up air to temperatures of up to 1,200 °C. Apart from the direct use of hot air, e.g. in drying processes or the heat treatment of metal, the generated heat can also be used for a number of subsequent processes, such as the transfer to thermal oil by means of a heat exchanger or for steam generation. This extends the range of applications to the food, paper and chemical industries. A huge advantage is the fact that when changing from gas to power, the existing production plants can mostly be kept and can also be operated with both gas and the air heater, i.e. hybrid. This gives a certain degree of energy independence and crisis resilience in times of highly fluctuating energy prices as a consequence of international conflicts. Apart from that, additional cost advantages are created which the companies can take advantage of.

However, there is another obstacle to the expansion of renewable energies: the volatility of power generation. In the future, there will be an increased demand for storage capabilities in order to keep photovoltaic and wind power systems from having to be switched off if more power than necessary is generated.

Using surplus power

Potential solutions for this are large battery storage, hydrogen electrolysis or gravity storage. However, high temperature heat storage is a far better solution, because it offers significant advantages, particularly for companies

72% 的工业用热是通过化石燃料（主要是天然气）产生的。

OTTO JUNKER SOLUTIONS 为应对这一挑战，开发了一种电转热设备，通过电阻将空气加热至 1200° C。除了在干燥过程或金属热处理等过程中直接使用热空气外，所产生的热量还可用于一系列后续过程，例如通过热交换器将热量转移到导热油中或用于产生蒸汽。这就将应用范围扩大到了食品、造纸和化工行业。一个巨大的优势是，当从燃气转换为电力时，现有的生产设备大部分可以保留，也可以同时使用燃气和空气加热器，即混合动力。这样，在国际冲突导致能源价格剧烈波动时，就能实现一定程度的能源独立性并具备危机应变能力。除此之外，还能为企业带来额外的成本优势。

然而，扩大可再生能源还有另一个障碍：发电量的不稳定性。未来，为了使光伏和风力发电系统在发电量超过需要时不必关闭，对能量存储能力的需求将越来越大。

利用剩余电能

潜在的解决方案包括大型电池储存、电解氢气或重力储能。然而，高温储热是一个更好的解决方案，尤其是对生产行业的公司而言，它具有显著的优势。使用这一概念可以将不稳定能源转化为热能，并以低成本进行储存。随着电网中可再生能源的不断增加，预计电力市场将出现更频繁的波动和低价时段。通过将 "电转热" 系统与储热相结合，可以利

in the production industry. Using this concept allows the transformation of volatile energy into heat and its storage at low cost. The increasing amount of renewable energies in the electricity network is expected to cause more frequent fluctuations and low price periods in the power market. By combining a Power-to-Heat system with heat storage, these periods can be used to significantly save costs. On top of that, the system can generate additional income because transmission system operators are obliged to keep the network frequency constant at 50 Hz and pay huge compensations for this.

The Power-to-Heat technology by OTTO JUNKER SOLUTIONS offers a lot of potential for the reduction of CO2 emissions and environmental protection. In various branches of industry, e.g. the food, wood, paper and plastic sectors, it allows an almost climate neutral production. In Germany, these sectors alone account for approx. 25 % of the overall energy consumption in industry. In the industry sector as a whole, the new technology can achieve an electrification of the process heat production of up to 50 %.

Application example from the German paper industry

A typical paper factory in Germany requires approx. 41.7 GWh of energy per year, with most of it being required for heat production. Based upon the current frequency and duration of low price periods in Germany, this results in approx. two charging cycles per week of 6 hours each. This means that 267.3 MWh of useful energy have to be stored per cycle, i.e. heat energy which is above the temperature level of the processes. In order to be able to rapidly store this energy within six hours, the typical paper factory will require a Power-to-Heat plant with a power of 44.6 MW. Without heat storage, approx. 3.2 MW would be sufficient. The heat from the Power-to-Heat plant or stored in the heat storage can be used for steam production by means of a waste heat boiler of the type which is also used in powerplants. This can then be taken to wherever it is required via ducts and used for, say, drying processes.

The potential of this system with regard to environmental protection and CO2 reduction is enormous. With a sufficient amount of green power, production in branches such as food, wood, paper and plastic can be completely climate neutral. In Germany, these sectors alone consume about 25 % of the energy in industry, in Europe it is even more than 30 %. The technology allows an electrification of process heat production in industry sectors by up to

50 % (34 % according to McKinsey, 41 % according to AEE), because many processes require heat between 100 and 1,200 °C. Decarbonization of these industries, in particular, will have a major impact, because they are particularly energy intensive. Just looking at the use of the air heater without heat storage in Europe, about 7 % of the overall energy consumption could be electrified with just 17.4 billion €. ■

用这些时段大幅节约成本。

OTTO JUNKER SOLUTIONS 的“电转热”技术为减少二氧化碳排放和保护环境带来了巨大的潜能。在食品、木材、造纸和塑料等不同的工业领域，通过这种技术可以实现接近气候中和的生产。在德国，仅这些部门的能耗就占工业总能耗的约 25%。在整个工业领域，通过新技术可实现高达 50% 的工业用热生产电气化。

德国造纸业应用实例

德国一家典型的造纸厂每年需要约 41.7GWh 的能源，其中大部分用于制热。根据德国目前低价时段的频率和持续时间，每周大约需要两个充电周期，每个周期 6 小时。这意味着每个周期需要储存 267.3MWh 的有用能源，即高于工艺温度水平的热能。为了能在 6 小时内快速储存这些能量，典型的造纸厂将需要一个功率为 44.6MW 的电力转热能装置。如果不带热存储，大约 3.2MW 的功率就足够了。电力转热能装置产生的热量或储存在蓄热器中的热量可通过发电厂使用的那种废热锅炉用于生产蒸汽。这些热量可以通过管道输送到需要的地方，例如用于干燥工艺。

该系统在环境保护和减少二氧化碳排放方面潜力巨大。只要有足够的绿色能源，食品、木材、造纸和塑料等行业的生产就可以实现完全的气候中和。在德国，仅这些行业就消耗了约 25% 的工业能源，在欧洲甚至超过 30%。这项技术可使工业部门的工业用热生产电气化率最高达到 50%（McKinsey 的数据为 34%，AEE 的数据为 41%），因为许多工艺需要 100 至 1200° C 的热量。这些行业的减排尤其会产生重大影响，因为它们是能源特别密集型产业。仅以欧洲使用无蓄热装置的空气加热器为例，只需花费 174 亿欧元，约 7% 的总能耗就可实现电气化。■

Turkish Foundry Doubled Its Share Of Production In The EU

土耳其铸件产量在欧盟的份额翻了一番



The Turkish foundry sector, having expanded its production capacity to 5 million tons, is enhancing its production volume in high-value markets. Successfully doubling its share of total casting production in Europe from 10% to 21%, the sector is now focusing on manufacturing high-profit products due to rising costs.

Experiencing significant growth in recent years, the Turkish foundry sector achieved production and export records in 2022, positioning itself as the second largest metal casting producer in Europe and the seventh globally. Kadir Efe, Chairman of the Turkish Foundry Association (TÜDÖKSAD), emphasized that the sector has experienced its most successful period in terms of growth and production, especially in Europe, over the last decade.

With capacity reaching 5 million tons, the Turkish foundry industry has witnessed considerable growth, particularly in the non-ferrous casting sector. The shift towards electric vehicles in the automotive industry has increased the importance of non-ferrous casting. However, challenges such as price expectations matching those of the Far East and India are pressuring the sector's quality and cost balance. The industry faces significant quality issues with cast products sourced from these regions.

TÜDÖKSAD's focus on renewable energy investments and energy efficiency projects marks a critical aspect of the sector's strategy, especially in light of the upcoming National Emission Trading System. However, rising energy and labor costs pose challenges to green and digital transformation efforts. Ensuring appropriate financing conditions for investments in renewable energy sources, particularly for melting processes in foundries, is crucial. The sector is increasingly taking advantage of programs like KOSGEB and TÜBİTAK Green Transformation Support Programs to facilitate this shift.

土耳其铸造行业的产能已经扩大到 500 万吨，正在提高其高附加值市场的产量。该国铸造业成功地将其在欧洲铸件总产量中的份额从 10% 增加到 21%，现在由于成本上升，开始专注于生产高利润产品。

土耳其铸造业近年来取得了长足的发展，2022 年的产量和出口量均创历史新高，成为欧洲第二大、全球第七大金属铸造生产国。土耳其铸造协会（TÜDÖKSAD）主席卡迪尔 - 埃菲（Kadir Efe）强调，过去十年来，土耳其铸造业在增长和生产方面经历了最成功的时期，尤其是在欧洲。

随着产能达到 500 万吨，土耳其铸造业取得了可观的增长，尤其是在有色金属铸造领域。汽车行业向电动汽车的转变增加了有色金属铸造的重要性。然而，与远东和印度相匹配的价格预期等挑战，正在给该行业的质量和成本平衡带来压力。该行业面临着来自这些地区的铸件产品的重大质量问题。

土耳其铸造协会对可再生能源投资和能效项目的关注标志着该行业战略的一个关键方面，特别是考虑到即将实施的国家排放交易体系。然而，不断上涨的能源和劳动力成本给绿色和数字化转型带来了挑战。尤其是铸造厂的熔炼工艺方面，确保为可再生能源投资提供适当的融资条件至关重要。该行业正越来越多地利用 KOSGEB 和 TÜBİTAK 绿色转型支持计划等项目来促进这一转变。

Versevo Adds 3D Sand Printing Of Cores, Molds

Versevo 公司增加 3D 砂芯、砂型打印服务

AFS Corporate Member Versevo, has expanded its capabilities in the development of complex cores and molds by adding 3D sand printing technology. 3D sand printing capabilities provide a faster and less expensive solution to making early development, low volume, and production sand cores.

“3D Sand printing allows us to deliver molds and cores faster using the same raw materials and chemicals as is used in current production core making processes” says Terry Moon, president, and CEO. “This process lowers costs for customers because the automated system eliminates the need for labor, reduces scrap, and is printed directly from 3D CAD data, therefore eliminating the need for physical tooling and core assembly operations.”

