



Global Casting Magazine

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DEC 2022 VOLUME 12 NUMBER 4



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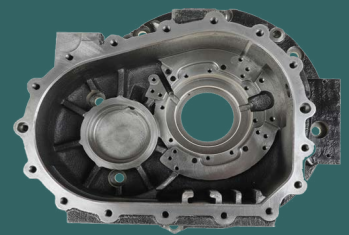
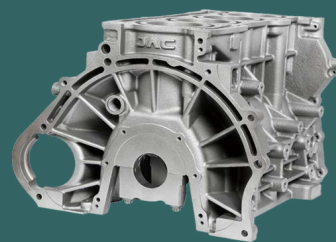
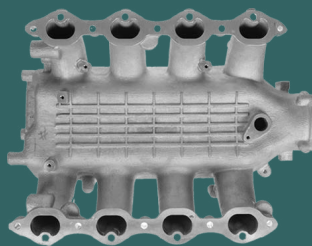
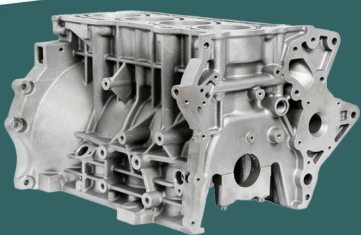
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会议咨询

刘琼 18911227977
赵刚 18911227996
吴仁贵 18910551271



Global Casting Magazine

世界铸造

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公司简介 COMPANY PROFILE

一汽铸造有限公司始建于1953年，是中国最大的汽车铸锻件生产企业之一。公司生产工艺种类齐全，可生产灰铁、蠕铁、球铁、铝合金、镁合金、锻钢、锻铝等材质的产品。

面向未来，一汽铸造有限公司将以“自强、担当、创新、超越”的企业精神，致力于为客户提供多样化的产品解决方案，续写70载辉煌篇章，乘风破浪，扬帆远航！

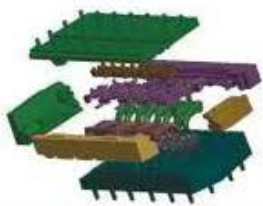
FAW Foundry Co., Ltd. was founded in 1953. It is one of the biggest auto casting manufacturers in China. The company has a complete range of production processes, and can produce products made of gray iron, vermicular iron, ductile iron, aluminum alloy, magnesium alloy, forged steel, forged aluminum and other materials. Facing the future, FAW Foundry Company will be committed to providing customers with diversified product solutions and continue its 70 years of brilliant chapters.



Cylinder head(1.4T,1.6L)



Cylinder block(1.4T,1.6L)



3D design



Cylinder block(7.5L,8.6L)



Shock tower



die csating rear floor



Transmission housing



Motor housing



Battery case



Casting simulation

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Norican Partners with Xinan for Digital Transformation and Sustainability

锡南科技携手诺瑞肯集团深化合作，共铸数字化可持续未来

Norican Group and Wuxi Xinan Technology Co., Ltd. recently held a strategic agreement signing ceremony at Norican's Hanjiang facility, marking another milestone of collaboration between the two major players in the industry. According to this agreement, Norican will build upon its advantages and resources to provide Xinan with advanced technologies and products, such as integrated die-casting units, melting furnaces, dosing furnaces, shot blasting machines, dust removal systems, and digital products. In addition to close production and technology exchanges, the two companies will partner seamlessly in digital transformation, SBTi goals and sustainability. With extensive experiences and practices, Norican will empower Xinan to drive its carbon reduction initiatives, thus enhancing its green competencies, while working together for digital transformation and sustainability of the foundry industry.

Attendees to the event included Gao Wei, Executive Vice President of China Foundry Association; Wei Baohua, Senior Vice President of Asia Pacific, Norican Group; Peter Holm Larsen, President of Norican Aluminum; Marco Gandini,

近日，无锡锡南科技股份有限公司与诺瑞肯集团达成重要战略合作，于11月24日在诺瑞肯汉江工厂举行了隆重的战略合作签约仪式，使双方的合作迈向了一个新的里程碑。根据合作协议，诺瑞肯将利用自身优势和资源，为锡南提供先进的技术和产品，如一体化压铸单元，熔炼炉，定量炉，抛丸机，除尘设备，数字化产品等。除了保持紧密的生产和技术交流，双方也将在数字化转型、SBTi科学碳目标设定及可持续发展等方面展开实质性深度合作，诺瑞肯将以自身在数字化领域的丰富实践经验，充分协助锡南推进减碳行动，提升绿色竞争力，共同推进铸造行业的数字化转型和可持续发展。

中国铸造协会执行副会长高巍、诺瑞肯集团亚太区高级副总裁魏宝华、诺瑞肯集团铝合金业务总裁 Peter Holm Larsen、诺瑞肯集团铝合金业务高级副总裁 Marco Gandini，以及无锡锡南科技股份有限公司总经理李忠良、





Peter Holm Larsen, President of Norican Aluminum, delivered a speech
诺瑞肯集团铝合金业务总裁 Peter Holm Larsen 致辞



Marco Gandini, Senior Vice President of Global Aluminium, Norican Group, delivered a speech
诺瑞肯集团铝合金业务高级副总裁 Marco Gandini 致辞

Senior Vice President of Global Aluminium, Norican Group; Li Zhongliang, General Manager of Wuxi Xinan Technology Co., Ltd.; Gu Dengfeng, Vice General Manager of Wuxi Xinan Technology Co., Ltd., and many more.

Xinan is committed to R&D and production of lightweight aluminum auto parts, for example, turbocharger housings, which are provided to world-famous components manufacturers. In response to the rapid development of the new energy vehicle market, Xinan has increased its investments in recent years, focusing on research, development and production of precision aluminum housings for NEV drive and transmission systems. For premium quality and consistency of its products, Xinan is firmly determined to establish a closer partnership with Norican.

“I would like to extend my sincere appreciation for the trust, Xinan have in our group our technologies and solutions, and I promise we shall do our outmost to help Xinan in the product, technology and digital dimensions,” said Peter Holm Larsen, President of Norican Aluminum. “At Norican, we have a local strategy and global vision mindset, as well as strong values including teamwork, diversity and sustainability. Lately we have also committed ourselves to the Science Based targets and set up the goals we need to achieve as a company to reduce the CO2 footprint in the world. This goes without saying reducing our own emission but also focusing strongly on how we can help our customers to reduce their CO2 footprint.”

“We value our partnership with Xinan very much,” said Marco Gandini, Senior Vice President of Global Aluminium, Norican Group. “Following the signing of this strategic agreement, we will hopefully be able to support even better our Chinese customers with a local production in the Norican facility of Changzhou, where, thanks to a proven supply chain and manufacturing concept, we can supply worldwide standard quality equipment faster and closer to our customers.”

Going on a new journey after collaborating for several years

The collaboration between Norican and Xinan dates

副总经理顾登峰等代表出席了本次的签约仪式。

无锡锡南科技股份有限公司专业从事铝合金轻量化汽车零部件的研发与生产，其主要产品为增压器壳体，客户涵盖全球知名零部件制造商。随着新能源汽车市场的快速发展，锡南近年来进一步加大投资，专注于新能源汽车驱动系统，传动系统精密铝合金壳体类零件研发与生产。由于生产过程对技术水平的要求极为严格，且在工艺方面对质量和设备稳定性的要求较高，锡南愈发坚定了与诺瑞肯加强合作的决心。

诺瑞肯集团铝合金业务总裁 Peter Holm Larsen 表示：“衷心感谢锡南科技对诺瑞肯集团的信任和支持，我们将竭尽全力在产品、技术和数字化维度为锡南提供最大帮助。诺瑞肯集团长期立足本土化战略和国际化视野，拥有团队合作、多样性和可持续性等企业价值观。我们近期还在科学减碳方面制定了公司层面的目标，同时也将致力于为我们的客户减少碳排放，实现可持续发展。”

诺瑞肯集团铝合金业务高级副总裁 Marco Gandini 表示：“我们十分重视与锡南的伙伴关系，希望在合作签约之后，通过常州诺瑞肯工厂的本地化生产更好地支持中国客户，凭借成熟的供应链和制造理念为客户更加快速地提供全球标准质量的设备。”

携手数载 再启新程

锡南科技与诺瑞肯的合作渊源始于2018年，自首次成为史杰克西的客户以来，锡南先后采购并使用了史杰克西熔炼炉、维尔贝莱特抛丸机等设备，技术层面上的紧密交流为双方进一步深化合作奠定了良好的信任基础。

在历经两年的紧密沟通和讨论后，锡南和诺瑞肯终于就合作方向达成共识。锡南和诺瑞肯将基于前一阶段的合



Gu Dengfeng, Vice General Manager of Wuxi Xinan Technology Co., Ltd. (left) and Wei Baohua, Senior Vice President of Asia Pacific, Norican Group (right) signed the agreement

无锡锡南科技股份有限公司副总经理顾登峰（左）与诺瑞肯集团亚太区高级副总裁魏宝华（右）签署协议



中国铸造协会执行副会长高巍致辞

Gao Wei, Executive Vice President of China Foundry Association, delivered a speech



Wei Baohua, Senior Vice President of Asia Pacific, Norican Group delivered a speech

诺瑞肯集团亚太区高级副总裁魏宝华致辞



Li Zhongliang, General Manager of Wuxi Xinan Technology Co., Ltd. delivered a speech.

无锡锡南科技股份有限公司总经理李忠良发致辞

back in 2018. Since Day 1 as a customer of StrikoWestofen, Xinan has introduced melting furnaces from StrikoWestofen, shot blasting machines from Wheelabrator, and some other equipment. This lays a solid foundation for them to deepen their partnership.

After two years of close communications and discussions, Xinan and Norican finally reached an agreement on how they should deepen their partnership. They will, based on their collaborative achievements of the previous stage, expand their cooperation in all aspects of aluminum business, such as intelligence, environmental protection and dust removal. Most important of all, Xinan will purchase the TF Smart Platform high pressure die-casting machines from ItalPresseGauss, as well as melting and dosing equipment, shot blasting machines, dust removal systems and digital products, aiming to further enhance its presence in manufacturing of aluminum auto parts.

作成果，拓展完整铝合金业务包括在智能化、环保除尘等领域的全面合作。锡南将重点采购意特佩雷斯高斯的 Smart Platform TF 系列高压压铸机，以及熔炼定量设备，抛丸机，除尘设备和数字化产品等，进一步提升其在铝合金汽车零部件制造领域的实力与市场份额。

诺瑞肯集团亚太区高级副总裁魏宝华表示：“这次战略合作的签署将全面加强和深化诺瑞肯与锡南之间的合作，进一步构建互助互信、共享共担的伙伴关系。未来，诺瑞肯将尽己之力为锡南的绿色化和数字化转型提供切实有效的帮助，同时汲取更多的实践经验，持续开发更多、更具可持续性的产品和解决方案，助力更多的铸造企业拥抱数字化和可持续未来。”

无锡锡南科技股份有限公司总经理李忠良表示：“铸

“The signing of this strategic agreement is expected to comprehensively deepen the cooperation between Norican and Xinan, and establish a stronger partnership based on mutual benefits, trust and sharing,” said Wei Baohua, Senior Vice President of Asia Pacific, Norican Group. “Moving forward, Norican will do whatever we can to help Xinan with its digital transformation, and continue to develop more sustainable products and solutions that more foundry companies need to embrace a digital and sustainable future.”

“The development of the foundry industry would be impossible without win-win cooperation. In the past, Norican’s technical support enabled us to gain improved production efficiencies,” said Li Zhongliang, General Manager of Wuxi Xinan Technology Co., Ltd. “In the future, we anticipate Norican’s digital solutions could create greater values for Xinan in terms of smart manufacturing and sustainable development, and enable us to grow with higher quality. We look forward to working with Norican to shape the future of the foundry industry.” ■

造行业的发展离不开合作共赢，在以往的合作过程中，诺瑞肯的技术支持让我们切实取得了生产效益上的提升。未来，我们希望诺瑞肯的数字化解决方案可以在智能制造和可持续发展方面为锡南创造更大的价值，推进企业的高质量发展。期待与诺瑞肯一起‘铸造行业未来’。” ■

Friend and Buhler Signed Strategic Cooperation in New Energy Vehicle

福然德与布勒在新能源汽车领域开展战略合作

On November 17, 2022, the signing ceremony of Carat 920 Die Casting Island Strategy Cooperation and the Delivery Ceremony of Carat 610 Die Casting Island between Friend Co., Ltd. and Buhler (China) Machinery Manufacturing Co., LTD. was successfully held in the Buhler Office Building. Mr. Lu Min, General Manager of Buhler and Director of Die Casting Business Division Asia Pacific, Mr. Cui Jianbing, President of Friend, and Mr. Chen Hua, Vice General Manager, attended the ceremony.