To provide the digital capabilities, Versevo invested in an ExOne S-Max Pro binder jet 3D sand printer, which features a large 1260-liter (44 Cu Ft) build volume, a max build rate up to 125 liters (132 quarts) per hour, and layer height from 0.2mm (.008 in) to 0.5 mm (.020 in).

Located in Hartland, Wisconsin, the company says using the 3D sand printing process to make complex cores is superior to traditional sand core blowing because it permits the consolidation of cores, eliminating expensive assembly operations, reducing labor, and considerably minimizing process-related defects. The company plans to quickly scale its 3D sand printing capabilities to meet customer demand as the metalcasting industry goes digital.

“It’s not just about building tools,” Moon said. “We focus on building tools that make high-quality parts, and that’s why customers value the variety of capabilities we offer, all under one roof. Customers rely on us to be an extension of their team, adding value and helping them be more successful. ■

美国铸造协会会员企业 Versevo 公司通过增加 3D 砂型打印服务，提升了其在复杂型芯和铸型开发方面的能力。3D 砂型打印技术为早期开发、小批量的砂芯生产提供了一种更快、更经济的解决方案。

公司总裁兼首席执行官 Terry Moon 表示：“3D 砂型打印使我们能够使用与当前生产型芯制造过程相同的原材料和化学添加剂更快地交付砂型和型芯。自动化的生产减少了对劳动力的需求，减少了废料的产生，降低了客户的成本，产品直接从 3D CAD 数据中打印出来，无需使用物理工具对型芯进行组装操作。”

为了赋能数字化，Versevo 公司投资了一台 ExOne 公司的 S-Max Pro 粘结剂喷射 3D 砂型打印设备，该打印设备具有 1260 升（44 立方英尺）的容积，最大构建速率高达每小时 125 升（132 夸脱），层高从 0.2 毫米（.008 英寸）到 0.5 毫米（.020 英寸）。

该公司位于威斯康星州哈特兰，公司表示，使用 3D 砂型打印工艺生产复杂的砂芯优于传统的砂芯工艺，因为它可以凝固砂芯，不再需要昂贵的组装操作，减少劳动力，并大大减少与工艺相关的缺陷。随着金属铸造行业的数字化发展，公司计划迅速提高其 3D 砂型打印能力，以满足客户需求。

Moon 说：“这不仅仅是制造模具。我们专注于能够生产出高质量部件的模具，这就是为什么客户重视我们提供的各种服务，这些服务都是一体化的。客户依赖我们的服务，将我们作为其团队的延伸，提升价值，帮助他们取得更大的成功。” ■

Superior Graphite Divests Desulco, X-Carb Business To Unimeta

Superior Graphite 剥离脱硫、X-Carb 业务并由 Unimetal 公司接管

AFS Corporate Member Superior Graphite has reached an agreement with Unimetal to divest its recarburizer business.

Unimetal will take over the Desulco trademark, the X-Carb

美国铸造协会会员企业 Superior Graphite 公司已与 Unimetal 公司达成协议，剥离其再渗碳业务。Unimetal

brand, and commercial operations, using the Superior Graphite Heat Treatment process.

“These products will perfectly fit into our portfolio for metallurgical applications”, says Alan Yung, CEO of Unimetal.

In the following months, together, Unimetal and Superior Graphite will implement the transition of all commercial operations in North America, Europe, Middle East, Asia/Pacific, and South America.

Unimetal intends to increase the market coverage, reinforcing its commitment with an environmentally friendly, energy-efficient processes and the state of the art thermal purification technology.

“I am proud of how we managed to build the Desulco business for over 45 years,” said Ed Carney, CEO of Superior Graphite. “... I am confident Unimetal will take the business to the next level ... we will intensify our focus on the non-metallurgical markets going forward.” ■

公司将使用 Superior Graphite 公司的热处理工艺接管脱硫商标、X-Carb 品牌和商业运营。

Unimetal 公司首席执行官 Alan Yung 表示：“这些产品将完全适合我们的冶金应用组合，”在接下来的几个月里，Unimetal 和 Superior Graphite 将共同完成北美、欧洲、中东、亚太和南美所有商业运营的转型。

Unimetal 公司打算扩大市场覆盖率，通过环保、节能的工艺和最先进的热净化技术来实现其承诺。Superior Graphite 公司首席执行官 Ed Carney 表示：“我为我们 45 年来成功建立脱硫业务感到骄傲。我相信 Unimetal 公司将把业务提升到一个新的水平……我们将加强对非冶金市场的关注。” ■

Waupaca Foundry Upgrades Plant 4 Conveyor System

沃帕卡铸造公司升级 4 号工厂输送机系统

Waupaca Foundry Plant 4, a ductile iron foundry located in Marinette, Wisconsin, installed two new heavy-duty Magaldi Superbelt conveyor systems designed to improve downtime by as much as 60%. The company says it anticipates a two-year return on investment due to reduced maintenance and energy costs along with significantly reduced silica dust and noise pollution.

“Preparation and planning was critical leading into the project due to the scope of work required given the defined shutdown install window,” said Jarrod Osborn, vice president of manufacturing engineering for Waupaca Foundry.

The New Magaldi Superbelt conveyors improved gate and sprue transportation uptime and reduced energy and maintenance costs. Running more quietly and improving indoor air quality, the foundry says the new conveyors improved the foundry workplace.

“The safety benefits of the new system were as important as the bottom-line savings,” Osborn said. “By replacing the vibrating system, we significantly reduced the amount of airborne dust and created a healthier working environment for our team.”

This is the second major capital project at the Marinette foundry in recent years. Plant 4 completed a multi-year power service upgrade in 2023. The plant is 327,000 square feet and can run six different grades of ductile iron concurrently using eco-conscious electric melt technology since its opening in 1973. ■

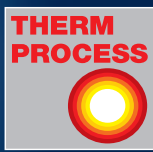
沃帕卡铸造公司 4 号工厂是一家位于威斯康星州 Marinette 的球墨铸铁厂，安装了两台新的重型 Magaldi Superbelt 带式输送机系统，旨在将停机时间缩短 60%。公司表示，由于维护和能源成本的降低，以及二氧化硅粉尘和噪音污染的显著减少，预计投资回报将在两年内实现。

沃帕卡铸造公司负责制造工程的副总裁 Jarrod Osborn 表示：“鉴于停工安装窗口期规定的工作范围，在项目实施前的准备和规划至关重要。”

新型 Magaldi 超级带式输送机提高了浇口和浇口运输的正常运行时间，降低了能源和维护成本。公司表示，新的输送机运行更安静，改善了室内空气质量和铸造工作场所环境。

Osborn 说：“新系统的安全效益与经济效益同样重要。通过更换振动系统，我们显著减少了空气中的灰尘量，为我们的团队创造了一个更健康的工作环境。”

这是 Marinette 铸造厂近年来的第二个重大投资项目。4 号铸造厂于 2023 年完成了已服务多年的电力系统升级。该工厂占地 327000 平方英尺（约 30379 平方米），自 1973 年开业以来，可以使用环保电炉熔炼技术同时生产六种不同等级的球墨铸铁。” ■



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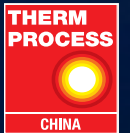
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Faucet foundry (Hansgrohe SE), innovative binder systems (Reinsicht GmbH) with innovative, patented dosing technology (KLEIN Anlagenbau AG) - an exemplary team

In the past, companies prioritized economic success over environmental protection. However, today, environmental protection and economic efficiency are recognized as urgent necessities for preserving our livelihoods globally. As a result, industry now consistently incorporates environmental protection as a central aspect of economic activity in the development of innovative products. Consistent reduction of emissions is required by EU regulations, including the

一个模范的团队——水龙头铸造厂（Hansgrohe SE）、创新的粘结剂系统（Reinsicht GmbH）和创新的专利定量技术（KLEIN Anlagenbau AG）

过去，企业将经济上的成功置于环境保护之上。然而，今天，环境保护和经济效率被认为是维护全球发展的迫切需要。因此，工业界现在一贯将环境保护作为创新产品开发中经济活动的核心方面。欧盟法规要求持续减少排放，包括 BREV 流程（最佳可用技术参考流程）和新的空

BREV process (Best Available Technique Reference Process) and the new TA-Luft.

In the foundry industry, which is naturally energy and emission-intensive, there is a high pressure to save energy and reduce or even eliminate emissions. When liquid metal comes into contact with molding material and core, organic materials are often decomposed into harmful or even toxic reaction products. These emissions require increasingly complex measures to prevent these pollutants from escaping into the environment. Development in the reduction of pollutants for organic binder systems is constantly progressing. However, emission-free organic binder systems are unlikely to be available in the foreseeable future.

The situation is completely different with hot-curing inorganic binder systems based on water glass resp. sodium silicate. Inorganic binders of this type have no practically relevant emissions - at most a little water vapor is visible during casting. Odor development does not occur in any of the upstream process steps. Today, water glass binders have very good technological properties and there has also been great progress in addressing specific challenges, such as decoring. It was precisely the technological property of decoreability that was also the entry hurdle that had to be overcome in order to establish the inorganic binder system in a comparatively small foundry.

After intensive research and development, the foundry Hansgrohe SE, in collaboration with Reinsicht GmbH and KLEIN Anlagenbau AG, has taken a decisive step towards more sustainable production.

The award of the German Sustainability Prize 2024 underlines Hansgrohe SE's efforts in terms of sustainability. The internal production processes are also being optimized for sustainability step by step. In the current project, the focus was particularly on optimizing air quality and avoiding harmful hazardous substances and waste.

In extensive upstream test series, Reinsicht and Hansgrohe SE developed the binder system for the requirements of the core sand mixture. Minimizing the required binder amount, which are comparable to the level of organic binder, resulted in acceptable shooting behaviour and the avoidance of gas porosity and sink marks. Great importance was also placed on decoring, so that the existing shot blasting system designed for the organic binder could continue to be operated without any conversion measures and without the use of additional equipment.

The shooting machines were modified to suit the requirements of the inorganic binder with reasonable effort. Specifically, measures were taken to prevent the core sand mixture from drying out. The sand mixer did not require any adjustment for the actual mixing task. In comparison, the core shooter tools require the greatest amount of adaptation. With new products, the experiences gained so far are now incorporated into the new tool design. The process parameters for core shooting must naturally be adapted to the chemically and physically different binder system, but the cycle times are not significantly different. The storability of the cores in weather conditions with high humidity requires comparatively little additional effort.

Reinsicht has set itself the task of developing and providing eco-friendly binders based on water glass. "Protecting the environment is our duty, the economy is our interest" is one of the guiding principles in

气净化技术指南 (TA Luft)。

铸造行业是能源密集型行业，节能、减少甚至消除排放的压力很大。当液态金属与造型材料和型芯接触时，有机材料往往会分解成有害甚至有毒的反应产物。这些排放需要越来越复杂的措施来防止这些污染物逸散到环境中。减少有机粘结剂系统污染物的研发正在不断进步。然而，在可预见的未来，不太可能提供无排放的有机粘结剂系统。

基于水玻璃的热固化无机粘结剂系统，例如硅酸钠的情况完全不同。这种类型的无机粘合剂没有实际相关的排放物——在铸造过程中最多只能看到一点水蒸气。在任何上游工艺步骤中都不会产生气味。如今，水玻璃粘结剂具有非常好的技术性能，在解决特定挑战方面也取得了巨大进展，如除芯。除芯的技术性能也是在相对较小的铸造厂中建立无机粘合剂系统所必须克服的门槛。

经过深入的研发，铸造厂 Hansgrohe SE 与 Reinischt GmbH 和 KLEIN Anlagenbau 公司合作，朝着更可持续的生产迈出了决定性的一步。

2024 年德国可持续发展奖的授予突显了 Hansgrohe SE 公司在可持续发展方面做出的努力。内部生产流程也在逐步优化以实现可持续性。在目前的项目中，重点放在优化空气质量和避免产生有害物质和废物。

在广泛的上游行业测试中，Reinischt 和 Hansgrohe SE 开发了满足芯砂混合物要求的粘合剂系统。通过最大限度地减少所需的粘合剂量（与有机粘合剂的水平相当），可实现可接受的射芯，并避免气孔和凹陷痕迹。此外，还非常重视去芯，以便为有机粘结剂设计的现有喷丸系统可以在没有任何转换措施和不使用额外设备的情况下继续运行。

经过合理的操作，对射芯机进行了改造，以满足无机粘结剂的要求。具体而言，采取了防止芯砂混合物变干的措施。不需要对混砂机实际混合作业进行任何调整。相比之下，射芯机的芯核需要最大程度的适应。有了新产品，已有的经验被纳入新的工艺设计中。射芯的工艺参数必须自然地适应化学和物理上不同的粘结剂系统，但循环时间没有显著差异。砂芯在高湿度天气条件下的可储存性需要相对较少的额外变化。

Reinisht 公司为自己设定了开发和提供基于水玻璃的环保粘结剂的任务。“保护环境是我们的责任，经济收入是我们的利益”是其发展的指导原则之一。

凭借“BF”粘结剂系统，即“最佳组合”的代名词，Reinisht 公司在市场上推出了一种新的、更具经济效益的

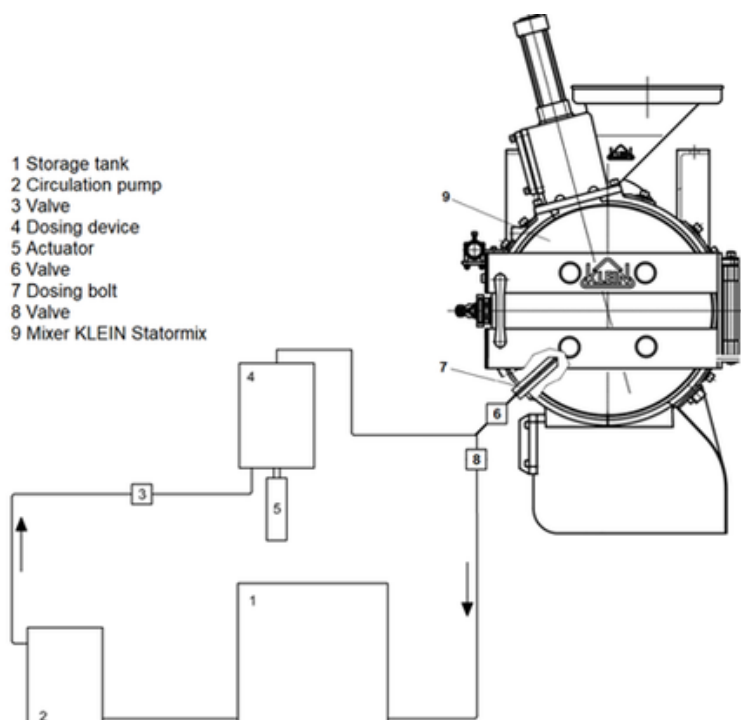


Fig. 1: BDG-ULD for the precise dosing of abrasive liquids
图 1：BDG -ULD，用于研磨液的精确定量

its development.

With the "BF" binder system, synonymous with "Best Fit", Reinsicht has launched a new, economical binder system on the market, which ensures safe, reproducible handling during dosing and mixing, comparatively easy decoring and acceptable casting surfaces. Good regenerability of the core sand used was also taken into account during development.

The binder system consists of three liquid components: glue, trimmer and additive, whereby a special combination of properties can be set with each of these components. This means that the core sand mixture can be individually adapted to the specific requirements of the different core geometries and production conditions with each mixer batch. Liquid dosing has the advantage that no residues accumulate in the mixer, which can lead to problems when dosing with powdered components. In addition, the quartz sand only generates a small amount of dust during the initial dosing phase, which further improves working conditions in the foundry.

In order to optimize the specific, desired properties of the binder, one of the three components, also known as slip or slurry in the ceramics industry, consists of an aqueous suspension that can contain up to 70% solids by mass. When at rest, the solids sediment and form a thixotropic slurry, which can, however, be dispersed again. The solid content naturally gives the slip abrasive properties.

The preliminary tests with a compulsory mixer and manual dosing of binder components with cups resulted in salable-quality brass

粘结剂系统，该系统确保了在配料和混合过程中的安全、可重复性，除芯相对容易、铸件表面较好。开发过程中还考虑了所用芯砂的再生性。

粘结剂系统由三种液体成分组成：胶、聚合物和添加剂，其中每种成分都可以设定特殊的性能组合。这意味着芯砂混合物可以适应不同几何形状芯子的特定要求和每个混合批次的生产条件。液体配料的优点是没有残留物积聚在混砂器中，这可能导致在用粉末状成分配料时出现问题。此外，石英砂在初始配料阶段只会产生少量灰尘，这进一步改善了铸造厂的工作条件。

为了优化粘结剂的特定性能，三种成分中的一种，在陶瓷工业中也称为浆料，由含有高达 70% 固体的水悬浮液组成。静止时，固体沉淀并形成触变浆料，但可以再次分散。固体含量自然赋予了滑动研磨性能。

通过强制搅拌器和使用料杯对粘结剂成分进行手动配料的初步测试，生产出了可销售的优质黄铜铸件。然而，现在有必要在全自动搅拌设备中使用 BF 粘结剂系统。为了实现这一目标，KLEIN Anlagenbau 公司的技术中心设计并广泛测试了配料系统。然后，与 Hansgrohe SE

casting production. However, it is now necessary to use the BF binder system in the fully automated mixing plant. To achieve this, a dosing test system was designed, set up, and tested extensively in the technical center of KLEIN Anlagenbau AG. The system was then integrated into the existing mixing and dosing system on site, in collaboration with Hansgrohe SE.

To meet the high demands for accuracy and reproducibility of the dosing quantity, specific solutions were required in the system technology due to two boundary conditions: settling of the solids and abrasiveness. To prevent settling, constant circulation of the suspension must be ensured. Additionally, homogenization of the slip was required after a long system shutdown. At the same time, the exact dosing of the suspension had to be available quickly and immediately on demand, in a reliable and reproducible way. Dosing devices like gear pumps are unsuitable here, as mechanical components sliding against each other will fail within a short time under the influence of the abrasive properties of the slip.

Figure 1 shows the principle of the new circulation dosing system. If there is no request from the mixer (9), the slip is kept in circulation by the circulation pump (2) so that the components of the slip remain homogeneously mixed. As soon as there is a request for binder dosing, the circulation pump stops. Valves 3 and 8 close and valve 6 opens. The dosing device is actuated by the actuator (5) and the slip is dosed into the mixer via valve 6 and the dosing bolt. When the required dosing quantity is reached, the actuator stops and valve 6 closes. Valves 3 and 8 open, the circulation pump starts again and the actuator returns to the starting position. The device is now ready for the next dosage.

The proven and well-known product range of bellow dosing equipment from KLEIN Anlagenbau AG has now been extended to include the new BDG-ULD recirculating dosing device. The BDG 254-ULD can reliably and reproducibly dose slip amount of 12.5 to 220 grams per dosing process with an accuracy of $\pm 0.6\%$ (FS). The BDG-ULD can be equipped with a flow control upon request and features a user-friendly multi-point calibration integrated into the control. It is fully automated and can be integrated into existing binder dosing systems.

The BDG-ULD has proven itself at Hansgrohe SE. In its endeavour to produce its world-famous products sustainably, Hansgrohe is now using eco-friendly binders from Reinsicht with success. Step by step, the proportion of inorganic binders is now to be further increased.

With the development and confirmation of BDG-ULD in continuous operation, the eco-friendly binder from Reinsicht GmbH and the tailor-made bellow dosing equipment BDG-ULD from KLEIN Anlagenbau AG are now available for general use.