After two years of in-depth research and validation, Friend took the opportunity of Hefei which is a rapidly developed automobile industry highland and invested in the construction of the integrated die casting project of new energy vehicles in Shucheng County, Anhui Province, positioning itself in the processing and manufacturing of auto body structural parts and chassis parts.

In the first half of 2021, Friend selected the world's top five aluminum die casting equipment brands and finally chose to sign a purchase agreement with Buhler. Up to now, Friend has purchased 2 units of 4400 tons, 1 unit of 6100 tons Buhler die casting islands, as well as other supporting production equipment.

In addition to the delivery ceremony of the Carat 610 tons of Buhler diecasting island, Friend and Buhler also signed agreement to add two more sets of 9,200 tons (Carat 920) to make good preparation for the second phase expansion of new energy vehicle with integrated die casting in Anhui Province. ■

2022年11月17日，福然德股份有限公司与布勒（中国）机械制造有限公司就布勒 Carat 920 压铸岛战略签约暨 Carat 610 压铸岛交付仪式在布勒办公楼圆满举行。布勒总经理、压铸事业部亚太区总监卢敏先生，福然德总裁崔建兵先生、副总经理陈华先生共同出席了此次战略签约及交付仪式。

福然德经过 2 年时间深入论证，以合肥快速崛起的汽车产业高地为契机，定位于汽车车身结构件和底盘件加工制造，在安徽舒城县投资建设新能源汽车一体化压铸项目。

2021 年上半年，福然德比选了全球前五大铝压铸设备品牌，最终选择与布勒签订采购协议。截止目前，福然德在安徽新能源汽车一体化压铸项目一期已采购 2 台布勒 4400 吨压铸岛、1 台布勒 6100 吨压铸岛，以及相关周边和配套生产设备。

此次，福然德采购布勒 6100 吨压铸岛（Carat 610 压铸岛）交付仪式外，还携手布勒续签 2 套 9200 吨压铸岛（Carat 920 压铸岛）战略合作协议，拟为福然德在安徽新能源汽车一体化压铸项目二期的扩建积极筹备。■

The Shining Pearl of the Persian Gulf

—Xinxing premium ductile iron pipes and fittings rushed to the 2022 Qatar World Cup

波斯湾上闪耀的明珠

——新兴铸管优质管材奔赴 2022 卡塔尔世界杯之约

Qatar D LINE project, the country's largest national key water project in recent years, shall serve as the main pipeline for domestic TSE water discharge during the 2022 World Cup as well as for irrigation. The project uses more than 30,000 metric tons of ductile iron pipes and more than 1,000 metric tons of ductile iron fittings. All these products are all special high-end pipes supplied by Xinxing Ductile Iron Pipes Co., Ltd.



卡塔尔 D LINE 项目，系该国近年来规模最大的国家级重点水务项目，在用于灌溉的同时将作为 2022 年世界杯期间国内中水排放的主要管线。该项目铸管用量达 3 万多吨，管件超过千吨，产品均属于特殊高端管材，全部由新兴铸管股份有限公司供货。

为了获取卡塔尔 D LINE 项目的订单，新兴

In order to obtain the order for the D LINE project in Qatar, Xinxing made a lot of efforts in the early stage. The company's sales staff got in touch with the client at the first time, submitted the technical proposal of pipe products lined with polyurethane and fittings products with internal and external FBE electrostatic spraying. Then after, the full set of English technical data was quickly completed. According to the requirements of Qatar ASHGHAL, the company's sales staff repeatedly revised and supplemented documents and materials, held more than 20 on-site technical clarification meetings, and finally signed the supply contract successfully.

The project implementation process coincided with the high incidence of the new corona virus epidemic at home and abroad, and the company's sales staff maintained close communication with customers through telephone, email, video conference and other forms to achieve "seamless interaction", and timely updated customers of the relevant situation of project implementation.

In the face of repeated epidemics, the company carefully prepared and optimized production and delivery plans, paid close attention to the feedback on the quality of arrivals, and quickly responded to the doubts and concerns raised by customers. After the efficient and coordinated efforts of all focal points in terms of production, marketing and transportation of Xinxing Ductile Iron Pipes Co., Ltd, the project was executed smoothly. It only took 60 days for the first batch of ductile iron pipes to arrive at the Qatar project site, and all pipes and fittings were dispatched to the

铸管公司在前期付出了大量的努力。公司的销售人员第一时间与客户取得了联系，推出内衬聚氨酯涂层的铸管产品、内外静电喷涂的管件产品技术方案，迅速完成全套英文技术资料的制作。根据水司的要求公司的销售人员反复修订、补充文件资料，进行现场技术答疑共计二十余次，终于成功签订供货合同。

项目执行过程适逢国内外新冠疫情的高发期，公司销售人员通过电话、邮件、视频会议等形式与客户保持密切沟通、实现“无缝对接”，及时向客户通报项目执行相关情况。

面对反复的疫情，公司精心编制优化生产发运方案，密切关注到货质量情况反馈，迅速响应客户提出的疑虑和关切。经过新兴铸管公司产销运各环节高效协同不断努力，项目执行顺利，第一批次管材到货卡塔尔项目工地仅用时 60 天，所有铸管、管件均严格按照项目进度发运到客户工地。

卡塔尔 ASHGHAL 水司、监理公司、工程公司等方面对铸管、管件到货质量、保供效率给予高度评价。新兴铸管克服疫情中生产、商检、物流保供等重重困难，为订单的执行划上了圆满的句号。（文/图：杜亚峰）■

customer site in strict accordance with the project delivery schedule.

Qatar ASHGHAL, the project consultant and the construction company highly praised the good quality of pipes & fittings and the high efficiency of production & supply. Xinxing Ductile Iron Pipes Co.,Ltd, overcame many difficulties in production, commodity inspection, logistics during the epidemic, and brought a successful end to the execution of Qatar D LINE project supply contract. (Text/ Photo: Du Yafeng) ■



Lk Group Launched the World's First 12000T Intelligent Die-Casting Unit

力劲集团发布全球首台 12000T 超大型智能压铸单元

On September 19, the 3-day METAL CHINA 2022 & DIECASTING CHINA 2022 held its opening ceremony in Shanghai. LK Group is pleased to announce that the presentation of the "Dreampress 12000T Extra large Intelligent Die Casting Unit Ceremony" was held after the opening ceremony of the exhibition. The world's first largest tonnage 12000T extra-large intelligent die casting unit was officially released. As a result of joint research and development, the trial production of prototypes has been completed, and it is expected to lead the world towards the trend of Single-piece casting technology on automotive structural parts, and promote the development of die casting industry.