This can be particularly interesting not only for smaller foundries. Often, the desire for innovation and implementation of existing ideas has to be put aside for reasons of capacity utilization. Reinsicht and KLEIN Anlagenbau AG offer a low-threshold entry point here by providing binders and mixing technology ready for in-house trials and using their expertise to develop optimal solutions on site together with the process operators. This approach can achieve both environmental protection and economic efficiency. ■

公司合作，将该系统集成到现场现有的混砂和配料系统中。

为了满足对定量给料的精度和可重复性的高要求，由于固体沉降和研磨性这两个边界条件，系统技术需要特定的解决方案。为了防止沉降，必须确保悬浮液的持续循环。此外，在系统长时间关闭后，需要对研磨液进行均质化处理。同时，悬浮液的确切剂量必须以可靠和可重复的方式根据需要迅速补充。像齿轮泵这样的配料装置在这里是不合适的，因为相互滑动的机械部件将在滑动的研磨特性的影响下在短时间内失效。

图 1 显示了新型循环和定量系统的原理。如果没有来自混合器 (9) 的请求，则通过循环泵 (2) 使滑片保持循环，使得滑片的组分保持均匀混合。一旦有粘结剂配料请求，循环泵就会停止。阀 3 和 8 关闭，阀 6 打开。配料装置由制动器 (5) 制动，并且通过阀 6 和配料螺栓将滑料定量到混合器中。当达到所需的剂量时，制动器停止，阀 6 关闭。阀 3 和 8 打开，循环泵再次启动，制动器返回到启动位置。这样，设备可以进入下一次定量操作。

KLEIN Anlagenbau AG 公司的波纹管定量设备的成熟和知名产品系列现已扩展到包括新的 BDG-ULD 再循环定量设备。BDG 254-ULD 能够可靠且可重复地加料，每次定量过程的剂量滑移量为 12.5 至 220 克，准确度为 $\pm 0.6\%$ (FS)。BDG-ULD 可根据要求配备流量控制装置，并具有集成在控制装置中的用户友好的多点校准功能。它是完全自动化的，可以集成到现有的粘合剂配料系统中。

BDG-ULD 已经在 Hansgrohe SE 证明了自己的实力。为了可持续地生产其世界闻名的产品，Hansgrohe 现在成功地使用了 Reinsicht 的环保粘合剂。现在，无机粘结剂的比例将逐步提高。

随着 BDG-ULD 在连续运行中的开发和确认，Reinsicht 公司的环保粘结剂和 KLEIN Anlagenbau 公司定制的波纹管定量给料设备 BDG-ULD 现在可用于一般用途。

这不仅让较小的铸造厂特别感兴趣。通常，出于产能的原因，对创新和实施现有想法的计划不得不搁置。Reinsicht 和 KLEIN Anlagenbau AG 公司通过提供可供内部试验的粘合剂和混合技术，利用其专业知识，与技术员一起在现场开发最佳解决方案，提供了一个低门槛的切入点。这种方法可以实现环境保护并获得经济效益。■



Everything Giga Or Mega? There Is No "Right" Or "Wrong"!

Giga 还是 Mega ? 没有“对”或“错”!

A background study with BMW on the development and use of large castings in body structures

Like all leading car manufacturers worldwide, the Bavarian premium manufacturer BMW in Landshut has been exploring the advantages and disadvantages of so-called giga or mega castings for some time. Tesla attracted a lot of attention with the introduction of large die-cast parts for its vehicle structure, such as the rear underbody structure of the Model Y.

This requires die casting cells with a clamping force greater than 6,000 tons. The approach of substituting as many individual parts and processes as possible with large castings and thus even reducing costs, weight and CO2 factors while simplifying the production process sounds tempting. On the other hand, there are high upfront investments in new systems and infrastructure, the reconfiguration of product lines and technical challenges related to the production and further use of the large parts.

During a background discussion with Klaus Sammer and Dr. Thomas Kopp at BMW's light metal foundry in Landshut, we were



与宝马公司就大型铸件在车身结构中的开发和使用进行背景研究

与全球所有领先的汽车制造商一样，位于兰茨胡特的巴伐利亚高级汽车制造商宝马公司一段时间以来一直在探索所谓的超大型一体化压铸件的优缺点。特斯拉为其车辆结构引入了大型压铸件，如 Model Y 的后底板结构件，引发了大量关注。

这需要具有大于 6000 吨锁模力的压铸单元。用大型压铸件替代尽可能多的单个零件，从而在简化生产工艺的同时降低

成本、重量，减少二氧化碳排放，这种生产工艺听起来很吸引人。另一方面，在新系统和基础设施、产线的重新配置以及与大型压铸件的生产和进一步使用相关的技术挑战方面需要大量的前期投资。

在位于兰茨胡特的宝马轻金属铸造厂与 Klaus



able to discuss the main arguments for and against large castings and gain insight into BMW's specific point of view.

"There is no 'right' or 'wrong' answer to the giga/megacasting question

Kopp and Sammer are sought-after discussion partners at congresses and symposiums, as they have dealt intensively with the issues surrounding the production of large castings and are well aware of the advantages and disadvantages.

What is the situation at the BMW light metal foundry in Landshut, Germany in 2024?

The BMW Group light metal foundry in Landshut is a highly innovative location known for a wide and unique range of casting technologies. These include both conventional gravity and low-pressure die casting. A notable technique is the injector casting process, developed and patented by the casting specialists in Landshut in 2007. It combines the advantages of gravity and low-pressure die casting.

The process involves filling the cavity using an injector at the mold's base and moving it upwards during the casting. This ensures the outlet opening remains below the molten bath's surface throughout the filling process, leading to a layered mold filling beneficial for the solidification process. This method allows for the production of highly complex and functional components, such as the central housing of electric motors. The sand cores needed for creating undercuts are exclusively made with inorganic binder systems, resulting in virtually emission-free casting—a practice in place for over 15 years, as emphasized by Kopp and Sammer.

In addition to conventional core shooting, sand cores can also be produced at the Landshut site using additive core printing with inorganic binder systems. This ensures the future viability of the site.

In the area of die casting, the facility operates ten systems with clamping forces ranging from 3,000 to 6,000 tons. Strong arguments

Sammer 和 Thomas Kopp 博士进行交流时，我们讨论了支持和反对大型压铸件的主要依据和论点，并深入了解了宝马公司的观点。

对于是否应该选择 giga/megacasting, 不能用“正确”或“错误”来回答

Kopp 和 Sammer 是研讨会上备受欢迎的嘉宾，因为他们深入研究了大型铸件生产的相关问题，并深知其优缺点。

2024 年，德国兰茨胡特的宝马轻金属铸造厂的发展如何？

位于兰茨胡特的宝马轻金属铸造厂是一个极具创新的企业，以广泛而独特的铸造技术闻名，包括传统的重力铸造和低压铸造工艺。一项引人注目的技术是喷射铸造工艺，该工艺由兰茨胡特的铸造专家于 2007 年开发并获得专利，它结合了重力铸造和低压铸造的优点。

该工艺包括在模具底部使用喷射器填充型腔，并在铸造过程中向上移动，确保了开口在整个填充过程中保持在熔池表面下方，从而导致有利于凝固过程的分层铸型充型。这种方法适用于生产高度复杂的和功能性部件，例如电动机的中央壳体。生产所需的底板砂芯完全由无机粘结剂系统制成，从而实现了几乎无排放的铸造——正如 Kopp 和 Sammer 所强调的，这种做法已经实行了超过 15 年。

除了传统的射芯工艺外，兰茨胡特工厂还可以使用无

exist for using die casting cells with clamping forces over 6,000 tons, potentially up to 16,000 tons, as the decision heavily depends on the specific production process requirements, site conditions (e.g., material flow/logistics), and company standards and objectives.

The substitution of sheet metal components with cast components can eliminate numerous manufacturing and assembly steps. For instance, the suspension strut support replaces about 15 components, though its lightweight construction potential is relatively low due to the small number of substituted components. Strut braces are made on die casting machines with a clamping force of 2,000 to 3,000 tons, while rear longitudinal members, which offer a higher degree of substitution and greater lightweight potential, require larger machines of about 4,000 tons.

If the aim is to substitute as many components as possible, the one-piece rear end is the right choice. Here, 80 to 100 components can be substituted. These so-called gigacastings are produced on systems with a clamping force of more than 8,000 tons. However, this is not necessarily the solution with the greatest lightweight construction potential. In order to be able to produce the component by die casting, the sheet metal surfaces shown in red in the diagram below, such as the trunk floor or the wheel arches, must have a certain minimum wall thickness. This is often greater than the wall thickness required by the loads and therefore increases the overall weight of the components. The additional weight is also accompanied by higher material costs, as the expensive lightweight material aluminum is used in areas that could also be represented by a thinner, e.g. formed sheet metal component.

It will be crucial to use the right material with the right manufacturing process in the right place (topology-optimized). The sweet spot of weight and degree of substitution is seen in components that are produced on die casting machines between 4,000 t and 6,000 t.

Moreover, while evaluating lightweight potential, other factors such as the requirements for heat treatment and the availability of repair

机粘合剂系统的增材制造工艺打印生产砂芯，这确保了工厂未来的可行性。

在压铸工艺方面，该工厂有 10 台压铸机，锁模力从 3000 吨到 6000 吨不等。对于使用锁模力超过 6000 吨（可能高达 16000 吨）的压铸单元，存在着很多争论，因为做出这个决策在很大程度上取决于具体的生产工艺要求、现场条件（如材料流 / 物流）以及公司的标准和目标。

用一体化铸件代替多个零部件可以省去制造和组装的很多步骤。例如，悬架支撑柱可替代约 15 个部件，但由于替代部件数量较少，其轻型结构的应用潜力相对较低。支架是在压铸机上制造的，锁模力为 2000 至 3000 吨，而后底板具有更高的替代度和更大的轻量化潜力，需要约 4000 吨的大型压铸机。

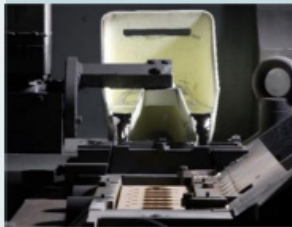
如果目标是替换尽可能多的部件，一体式后底板是正确的选择，它可以取代 80 至 100 个零部件。这些所谓的大型铸件是在锁模力超过 8000 吨的压铸单元生产的。然而，这不一定是具有最大轻量化结构结果的解决方案。为了能够通过压铸工艺生产部件，下图中表面以红色显示的金属板，如行李箱地板或车轮罩，必须具有一定的最小壁厚。这通常大于负载所需的壁厚，因此增加了部件的总重量。额外的重量还伴随着更高的材料成本，因为昂贵的轻质材料铝，是可以由更薄的例如成形的金属板部件来替代的。

此外，在评估轻量化潜力时，必须考虑其他因素，如热处理要求和维修解决方案的可用性，这些因素对大型铸

BMW GROUP LEICHTMETALLGIEßEREI IN LANDSHUT MIT EINEM BREITEN SPEKTRUM AN GIEßTECHNOLOGIEN.

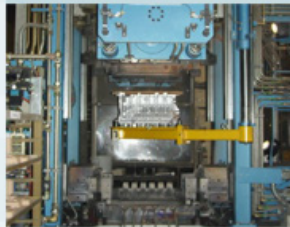
Schwerkraft- & Niederdruckguss

Konventioneller Schwerkraftguss



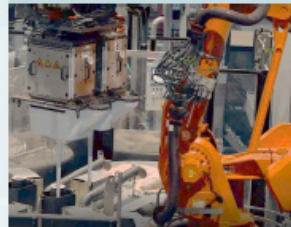
21 Gießplätze

Konventioneller Niederdruckguss



38 Gießplätze

Injektor Casting



7 ICA-Anlagen

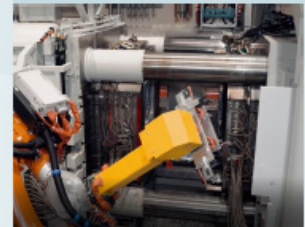
32 x Sandkern-Schießmaschinen

18 x Sandkern-Drucker

→ Emissionsfreier Guss durch anorganische Bindersysteme seit mehr als 15 Jahren

Druckguss

Druckguss



10 Druckguss-Maschinen
(3.000 t - 6.000 t
Schließkraft)

solutions, which are limited for large castings and often costly, must be considered. Logistic costs also rise with increasing component size, suggesting that the foundry might need to integrate more closely with the vehicle plant to justify investment in new die casting systems. The number of systems required largely depends on the vehicle plant's output and the number of variants per line. Several die casting machines are often necessary to ensure a reliable supply to the vehicle line. Due to the large size of components, increased tool wear is expected, leading to more frequent maintenance and a higher number of tools required.

It should be noted that there are currently no compelling advantages for using casting cells with a clamping force greater than 6,000 tons at BMW. The BMW component plant in Landshut operates with a strong supplier network, ensuring the supply to the vehicle plants. At BMW, the focus is more on achieving optimal results with innovations and a great deal of expertise while casting the right material in the right place using the right process.

About BMW Landshut:

At BMW Group Plant Landshut, approximately 3,700 employees produce engine, chassis and body structure components from light metal casting, plastic components for vehicle exteriors, carbon body components, cockpit and equipment scopes, engines and drive shafts. The Landshut plant is the BMW Group's largest component plant worldwide and supplies components to all BMW Group vehicle and engine plants worldwide - and thus for almost every BMW, MINI, Rolls-Royce and BMW Motorrad. The BMW Group Plant Landshut stands for component production characterized by digitalization and sustainability as well as responsible use of resources.

With future-oriented technologies, the BMW Group Plant Landshut plays the role of an innovation driver in the technological transformation of the automotive sector and its supplier industry. At the Lightweight Construction and Technology Center (LuTZ), which is directly connected to the plant, specialists from a wide range of disciplines actively drive the sustainable development of future vehicle models. They are involved in the development processes of new vehicles at an early stage. The BMW Group Plant Landshut is a socially responsible, innovative and attractive employer in the Landshut and Lower Bavaria region. ■

件来说是不利的，而且往往成本高昂。物流成本也随着部件尺寸的增加而增加，这表明铸造厂可能需要与汽车制造商更紧密地合作，以证明对新压铸系统的投资是合理的。所需系统的数量在很大程度上取决于汽车制造商的产量和每条生产线的变量。为了确保汽车生产线的可靠供应，通常需要几台压铸机。由于部件尺寸较大，将会增加模具的磨损，导致更频繁的维护和所需模具数量增加。

需要注意的是，宝马目前使用锁模力大于 6000 吨的压铸单元没有明显的优势。宝马位于兰茨胡特的零部件工厂拥有强大的供应商网络，确保了对工厂的供应。在宝马，我们更专注于通过创新和专业知识实现最佳效果，同时在正确的位置使用正确的工艺生产最佳的铸件。

关于宝马兰茨胡特工厂：

在宝马集团兰茨胡特工厂，约有 3700 名员工，生产发动机、底盘和轻金属铸件的车身结构部件，以及汽车外部的塑料部件、碳车身部件、驾驶舱、发动机和驱动轴等。兰茨胡特工厂是宝马集团全球最大的零部件工厂，为宝马集团全球范围内的汽车和发动机工厂供应零部件，因此几乎为每一辆宝马、MINI、劳斯莱斯和宝马 Motorrad 汽车系列提供零部件。宝马集团兰茨胡特工厂是代表着以数字化、可持续性以及合理利用资源为特点的零部件生产。

凭借面向未来的技术，宝马集团兰茨胡特工厂在汽车行业及其供应商行业的技术转型中发挥着创新驱动力的作用。在与工厂直接相连的轻型结构件与技术中心 (LuTZ)，来自各个领域的专家积极推动未来车型的可持续发展。他们在早期阶段就参与了新车的开发过程。宝马集团兰茨胡特工厂是兰茨胡特和下巴伐利亚地区一家具有社会责任感、创新精神和吸引力的雇主。■



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A Color Change Full Of Meaning 金属桶颜色的变化意义重大

The metal drum is, for those as us who produce lubricants, a symbol that identifies us and makes us easily recognizable in the workshops where our products are present.

The color that has "dressed" our metal drums up to now, and which you have all learned to recognize, is blue with white writing, but from the next months our metal drums will be white with red writing, as you can see in the photo here above. The white wants to remind us of our commitment to the creation of clean and environmentally friendly lubricants, while the red writing symbolizes our belonging to a glorious group, whose brand of that color is famous throughout the world and accompanies many racing competitions. We hope that you like this change in livery and that you soon get used to recognizing the new colors and our products, with the certainty that commitment to quality and customer service will always be our priority.

For more info on our products: <https://www.baraldi.com/en/diecasting/lubrodistaccanti/> ■

对于生产润滑油的企业来说，金属桶是一个识别符号，使产品所在的车间中易于识别。

到目前为止，我们的金属桶的颜色是蓝色加白色，客户都已经学会了识别，但从接下来的几个月开始，我们的金属桶将是白色加红色，正如在上面的照片中看到的那样。白色是为了提醒我们致力于创造清洁环保的润滑油，而红色则象征着我们属于一个光荣的团队，伴随着许多比赛，我们团队的这种颜色的品牌在世界各地都很有名。我们希望客户喜欢这一涂装变化，并希望您很快习惯于识别新的颜色和我们的产品，确信对质量和客户服务的承诺将始终是我们的首要任务。

更多信息，请访问: <https://www.baraldi.com/en/diecasting/lubrodistaccanti/i> ■



Efficiency Through Minimum Quantity Application

最少使用即提升效率

Case Study: Fritz Schmidt Metallgießerei GmbH & Co. KG / Chem-Trend (Germany) GmbH / Wollin GmbH

案例研究来自 Fritz Schmidt Metallgießerei GmbH & Co. KG / Chem-Trend (Germany) GmbH / Wollin GmbH

Status Quo & Requirements

Fritz Schmidt Metallgießerei GmbH & Co KG carried out a trial to prove the suitability of a simple, standard die tempering system for the use of minimum quantity application ('MQA'). An attempt was made to save costs and increase the output through various measures.

The intended goals were:

- Reduction of energy costs
- Reduction of die costs by achieving longer die service lives
- Reduction of water consumption and waste water costs
- Reduction of cycle times
- Reduction of compressed air consumption (lower noise emission)
- Reduction of rework costs through reduced die wear
- Reduction of air and hall pollution (fire load)
- Less energy required by using FSD nozzles in combination with pressurized water units for increased cooling capacity in less time
- No or less heat transfer oil in use, thus cost reduction in procurement and reduction of the ecological footprint.

The test was carried out using Wollin's EcoSpray technology and the water-based release agent concentrate HERA™ light Chem-Trend® SL-68504 from Chem-Trend.

Test preparation

In the run-up to the experiment, all relevant parameters of the conventional spraying and casting process were documented. IR images were also taken for this purpose. Chem-Trend® SL-7732 was used as the release agent in a dilution of 1:83.

In order to be able to carry out the minimum quantity application, some modifications had to be made to the system and the spraying tool. Among other things, a release agent supply system from Wollin was connected, the spraying tool was modified, two single-circuit oil heating and cooling units were replaced by a dual-circuit water heating and cooling unit, and a float flow meter was installed. The lines carrying the release agent were flushed with Chem-Trend® DC-456 system cleaner and then rinsed with water. The Wollin OSA release agent storage tank was filled with HERA™ light Chem-Trend® SL-68504 diluted 1:5.