On the occasion of the opening ceremony, the ceremony was attended by a number of guests from local die-casting associations, financial and media representatives to witness the historical moment together. At the meeting, Mr. Zhang Libo, President of China Foundry Association, Mr. Xu Feiyue, President of Guangdong Hongtu Technology Co., Ltd., and Mr. Liu Siong Song, founder of LK Group delivered speeches at the event. The ceremony was led by "large-scale integration" and focused on three major modules, including thematic integration technology exchange, automotive structural product display, and characteristic brand display, to promote the sustainable development of the high-end equipment market.

"In the past three years, I have witnessed the launch of LK's diecasting Units from 6,000 tons and 9,000 tons to 12,000 tons, which not only reflects the tonnage record, but also brings continuous new opportunities and challenges for our diecasting industry, injecting new vitality and new development." Mr. Zhang Libo said in his speech, "In the past two years, non-

9月19日上午,为期三天的中国国际铸造博览会、第十六届中国国际压铸工业展览会暨第十六届国际有色及特种铸造展览会在上海国家会展中心开幕。在展会开幕式后,力劲集团、广东鸿图科技股份有限公司联合举行了12000T超大型智能压铸单元发布仪式,该压铸单元是力劲集团与广东鸿图联合研发成果,目前已完成样件试产,将领导全球迈向大型汽车结构件“一体化压铸”态势,助推国家铸造高质量发展。

中国铸造协会会长张立波先生及执行副会长高巍先生、香港铸造业总会会长蔡子芳先生、鸿图科技总裁徐飞跃先生、力劲集团创始人刘相尚先生、力劲集团深圳领威科技有限公司总经理潘玲玲女士、上海一达机械有限公司总经理胡早仁先生等领导,以及参加开幕式的嘉宾参与和见证了发布会。中国铸造协会会长张立波先生、广东鸿图科技股份有限公司总裁徐飞跃先生,以及力劲集团创始人刘相尚先生分别于活动上致辞。仪式以“大型一体化”为引领,聚焦主题一体化技术交流、汽车结构件产品展示、特色品牌展示等三大模块,助推高端装备市场可持续发展,备受社会各界关注。

“在过去的三年中,我见证了力劲从6000吨到9000吨再到12000吨压铸装备的问世,这不仅仅是体现吨位上的记录,更是为我们压铸行业带来了持续的新的机遇与挑战,也注入了新的活力和新的发展。”张立波会长

ferrous metal and diecasting industry has ushered in a new track thanks to the integrated molding technology of large automobile structural parts. Our upstream and downstream industrial chain has also been improved, forming a good situation of domestic and overseas circulation. I hope the diecasting industry will make more contributions to the rapid development of new energy vehicles."

Mr. Xu Feiyue said, "As the leading die casting company in China, Hongtu Technology has a keen insight into the development trend of technology, and unites with the upstream and downstream innovation counterparts of the industrial chain. It has realized the technology leader in the integrated design, material development, process design, equipment manufacturing and other aspects of super-large integrated die casting products. In the face of profound changes in the industry background and unstable external environmental factors, Hongtu Technology never stops independent innovation. "Hongtu advantages" such as three self-developed heat-treatment free materials, top research and development planning team, and integrated application performance escort the development of new models, realizing the independent and controllable key core technologies of national integrated die casting. The successful development of 12,000 tons of super intelligent die casting unit has opened a new chapter for the research and development and manufacturing of key core lightweight components such as the integrated front cabin assembly and integrated battery tray for new energy vehicles."

As early as January 2022, LK Group and Guangdong Hongtu signed a research and development cooperation contract for the world's first largest tonnage Dreampress

致辞表示，“有色金属压铸近两年得益于大型汽车结构件的一体化成型技术，迎来了新的赛道，我们上下游产业链，也同步完善，形成了内、外双循环的良好态势，在“十四五”开局之年这一重要的节点，希望压铸产业在新能源汽车快速发展的浪潮中贡献力量。”

徐飞跃先生表示：“鸿图科技作为国内压铸龙头，敏锐洞察技术发展趋势，联合产业链上下游创新主体，已经实现了超大型一体化压铸产品在集成设计、材料开发、工艺设计、装备制造等方面的全栈技术领跑。面对深刻变革的行业背景和不稳定的外部环境因素，鸿图科技在自主创新的道路上永不止步，三大自研免热处理材料、顶尖研发策划团队、一体化应用量产实绩等‘鸿图优势’为新车型开发保驾护航，实现国家一体化压铸关键核心技术自主可控。12000吨超级智能压铸单元的成功开发，更是为新能源汽车一体化前舱总成、一体化电池托盘等关键核心轻量化部件的研发、制造开启了新的征程。”

早在2022年1月，力劲集团与广东鸿图举行了全球首台最大吨位12000T超级智能压铸单元的研发合作签约仪式，本次发布会则为该战略合作及批量采购协议的实现。该压铸单元为目前全球首台最大吨位的超级智能压铸单元，将聚焦于新能源汽车更大车型的前后舱、中底板电池等一体化结构件的集成化设计与制造。

力劲集团在压铸技术上屡获突破，受益于新能源汽车产销两旺带来的机遇。据中国汽车工业协会数据显示，



12,000T die-casting unit. The launch of Dreampress 12,000T is the realization of this strategic cooperation and bulk purchase agreement. Trial production of prototypes has also been completed. The die-casting unit is currently the world's first super-intelligent die-casting unit with the largest tonnage. It will focus on the integrated design and manufacture of integrated structural parts such as front and rear underbody and mid-underbody battery case for larger models of new energy vehicles.

LK Technology has made many breakthroughs in die casting technology, benefiting from the opportunities brought by the booming production and sales of new energy vehicles. According to data from the China Association of Automotive Manufacturers, in the first eight months of 2022, 3.86 million new energy vehicles were sold, an increase of 11 times year-on-year, which proves that China's die-casting industry has created a huge space for development. LK Group will also continue to seize its leading advantage in the die-casting machinery industry, devote itself to promoting the intelligence and digitization of new energy vehicles, and continue to contribute to the sustainable development of the industry.