After the rebuild phase, the spray tool was also flushed, cleaned

现状与需求:

弗里茨 - 施密特铸造公司试运行了一套 MQA - 最低应用体系, 以确保一套简单标准化的系统可以持续稳定应用于生产环节。这一尝试是基于降本增效, 通过不同方式提高产量。

期望达成的目标如下:

- 减少能耗
- 减少模具损耗, 延长模具使用年限
- 减少用水量和废水量
- 减少循环周期
- 减少压缩空气使用 (低噪音排放)
- 通过降低模具损耗减少返工率
- 减少空气污染和降低火灾隐患
- 少使用或不使用导热油, 从而降低采购成本, 减少生态足迹。

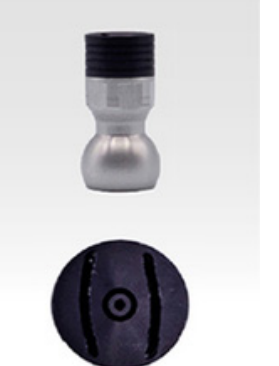
测试使用了 Wollin 公司的 EcoSpray 技术和肯德公司的水基脱模剂浓缩液 HERA™ light Chem-Trend® SL-68504。

Test preparation 测试准备

在实验准备阶段, 记录了常规喷涂和铸造工艺的所有相关参数。为此还拍摄了红外图像。使用 Chem-Trend® SL-7732 作为脱模剂, 稀释比为 1:83。

为了能够进行最少数量的应用, 必须对系统和喷涂工具进行一些修改。除其他外, 连接了 Wollin 的脱模剂供应系统, 修改了喷涂工具, 将两个单回路油加热和冷却装置替换为双回路水加热和冷却装置, 并安装了浮子流量计。用 Chem-Trend® DC-456 系统清洁剂冲洗带有脱色剂的管线, 然后用水冲洗。Wollin OSA 脱模剂储罐中填充 1:5 稀释的 HERA™ light Chem-Trend® SL-68504。

在重建阶段之后, 还对喷涂工具进行了冲洗、清洗并

Ball nozzle type	KD-A-L-06 NEW	KD-A-L-08 NEW	KD-A-L-10 NEW	KD-A-L-12 NEW
Spray pattern	Flat jet	Flat jet	Flat jet	Flat jet
Bore diameter of parting agent bores	0,6 mm	0,8 mm	1,0 mm	1,2 mm
				

and fitted with adapter modules to achieve a spray distance of less than 150 mm. All Wollin SD nozzles were removed and replaced with Wollin FSD nozzles. Except for 2 KD-A-06 ball nozzles, only KD-A-L-08 and KD-A-L-10 were installed.

In the test, sufficient die temperature control was achieved by minimum quantity application with the release agent HERA™ light Chem-Trend® SL-68504 diluted 1:5.

In summary, it can be said that for successful performance of minimum quantity application, a water-operated heating-cooling unit is necessary for sufficient die temperature control. Approximately 200 shots were fired in the test, and after adjustment of the nozzle orientation, the separation effect could be judged to be good. The part surface showed slight streaking, but was good according to Fritz Schmidt's quality assurance department. Dimensional accuracy was also within tolerance.

All defined targets could be achieved with the minimum quantity application process.

By using it with a simple, standard die temperature control system, the minimum quantity application process achieved energy savings of 72% for the heating/cooling equipment.

By reducing the quantity of release agent spray, the consumption of release agent concentrate was reduced by ~60%, and the lower release agent application reduces the thermal load, which means that a longer die service life can be expected.

In addition, the use of MQA technology has reduced the cycle time by 18%. This means that more parts can be produced in the same time, which leads to an increase in output.

Another goal of the trial was to reduce water consumption and

安装了适配器模块，以实现小于 150mm 的喷涂距离。所有的 Wollin SD 喷嘴都被移除并替换为 Wollin FSD 喷嘴。除了 2 个 KD-A-06 球形喷嘴外，只安装了 KD-A-L-08 和 KD-A-L-10。

测试运行与结果综述

在测试中，通过少量使用 1:5 稀释的 HERA™ light Chem-Trend® SL-68504 脱模剂，实现了充分的模具温度控制。

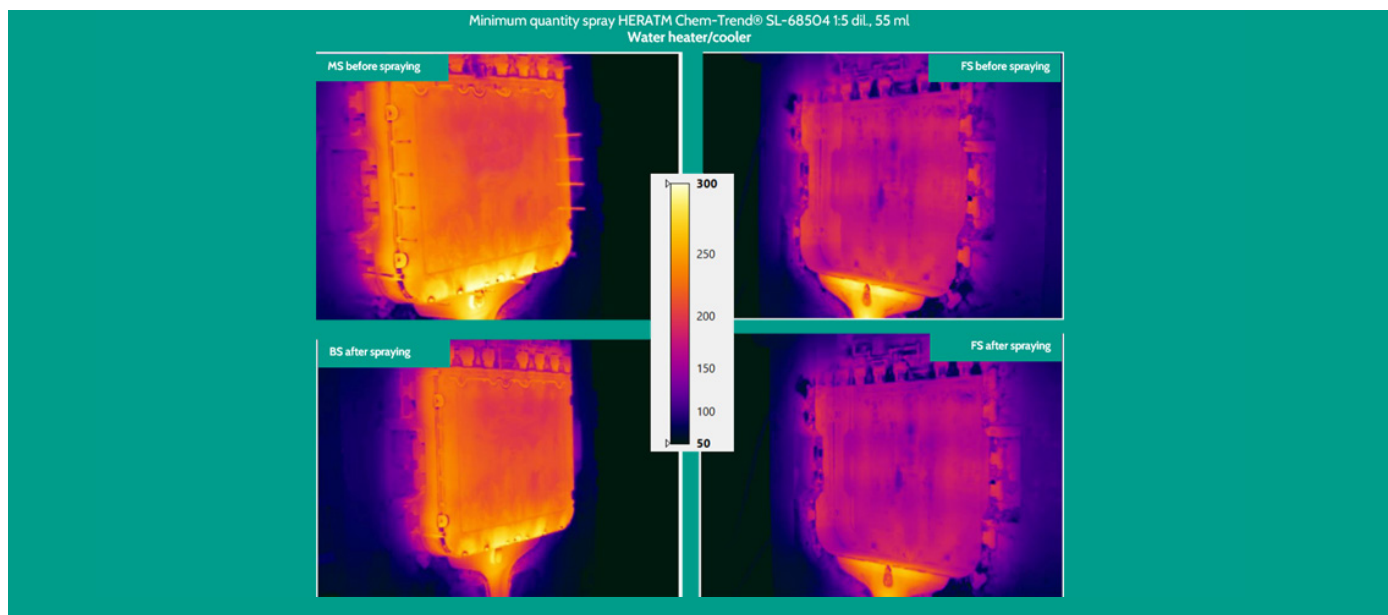
总之，可以说，为了成功地实现最少数量的应用，一个水环境下的加热冷却装置是必要的，以充分控制模具温度。试验共发射约 200 发，调整喷嘴方向后，分离效果良好。零件表面显示轻微的条纹，但根据弗里茨施密特的质量保证部门反馈是不错的，尺寸精度也控制在公差范围内。

所有定义的目标都可以通过最低次数的使用来实现。

通过将其与简单的标准模具温度控制系统一起使用，最低次数的使用过程为加热/冷却设备节省了 72% 的能源。

通过减少脱模剂的喷施量，脱模剂浓缩液的消耗量减少了约 60%，脱模剂的用量减少了热负荷，这意味着可以预期更长的模具使用寿命。

此外，MQA 技术的使用将循环时间缩短了 18%。这



Result summary from test execution
测试运行与结果综述

wastewater disposal costs. By using Wollin EcoSpray technology, water consumption was reduced by 97%, resulting in significant cost savings. The costs for wastewater disposal are eliminated completely.

The reduction in compressed air consumption also led to a reduction in noise emissions, which improved working conditions in the foundry. The shorter spray/blow time at lower pressure reduced compressed air consumption by ~ 76%.

Conclusion

Overall, the use of MQA technology in combination with the water-based release agent HERA™ light Chem-Trend® SL-68504

意味着在同一时间可以生产更多的零件，从而实现产量的增加。试验的另一个目标是减少用水量和废水处理成本。通过使用 Wollin EcoSpray 技术，用水量减少了 97%，从而显著节省了成本。还完全消除了废水处理的费用。

压缩空气消耗的减少也导致了噪音排放的减少，从而改善了铸造厂的工作条件。较短的喷雾 / 吹风时间在较低的压力下减少压缩空气消耗约 76%。

结论

总体而言，将 MQA 技术与水基脱模剂 HERA™ light

Results of the spray test	Conventional Spraying	EcoSpray	Comparison
Concentrate usage	21 ml	8,3 ml	-60%
Cycle Time	59 s	48 s	-18%
Energy savings (tempering of die cast mould)	0,178kW	0,05kW	72%
Compressed air (Standard litre)	2.100	500	-76%
Fresh water	~ 1.800 ml	~50 ml	-97%
Waste water	> 1.500 ml	~ 0 ml	-100%
Output shots	61	75	+22%

Comparison of conventional spraying and minimum quantity application at Fritz Schmidt
弗里茨施密特常规喷涂与最小量喷涂的比较

resulted in significant cost savings and productivity improvements.

The trial shows that even a simple die tempering system of standard design can be suitable for the use of minimum spray technology when combined with the right equipment and technology.

In conclusion, it can be stated that Fritz Schmidt Metallgießerei GmbH & Co. KG was able to increase productivity and reduce costs by using MQA technology and the water-based release agent HERA™ light Chem-Trend® SL-68504. The trial shows that it pays off to use innovative technologies in the foundry industry to produce more economically and sustainably. ■

Chem-Trend®SL-68504 结合使用，可显著节省成本并提高生产率。试验表明，即使是一个简单的标准设计的模具回火系统，如果结合合适的设备和技术，也可以适用于最小喷雾技术的使用。

综上所述，Fritz Schmidt Metallgießerei GmbH & Co. KG 能够通过使用 MQA 技术和水基脱色剂 HERA™light Chem-Trend®SL-68504 来提高生产率并降低成本。试验表明，在铸造工业中使用创新技术以更经济和可持续地生产是值得的。■

Disa's Seamless Pouring Integration Cuts Headcount, Boosts Productivity And Improves Quality

迪砂公司连续浇注集成减少人工，提高生产率及产品质量

German foundry Ortrander cut its pattern change time by more than half, reduced staffing on the line by 30% and cut scrap by about 20% after implemented a digitally-controlled seamless pouring solution, supplied and supported by DISA, a Norican technology.

The solution completely automates and synchronises the moulding and pouring sub-processes while capturing valuable process data. The machine-to-machine communication between the moulding and pouring process is controlled by DISA's Monitizer® | CIM platform.

"Fully integrated digital synchronisation of moulding and pouring—seamless pouring—makes for a faster, more consistent and higher quality process with less scrap and lower downtime," says Kasper Paw Madsen, Vice President Portfolio Development & Marketing at DISA. "With no need for a pouring operator, your DISA line almost runs itself. Seamless pouring accelerates pattern changes, reduces the number of people you need, cuts out human mistakes and thereby improves your process. It also builds an intelligent, digital infrastructure that supports data-driven process optimisation and further automation."

Automating for speed

Equipment like DISA's Automatic Pattern Changer (APC) or Quick Pattern Changer (QPC) help foundries

德国铸造厂 Ortrander 在使用了由诺瑞肯集团迪砂公司提供的数字化连续浇铸解决方案后，将其铸型更换时间缩短了一半以上，将生产线上的人员减少了 30%，并减少了约 20% 的废品。

这一解决方案实现了造型和浇注过程的完全自动化和同步，并可以及时捕捉有价值的过程数据。造型和浇注过程之间的机器对机器通信由迪砂公司的 Monitizer® | CIM 平台控制。

迪砂公司投资发展和营销副总裁 Kasper Paw Madsen 表示：“完全集成的造型和浇注数字同步 – 连续浇注 – 使过程更快，更一致、质量更高、废品更少、停机时间更短。”他补充说明：“不需要浇注操作人员，您的迪砂生产线几乎可以自己运行。连续浇注加速了铸型的更换，减少了所需人员的数量，减少了人为错误，从而改善了流程。它还建立了智能的数字基础平台，支持数据驱动的流程优化和进一步的自动化。”

自动化提速

像迪砂的自动行办更换器（APC）或快速换型器

change patterns in as little as one minute. But the bottleneck then often shifts to pouring—specifically, the time needed to manually reposition the pouring device for pours following a pattern change. Integration between moulding machine and pouring controller handles this—and all pouring actions—automatically.

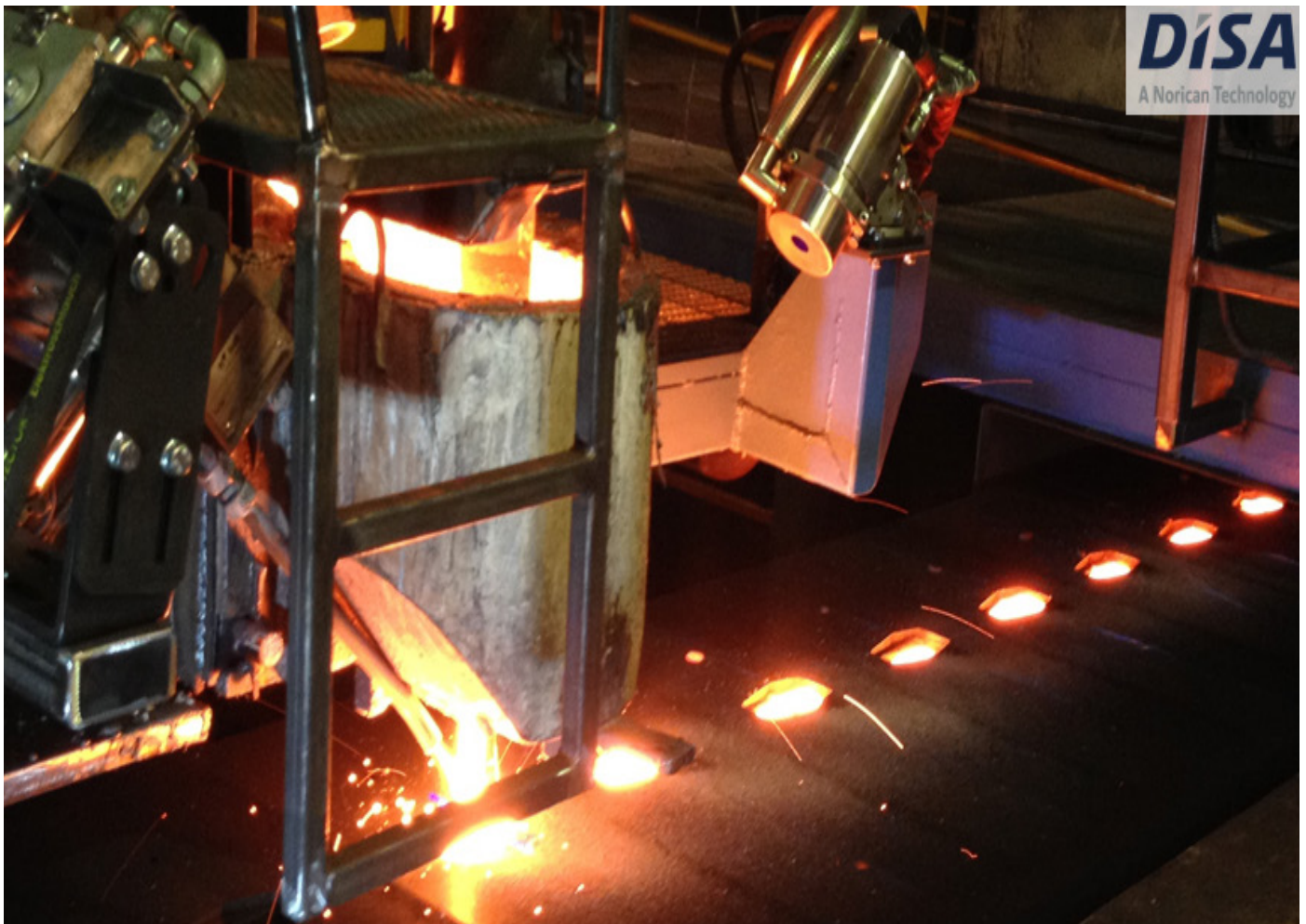
This speed-enhancing automation is particularly valuable for foundries challenged by just-in-time production's shorter runs and more frequent pattern changes. Implementing seamless pouring at Ortrander cut pattern change downtime from 4.5 minutes to under 2 minutes while also reducing scrap. The foundry needs fewer people to run its line and those personnel require less training too.

“Finding and training new staff is a global challenge for foundries,” says Kasper. “Seamless pouring reduces the need for manual oversight and also improves process speed, quality and productivity. With modern machines, digital systems and best practice experience, you can implement seamless pouring rapidly and with minimum customisation.” ■

(QPC) 这样的设备可以帮助铸造厂在短短一分钟内更换铸型。但瓶颈通常会转移到浇注环节上，具体来说，就是在浇注的铸型改变后手动重新定位浇注装置所需的时间。造型机和浇注控制器之间的集成，可以自动处理所有浇注动作。

这种提高速度的自动化对于受即时生产的运行时间较短和频繁更换铸铸的铸造厂尤其有价值。Ortrander 公司实施了连续浇注之后，将停机时间从 4.5 分钟缩短到 2 分钟以下，同时减少了废品。铸造厂运行生产线的人更少，这些人员需要的培训也更少。

“寻找和培训新员工是铸造厂面临的全球性挑战，”卡斯珀说。“连续浇铸减少了人工监督的需要，也提高了工艺速度、质量和生产率。凭借现代化的机器、数字系统和最佳实践经验，您可以快速实现连续浇注，并将使客户定制化生产更加简单。” ■



Ecoline: The New Entry Into The Abp Furnace World

Ecoline: ABP 熔炼世界的新产品



Easy to order and install, quick to use: EcoLine provides new entry-level product

ABP Induction presents a new entry into the furnace world: EcoLine is rounding out their portfolio to provide the perfect entry into the foundry market for small companies, research institutes or even engineering offices wanting to set up their own production.

With this move, ABP is targeting customers in countries characterized by the fact that companies operating in those markets primarily look for an economical solution which offers a balance between a reasonable investment, high reliability, and appropriate production capacities. "These are markets that feature a broad base of small, often family-run operations that require economical solutions for small-scale production with different types of metals," explains Patrick Lück, Sales Support Engineer at ABP and responsible for the development of the new EcoLine together with Byron McCall, General Manager for ABP in South Africa.

Compact design

It also addresses other target groups that have an interest in small, easy-to-use furnace systems with comparatively

易于选购和安装，快捷使用：EcoLine 新的入门级产品

ABP Induction 公司产品为客户选购电炉提供了新的选择：EcoLine 是正在完善的产品组合，为希望进入铸造行业的小公司、研究机构甚至工程办公室提供完美的切入点。

通过这一举措，ABP 公司将目标锁定在以下国家的客户：在这些市场运营的公司主要寻找经济的解决方案，在合理的投资、高可靠性和适当的生产能力之间取得平衡；ABP 销售支持工程师 Patrick Lück 与 ABP 南非总经理 Byron McCall 一起负责新 EcoLine 产品的开发，他解释道：“这些市场拥有广泛的小型、通常是家族经营的业务基础，需要不同类型金属的小规模生产的经济解决方案。”

紧凑型设计

它还针对生产要求相对较少的，对易于操作的熔炉系统感兴趣的其他目标群体。Byron McCall 解释道：举个例子，研发机构寻找小型系统来生产实验合金，或者培训

small production capacity. “One example might be research and development facilities looking for small systems to produce experimental alloys, or training facilities to train new foundry employees in the basics of metallurgy and furnace operation,” explains Byron McCall. EcoLine is also of particular interest to start-ups and engineering firms that want to set up their own production facilities in order to become more independent. “With the development of EcoLine, we are responding to the wishes of customers from these target groups: quickly available and easy to commission, inexpensive to operate and purchase.”

What makes the EcoLine furnace stand out? It is the missing link in ABP’s product portfolio that offers exactly these potentials. While there will be some sizes in the 300 to 2,000 kilogram capacity range that EcoLine and the well-known FS series have in common, the requirements and complexity of the systems are different.

“EcoLine is based on the proven and well-known FS series, but is implemented in a simplified way for non-specific, cross-industry use. The straightforward design is indicative of what the EcoLine is for: melting!” says Byron McCall.

We have made things particularly simple for customers so that they can get up and running with it as quickly as possible: “EcoLine is modular, so a certain size and performance range can be covered - and the lead times from order to delivery are very short,” explains Patrick Lück. One key feature, he says, is the plug-and-play concept, which allows customers to install and commission the system themselves. “We want everything to be as simple as possible: The customer can put the right furnace together using our web configurator, have it installed by the customer’s team of technicians, and also commission and operate the furnace themselves,” he says. ABP will make instructions available for this for the customer.