Mr. Liu Siong Song, founder of LK Technology Group Co., Ltd. said: "LK Technology and Hongtu Technology have always supported and trusted each other. As a leading die-casting enterprise in China, we and Hongtu Technology have been partners for many years. The successful launch brings more possibilities for integrated casting structural parts. Since 2019, the Group has successively released the world's first 6,000-ton, 9,000-ton and 12,000-ton super-large intelligent die-casting units. New breakthroughs in the structure have been achieved, and the maximum die-casting area of die-casting products and the size of die-casting products have been continuously raised to new heights, which has driven the continuous improvement of single-piece casting integrated die-casting technology. LK Group will take the world premiere of 12000T as a new starting point, increase R&D efforts, explore more opportunities for R&D and cooperation, and hope to create a high-quality and healthy industrial ecology and promote the sustainable development of the die-casting industry." ■

2022年首八个月录得新能源汽车销售386万辆，同比增长11倍，足以证明中国压铸产业的巨大发展空间。力劲集团也将继续抓紧在压铸机械制造行业领先的优势，致力推动新能源汽车智能化、数字化，持续为行业可持续发展贡献智慧力量。

力劲集团创始人刘相尚先生表示：“力劲集团与鸿图科技一向相互支持和信赖，作为国内领先的压铸商企业，我们与鸿图科技为多年合作伙伴，期望本次12000T智能压铸单元的成功发布为一体化成型结构件带来更多可能。自2019年起至今，本集团陆续发布全球首创之6000吨、9000吨及12000吨超大型智能压铸单元，坚持以技术引领，不断在技术和结构上实现新突破，持续将压铸产品的最大压铸面积、可压铸产品尺寸提升至新的高度，带动一体化压铸工艺技术不断提升，期望为整个压铸产业发展持续注入了新的活力。展望未来，力劲科技将以12000T的全球首发作为全新起点，加大研发力度，探索更多研发和合作的机会，期望打造优质、健康的产业生态，推进压铸产业可持续发展。” ■

A Single 16 MW Offshore Wind Turbine Offline

单机容量 16 兆瓦海上风电机组下线

China's self-developed 16-megawatt offshore wind power unit went offline at the Three Gorges Offshore Wind Power Industrial Park in Fujian province on Nov. 23. The offshore wind turbine unit has a single capacity of 16 MW, with its impeller diameter is 252 meters, and the impeller sweep area

11月23日，我国自主研发的16兆瓦海上风电机组在福建三峡海上风电国际产业园下线。机组单机容量16兆瓦海上风电机组，叶轮直径252米，叶轮扫风面积约5万平方米，约相当于7个标准足球场大；轮毂高度达146米，

is about 50,000 square meters, which is about the size of 7 standard football fields. The wheel hub is 146 meters high, equivalent to the height of a 50-story building. This wind turbine has the largest single capacity, the largest impeller diameter and the lightest weight per megawatt in the world. It marks an important breakthrough in the high-end equipment manufacturing capacity of Chinese offshore wind power large-capacity units, reaching the international leading level. It is jointly developed by the Three Gorges Corporation and Goldwind Technology, which is the vice president member unit of China Foundry Association.

The 16 MW offshore wind turbine has achieved important technological breakthroughs, such as large spindle bearings and ultra-long lightweight blades. The digital level for its monitoring of the operation condition is high, which can adjust the operation mode intelligently in dealing with the typhoon and other bad weather, ensuring the safety and efficient power generation.

The 16 MW offshore wind turbine can generate 34.2 KWH for each rotation of a single unit with rated working conditions, and an average of more than 66 million KWH of clean electric energy can be produced annually, which can meet the annual electricity need of 36,000 three-people households, and about 22,000 tons of standard coal can be saved and about 54,000 tons of carbon dioxide can be reduced. ■

相当于一座 50 层大楼的高度。这是目前全球范围内单机容量最大、叶轮直径最大、单位兆瓦重量最轻的风电机组，标志着我国海上风电大容量机组在高端装备制造能力上实现重要突破，达到国际领先水平，风电机组由三峡集团和中铸协副会长单位金风科技联合研制。

此次下线的单机容量 16 兆瓦海上风电机组，在大型主轴轴承、超长轻量化叶片等关键核心部件的研发制造方面取得了重要的技术突破。机组运行状态监测的数字化水平高，能够针对台风等恶劣天气智能调整运行模式，确保风机安全和高效发电。

16 兆瓦海上风电机组，在额定工况下，单台机组每转动一圈可发电 34.2 千瓦时，平均每年可输出超过 6600 万千瓦时的清洁电能，能够满足 3.6 万户三口之家一年的生活用电，可节约标煤约 2.2 万吨，减排二氧化碳约 5.4 万吨。■

DEC Completes China's First Self-developed F-class 50 MW Heavy-duty Gas Turbine

国内首台自主研制的 F 级 50 兆瓦重型燃气轮机完工发运

On November 25th, DEC completed China's first self-developed F-class 50 MW heavy-duty gas turbine, which was ready for delivery in Deyang, Southwest China's Sichuan province, indicating a scientific and technological breakthrough in the heavy gas turbine field in China.

The turbine can reduce carbon emissions by over 500,000 tons a year. It will produce more than 70 MWh of electricity per hour in a combined cycle power generation system, meeting the demand of 7,000 households for a whole day. ■



11 月 25 日，在中国东方电气集团有限公司（以下简称“东方电气”）所属东方汽轮机的燃机总装车间内，国内首台自主研制的 F 级 50 兆瓦正式完工发运，即将进入工程应用阶段，标志着我国在重型燃气轮机领域完成了从“0”到“1”的突破。

F 级 50 兆瓦重型燃气轮机一年可减少碳排放超过 50 万吨，

联合循环一小时发电量超过七万千瓦时，可以满足 7000 个家庭 1 天的用电需求，将积极助推“双碳”目标实现。■

Dalian Heavy Industry Developed 18MW Offshore Wind Turbine Castings

大连重工成功研制出 18 兆瓦海上风电机组铸件

On November 29, two sets of 18MW offshore wind turbine castings developed by Dalian Heavy Industry Co., Ltd. successfully rolled off the production line, including hub and main frame.

The hub and main frame, as the core components of offshore wind turbine, the maximum weight of a single piece is up to 70 tons, the height of more than 6.5 meters, and they must be able to meet the strict working conditions of 25-year of service life at sea. The research team was composed of experts from design, process and production. By carefully summarizing the previous production experience, through multidimensional simulation, casting process innovation and tooling optimization, the company solved the difficulties of high-pressure of hot metal filling and high-grade whole body nondestructive testing, and successfully completed the trial production. Tested and approved by the customer expert team, the final spheroidization rate, mechanical properties and other indicators all meet the requirements.

Up to now, Dalian Heavy Industry has provided 600,000 tons of core castings for domestic and foreign customers, and developed a series of ultra-large offshore wind turbine castings, such as 8-10MW, 12-14MW and 14-16MW. (Source: Dalian Heavy Industry) ■

11月29日，大连重工下属铸业公司研制的2套18兆瓦海上风电机组铸件顺利下线，包括轮毂和主机架。

轮毂和主机架作为海上风电机组的核心部件，其产品结构复杂，轮廓尺寸高大，单件最大重量达70吨，高度超过6.5米，必须能够满足海上恶劣工况条件下25年的使用寿命，各项性能指标要求十分严格，制造难度非常大。铸业公司抽调设计、工艺、生产等各领域专家组成项目攻关组，在认真总结以往大型海上风电铸件生产经验的基础上，通过多维仿真模拟、铸造工艺创新和浇注工装优化等措施，创造性解决了铁水充型压力大、铸件高等级全身无损检测等难题，成功完成产品试制，并经顾客专家监理团队检测，产品最终球化率、机械性能等各项指标均满足设计要求。

截至目前，大连重工已累计为国内外风电整机企业提供核心铸件60万吨，研发出的海上8-10兆瓦、12-14兆瓦和14-16兆瓦等多个系列超大型风电核心铸件。（来源：大连重工）■

One of the World's Largest EV Manufacturers Starts Casting with New Toggle Free HPDC Machine from ItalpresseGauss

全球最大的电动汽车制造商选择意特佩雷斯高斯无曲拐两板压铸机打造新系列汽车压铸件

One of the largest EV manufacturers in the world, has produced its first casting from a newly installed TF2800 machine from Italpresse Gauss.

The machine, installed at the company's state-of-the-art facility in Hefei (China's Anhui Province) where the company's best-selling EV model is manufactured, is the first of its type to be deployed from ItalpresseGauss' new modular range of Toggle Free machines.

Later this year it will be joined by several more TF HPDC

全球最大的电动汽车制造商，第一件来自意特佩雷斯高斯全新的TF 2800压铸机的压铸件已经如期顺利下线。

这台设备安装在该公司位于安徽合肥的新工厂内，旗下最畅销的电动车型就是在这里生产的。该台设备是意特佩雷斯高斯最新推出的Smart Platform智能模块化无曲拐TF系列中首台投入使用的设备。

machines from the die casting equipment supplier, with closing forces up to 3700 tons. They will predominantly be used to cast transmission front shells and rear shells for EV vehicles.

The new ItalPresseGauss machines will significantly increase casting capacity at the Hefei facility and will play an important role the company's future development.

Highly configurable die casting technology

Unveiled earlier this summer, ItalPresseGauss' so called 'SmartPlatform' TF machines are highly configurable, meaning they can be more easily tailored to match the needs of each individual customer. With closing forces ranging from 1,400 to 11,000 tons, 6 types of injection, and up to 2 closing unit options for every machine size, over 55 different combinations are available to die casters.

This current generation of TF machines also feature several familiar technologies that have become synonymous with low scrap rates and high casting yields.

The machines offer the hardest certified alloy steel platens in the industry, well equalized tie bar loads, a hydraulic locking system able to compensate for any geometrical imperfections of the die or thermal expansions, and a SC.4 shot end system with real time injection control, all of which help guarantee casting repeatability.

Sustainable furnace solutions

Supplying both existing and new HPDC machines at Hefei with high quality liquid aluminium, the customer has also ordered several Westomat aluminium dosing furnaces in different sizes from StrikoWestofen – the first of which was installed alongside the TF 2800.

The crucible-free Westomat is a clean, sustainable, closed holding and dosing system for liquid aluminium, with a reputation for high dosing accuracy, extreme energy efficiency and metal loss as low as 0.06%.

Additional TF HPDC machines and Westomat furnaces will also be delivered to the manufacturer's Changsha facility later this year. Several Westomats are already in operation at the plant.

Performance and partnership

The die casting and furnace solutions supplied by ItalPresseGauss and StrikoWestofen had to meet strict energy efficiency, reliability and casting accuracy performance criteria in order to win the contract.

Additionally, the customer looked for flexibility – equipment capable of flexing to meet each facility's current and evolving production needs – and the ability for supplying partners to offer efficient long-term service support.



今年晚些时候, 还将有更多 TF 系列设备投入使用, 最大合模力可达 3700 吨。它们将主要用于生产新能源汽车变速箱的前箱体和后箱体。

全新的意特佩雷斯高斯压铸机将使其合肥工厂的现有铸造能力大大提升, 并将在其未来的发展中发挥重要作用。作为行业的先锋者, 该电动汽车制造商很高兴能够成为首家使用意特佩雷斯高斯新模块化系列设备生产铸件的企业。

高度可配置的压铸技术

今年上半年正式推出的意特佩雷斯高斯“SmartPlatform”TF 系列高压压铸机有高度可配置性, 这意味着它们可以更容易地进行定制, 以满足每个客户的需求。压铸机的合模力从 1,400 至 11,000 吨, 有 6 种压射类型, 每种设备尺寸至少有 2 种合模单元选项, 适用于各种铸件尺寸的生产, 有超过 55 种不同的组合可选。

最新一代的 TF 系列延续了意特独有的技术, 这些技术已成为低废品率和高产量的代名词。

TF 设备拥有业内公认最坚硬的合金钢板, 均衡的大缸负荷, 能够补偿模具或热膨胀带来的几何缺陷的液压锁定系统, 以及具有实时压射控制的 SC.4 压射端系统, 所有这些都助于保证高质量铸件生产的可重复性。

可持续的工业炉解决方案

为合肥工厂的压铸件提供高质量铝液, 该电动汽车制造商为全工厂的压铸机选配了不同型号的史杰克西 Westomat 定量炉, 其中与 TF 2800 配套的就是其中一台 W3100 定量炉。

史杰克西的无坩埚 Westomat 定量炉是一种清洁、可持续、封闭的铝液保温和定量给料系统, 以高定量精度、极



高效率 and 低至 0.06% 的金属烧损而闻名。

TF 系列压铸设备和 Westomat 定量炉将于今年晚些时候交付给其位于的长沙工厂。目前多台 Westomat 定量炉已经在该工厂投入运行。

携手合作，共创未来

意特佩雷斯高斯和史杰克西提供的压铸机以及定量炉解决方案必须满足严格的能效、可靠性和铸造精度的性能标准，才能赢得该项目。

此外，该电动汽车制造商还在寻找灵活性——需要压铸岛能够灵活调整，以满足其工厂当前和不断发展的生产需求，以及为客户提供长期的技术服务支持的能力。

Peter Holm Larsen, President – Norican Aluminium, commented: “To work with this customer has been a privilege, and reaching this point in the project is a testament to great teamwork from all involved – our customer, my colleagues from ItalPressGauss in Italy and StrikoWestofen in Germany, and obviously our organization in China.”