The customer thus benefits from the experience of the entire Group organization: ABP offers a homogeneous, well-rounded melting solution that combines experience and new technologies into a broad-based system. “In the spirit of creating good and lasting relationships with its customers, ABP wants to start this relationship earlier, from the very beginning, so to speak, says Patrick Lück: “Customers who have had positive experiences with their first system will usually take the next step with the same supplier. EcoLine offers great potential for this.” Further information is available at ecoline.abpinduction.com

Additional information: quote by Zitat Till Schreiter, CEO & President ABP Induction

“With EcoLine, we are deliberately focusing on small businesses and family-run companies, but also on start-ups and development offices that are keen to take the next step and rely on ABP’s proven know-how. This solution is

机构向新铸造员工培训冶金和熔炉操作的基础知识。想要有自己的生产设备，变得更加独立的初创企业和工程公司也对 EcoLine 产品特别感兴趣。随着 EcoLine 的发展，我们正在回应这些目标群体客户的愿望：快速可用、易于安装、操作和购买成本低廉。

是什么让 EcoLine 产品脱颖而出？正是 ABP 产品组合中缺失的一环提供了这些潜力。虽然 EcoLine 和众所周知的 FS 系列在 300 至 2000 公斤的容量范围内有一些尺寸是相同的，但系统的要求和复杂性是不同的。

Byron McCall 说：“EcoLine 是基于普遍接受的 FS 系列，但更简化，用于非特定的跨行业用途。简单的设计实现了 EcoLine 的熔炼用途。”

我们为客户提供了特别简单的操作方案，以便他们能够尽快启动并运行。Patrick Luck 解释道：“EcoLine 是模块化的，因此可以覆盖的规格和性能范围固定，而且从订购到交付的周期非常短。”一个关键功能是即插即用的概念，它允许客户自己安装和调试系统。他说：“我们希望一切尽可能简单：客户可以使用我们的网络配置器将合适的熔炉组装在一起，由客户的技术团队自行安装，还可以自己调试和操作熔炉。”ABP 将为客户提供相关说明。

因此，客户受益于整个集团组织的经验：ABP 提供了一个同质、全面的熔炼解决方案，将经验和新技术结合到一个基础广泛的系统中。Patrick Lück 表示，本着与客户建立良好和持久关系的精神，ABP 希望从一开始就更多地建立这种关系：“对第一个系统有过积极体验的客户通常会与同一供应商采取下一步合作。EcoLine 为此提供了巨大的潜力。”更多信息请访问 EcoLine.abpinduction.com。

其他信息：引用自 ABP 首席执行官兼总裁 Zitat Till Schreiter 的话

“通过 EcoLine，我们有意将重点放在小企业和家族企业上，但也关注那些热衷于采取下一步行动并依靠 ABP 久经检验的专业知识的初创企业和研发办公室。这一解决方案对研发机构和培训公司来说也是一个有吸引力的选择。EcoLine 明智地完善了我们的产品组合，特别关注我们的客户，使之易于访问：通过我们的网络配置器配置和订购，由我们自己的技术团队交付后连接，完成后，熔炼就可以立即开始了！”

also an attractive option for research institutes and training companies. EcoLine sensibly rounds off our portfolio and especially focuses on easy access for our customers: Configure and order via our web configurator, connect after delivery by our own team of technicians—done, melting can start straight away!”

About ABP Induction

ABP is a leading manufacturer of induction furnaces and systems for inductive melting and holding for the metal and metalworking industries. ABP is an expert in melting, pouring, holding and heating iron, steel and non-ferrous metals with design, production, assembly and services for foundries, forges and steelworks. The ABP Induction Group with over 400 employees has companies in the USA, Mexico, Sweden, Germany, South Africa, Russia, India, Thailand and China. It is represented by service and sales partners in most of the world's industrialized countries. ■

关于 ABP Induction

ABP 是金属和金属加工行业感应熔炼和保温及系统的领先制造商。ABP 是铁、钢和有色金属的熔炼、浇注、保温和加热专家，为铸造厂、锻造厂和钢铁厂提供设计、生产、组装和服务。ABP 集团拥有 400 多名员工，在美国、墨西哥、瑞典、德国、南非、俄罗斯、印度、泰国和中国都设有分公司，在世界大多数工业化国家都拥有服务和销售合作伙伴。■



A New Way to Manufacture Castings Right First Time, Every Time

制造铸件的新方法，确保每一次都成功

You are probably tired of inspecting the first off-tool parts only to discover pinholes, shrinkage, hot spots, or porosity issues. But facing tight deadlines, you're left with two choices: ship defective parts and risk unhappy customers, or return to the drawing board, wasting time and resources. Too often, the trial phase of the development schedules is de-prioritized, and you miss the opportunity to ensure that gating designs are robust and optimal. However, there is a way for foundries to eliminate defects and streamline casting processes right from the start - with ProCAST from ESI.

Equally supporting sand, investment, and die-casting methods, ProCAST has been helping independent foundries, toolmakers, and OEMs for over 30 years. It allows engineers to accurately simulate the entire process chain, from furnace to final casting. Issues are identified before they become

您可能已经厌倦了在检查第一批下线零件时发现针孔、收缩、热点或气孔等问题。但面对紧迫的最后期限要求，您不得不做出妥协：装运有缺陷的零件，冒着让客户不高兴的风险；或者返回制图环节，浪费时间和资源。很多时候，开发计划中的试验阶段会被置于次要地位，从而错失确保浇注系统准确和良化的最佳时机。然而，有一种方法可以让铸造厂从一开始就消除缺陷并简化铸造流程——那就是使用 ESI 的 ProCAST。

ProCAST 同样支持砂型、熔模铸造和压铸方法，30 多年来一直在帮助独立铸造厂、工具制造商和 OEM 厂家。它允许工程师精确模拟从熔炉到最终铸造的整个工艺链。

costly production problems by capturing and tracking all the physics involved. According to Industry Director at ESI, Badarinath Kalkunte, "ESI ProCAST doesn't just identify defects; it helps to eliminate them. It automatically determines the best process window for cast parts, ensuring they meet final quality goals. Through early and easy design of experiments, optimization, and process robustness analyses, you can fine-tune your casting process to match your needs."

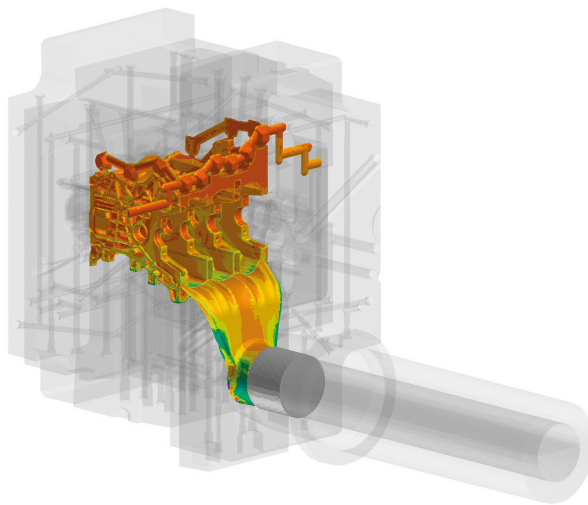
ProCAST casting simulation of a vehicle engine block

For example, a foundry producing automotive components used ProCAST to identify potential issues related to filling and solidification, and then to inform the redesign of a new gating system and mold cavity, ensuring uniform solidification, no shrinkage, reduced cycle times, increased production, improved part quality, and reduced scrap rate. As ProCAST can simulate the complete casting process with a single tool, engineers ultimately reduce costs and accelerate. ■

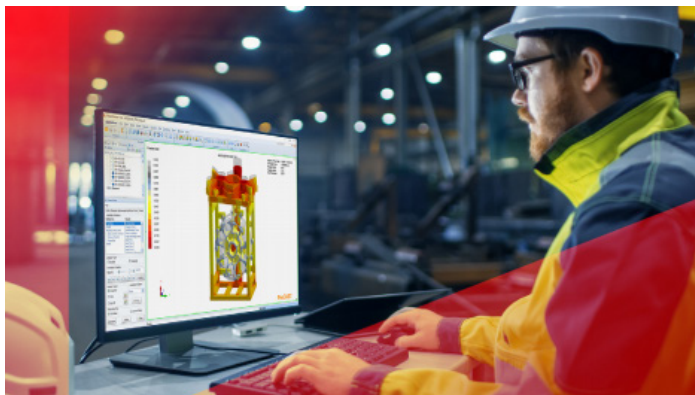
通过捕捉和跟踪所有相关的物理现象，可以在问题演变成代价高昂的生产缺陷之前将其识别出来。ESI 行业总监 Badarinath Kalkunte 说：“ESI ProCAST 不仅能识别缺陷，还能帮助消除缺陷。它能自动确定铸件的最佳工艺窗口，确保铸件达到最终质量目标。通过早期和简便的实验设计、优化和工艺稳健性分析，您可以对铸造工艺进行微调，以满足您的需求。”

例如，一家生产汽车零部件的铸造厂利用 ProCAST 发现了与充型和凝固有关的潜在问题，并据此重新设计了新的浇注系统和模腔，从而确保了均匀凝固、无缩孔、缩短时间、提高产量、改善零件质量和降低废品率。由于 ProCAST 可通过单个工具模拟整个铸造过程，因此工程师最终可降低成本并提高生产率。

了解有关 ESI ProCAST 的更多信息，请访问 www.esi-group.com/cn。■



ProCAST casting simulation of a vehicle engine block
汽车发动机缸体的 ProCAST 铸造模拟



We look forward to seeing you at
the 20th Annual Congress of China
Foundry Association.

Visit our ProCAST webpage:
esi-group.com/products/procast



第二十一届中国铸造协会年会

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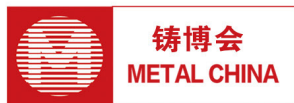
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The 18th China International Die Casting Industry Exhibition
第十八届国际有色及特种铸造展览会
The 18th International Nonferrous and Special Casting Exhibition



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