“We are dedicated to developing and continually evolving solutions to ensure they perfectly match the needs of our customers and the markets they serve. The new TF range from ItalPressGauss certainly embodies this commitment and we are delighted to see our first machine up and running. I thank our customer for their trust, and everyone in my team for making this project a reality.” ■

诺瑞肯铝合金业务总裁 Peter Holm Larsen 表示：“能够与全球最大的电动汽车制造商合作是我们的荣幸，在项目中达到这一点证明了所有相关人员的出色团队合作——我们的客户、在意大利的意特佩雷斯高斯和德国的史杰克西的同事，当然还有我们在中国的团队。我们致力于开发和不断改进解决方案，以确保它们完全符合我们的客户和他们所服务的市场的需求。意特佩雷斯高斯的新一代 TF 系列无疑体现了这一承诺，我们很高兴看到我们的第一台设备启动并运行。感谢客户的信任，感谢我们团队中的每一个人让这个项目成为现实。” ■

China Foundry Association Participated in the 74th WFC and Exhibition

中铸协参加第 74 届世界铸造大会暨展览会

The 74th World Foundry Congress, held at the BEXCO Convention Center in Busan, Korea, concluded on October 20. The World Foundry Congress is held every two years, and this year, it was organized by the World Foundry Organization (WFO) and Korea Foundry Society with the theme "Cast The Future". The event lasted for five days, including theme conference, exhibition, technical report, poster speech and factory visit.

A total of 244 papers were submitted from 28 countries and regions, and 235 papers were selected from 28

在韩国釜山 BEXCO 会展中心举办的“第 74 届世界铸造大会 (The 74th World Foundry Congress)”于 10 月 20 日圆满结束。世界铸造大会每两年一届，本届大会由世界铸造组织 (WFO) 和韩国铸造协会主办，主题为“Cast The Future 铸造未来”。活动为期五天，包含主题大会、展览展示、技术报告、海报演讲及工厂参观等多项内容。

此次大会共收到来自 28 个国家和地区的 244 篇论



countries and regions, including 59 guest speakers, 155 oral presentations and 61 poster presentations. A total of 439 delegates (both online and offline) from 30 countries and regions attended the conference.

For a long time, China Foundry Association and Korea Foundry Society has kept close cooperation, and as the secretariat of the Asia Foundry Association, giving full play to the advantages of the association, CFA has taken advantage of the conference held in Asia and organized the "Asia Foundry Report".

Due to the outbreak of the pandemic, the conference was finally postponed for two years. But as the chairman of the conference -- Dr. Sangmok Lee, Vice president of Korea Foundry Society said in his speech, "As an important part of the entire manufacturing supply chain, foundry industry will overcome the difficulties and keep the promise".

The original theme of "Asia Foundry Report" was changed to "COVID Foundry Report," but it still became the "focus" of the conference. GAO Wei, Executive Vice President of China Foundry Association and Secretary-general of Asia Foundry Association, was invited to give a report entitled Foundry companies and market status and prospects under Covid-19 pandemic. Other speakers are: Dr. Jose Javier Gonzalez, Secretary General of World Foundry Organization, DongEung Kim Ph.D. from Korea Institute of Industrial Technology, Dr. Inż.katarzyna Liszka, Secretary general of Polish Foundry Association and Hiroshi NISHIHARA, Japan Foundry Society. Meanwhile, at the call of the Asia Foundry Association, many other representatives of member units of the association participated the meeting online.

GAO Wei's report received high attention from the delegates. After the speech, Dr. Sangmok Lee, chairman of the conference, hoped that CFA could make continuous

文投稿，最终选出 28 个国家和地区的 235 篇论文，其中包括 59 名特邀演讲人，155 名口头演讲和 61 名海报演讲。共有来自 30 个国家和地区的 439 名代表(包含线上线下)参加了本次大会。

长期以来，中国铸造协会就与韩国铸造协会紧密合作，并作为亚洲铸造业联合会秘书处所在单位，充分发挥联合会优势，团结联合会各个主席团成员，利用此次大会在亚洲地区召开的契机，专门研究策划了“Asia Foundry Report 亚洲铸造专题论坛”。

由于疫情的爆发，导致本届大会最终推迟了两年才得以举办。但正如大会主席——韩国铸造协会 Dr. 李尚穆在致辞中所说，“铸造行业作为整个制造业供应链的重要一环，铸造人终将克服困难，实践诺言”。

虽然原定的亚洲铸造专题被修改为“COVID Foundry Report (新冠铸造报告)”，但仍然成为本届大会的“焦点”。中国铸造协会执行副会长、亚洲铸造业联合会秘书长高巍受邀在大会上作了题为《中国铸造业现状及战略规划》的报告。其它报告人还有：世界铸造组织秘书长 Dr. José Javier González、韩国工业技术研究院 DongEung Kim Ph.D.、波兰铸造协会秘书长 Dr. inż. Katarzyna Liszka，以及日本铸造协会 Hiroshi NISHIHARA。同时，在亚洲铸造业联合会的号召下，联合会成员单位马来西亚机器厂商总会副总理、亚洲铸造业联合会副秘黎永强、印尼铸造工业协会秘书长 Ramadhan Rudy、巴基斯坦铸造协会 Pervez Mughla、日本铸造协会副会长 Tomio Okamura、技



efforts on the basis of the Asia Foundry Association and present the status analysis and prospect of the foundry industry in Asia in the near future. In addition, GAO Wei also had a friendly exchange with Prof. Jezierski from Technical University of Silesia, Poland, and Dr. Jose Javier Gonzalez, the new Secretary General of the World Foundry Organization, on talent attraction and reserve in the foundry industry.

A total of 67 exhibitors participated in the exhibition. China Foundry Association organized several enterprises to participate in the exhibition, including Hebei Shenghuo New Material Technology Co., Ltd., Xiangyang Juli New Material Technology Co., Ltd., Shaanxi Diesel Heavy Industry Co., Ltd., Tianjin Muzi Carbon International Trade Co., Ltd., and Suzhou Weijing Automation Co., Ltd... ■

术环境部组长 Akira Yoshizawa、印度铸造协会会长 Vineet Jain 和香港铸造业总会会长梁诗雅、常务副会长刘卓铭、理事陈国强等多位代表在线上收看了此次会议。

高巍的报告获得了与会代表的高度关注。演讲结束后，大会主席 Dr. 李尚穆提出，希望在亚洲铸造业联合会的基础上，再接再厉，在不久的将来为大家奉上亚洲地区铸造行业的现状分析及前景展望。除此之外，高巍还同来自波兰西里西亚工业大学的 Jezierski 教授，以及世界铸造组织新任秘书长 Dr. José Javier González 对铸造行业人才吸引和储备进行了友好交流。

此次参加世界铸造大会的展商总共 67 家。中国铸造协会组织了河北盛火新材料科技有限公司、襄阳聚力新材料科技有限公司、陕西柴油机重工有限公司铸造事业部、天津木子碳素国际贸易有限公司、苏州微晶自动化有限公司等企业参展。 ■

ASK Chemicals Inaugurates its New Mexican Plant

亚世科化学集团墨西哥新工厂落成

ASK Chemicals celebrates the opening of its new production facility in El Carmen near Monterrey, Mexico, together with its employees. The new site will produce high-performance binders and coatings for the Mexican market.

With this investment, which is among the most significant in ASK Chemicals' history, the company is making a clear commitment to the growing Mexican market.

The site will be brought gradually into operation starting with the production of high performing binders. The Coatings production will follow in the coming months.

The newly inaugurated production facility will cover both current and future growth in the Mexican market. The new site represents an important addition to ASK Chemicals' manufacturing footprint in the Americas.

In addition to a state-of-the-art chemical plant, the new Monterrey site also houses development laboratories to bring the company's innovations closer to the Mexican market.

"The investment in our Mexican plant is one of the



亚世科化学集团在墨西哥蒙特雷附近的埃尔卡门与员工一起庆祝新工厂的开业。新工厂将为墨西哥市场生产高性能粘结剂和涂料。

该项投资是亚世科化学集团历史上最重要的投资之一，公司明确承诺将进军不断增长的墨西哥市场。新厂将从高性能粘结剂开始逐步投产，并将在未来几个月进行涂料生产。

新工厂将满足墨西哥市场目前和未来的增长需求，是亚世科化学集团在美洲生产布局的重要补充。

most significant for our company, and a fundamental milestone in our long-term strategy to better serve the Mexican market" states Frank Goede, Chief Executive Officer, " We are very proud of our team that has succeeded not only in building this world-class production site during a pandemic but also has transferred the know-how and expertise to ensure a smooth ramp-up." ■

除了最先进的化工厂，蒙特雷的新基地还设有研发实验室，使公司的创新成果与墨西哥市场更贴近。

首席执行官 Frank Goede 表示：“墨西哥工厂对我们公司来说是最重要的投资之一，也是我们更好地服务墨西哥市场的长期战略的一个具有标志性的里程碑。我们感到非常自豪，因为我们的团队不仅在新冠疫情期间成功地建立了这个世界级的生产基地，而且转移了专有技术和专业知识，确保公司的扩张计划顺利进行。” ■

IDRA Group Completes and Delivers Giga Press for Tesla Cybertruck

意德拉集团完成并交付生产特斯拉网络卡车的超级压铸机

Tesla plans to start building the Cybertruck in the first quarter of 2023.

Tesla commissioned a 9,000-ton die casting press from Italy-based specialists at IDRA Group, the only company that took up the challenge to try to create such a mammoth piece of equipment. Now the company says it has completed assembly and testing of this gargantuan press and it reportedly has already arrived in the United States.

The press is truly spectacular to see such a big piece of machinery in action, especially since it has massive visible moving parts. IDRA posted a video announcing the completion of this particular press and notes that “this innovation revolutionizes the manufacturing of the car body structure, reducing substantially assembly time and costs... IDRA was the first company to receive production orders for 9,000 ton machines that can be used for SUV and small truck markets.”

It is believed that this particular 9,000-ton press will be used to create Tesla Cybertruck frames by die-casting aluminum and this seems to be confirmed by IDRA itself as per the YouTube video description excerpt added above that mentions light trucks. IDRA has already supplied Tesla with Giga Presses, which is now in operation and is able to create an entire Model Y frame from just two separate stampings, far reducing the number of individual parts needed.

For reference, just the rear part of a Model Y frame was made out of 70 separate pieces before the the introduction of the Giga Press, and now that has been reduced to 1. Apparently, this allowed Tesla to eliminate some 300 robots that helped put all those 70 parts together, thus speeding up the car building process, while also reducing complexity and manufacturing cost.

It is speculated that the Cybertruck will be made up of three large structural components: the rear section, the bed and

特斯拉计划在 2023 年第一季度开始生产网络卡车

基于意大利意德拉集团的专家团队，特斯拉委托定制了一台 9000t 的压铸机，该集团是唯一一家接受挑战尝试制造如此巨大设备的公司。现在，该公司宣布，这台大型压铸机已经完成了组装和测试，据报道，设备已经运抵美国。

看到如此大的压铸机在运行，真是非常壮观，尤其是它有大量可见的运动部件。意德拉集团发布了一段视频，宣布这一压铸机的完成，并指出“这项创新彻底改变了车身结构的制造，极大的减少了组装时间和成本……意德拉集团是第一家收到 9000t 压铸机生产订单的公司，可用于 SUV 和小型卡车市场。”

据信，这台特殊的 9000t 压铸机将被用于制造特斯拉网络卡车压铸铝合金框架，从 youtube 视频中提到的轻型卡车，似乎被意德拉集团证实。意德拉已经为特斯拉提供了超级压铸机，目前正在运行，能够从两个独立的冲压件创建一个完整的 Model Y，极大减少了所需的单个零件的数量。

在超级压铸机推出之前，Model Y 框架的后部是由 70 个独立的零件组成的，现在已经减少到 1 个。显然，得益于将这 70 个零件集成在一起，这使得特斯拉减少了大约 300 个机器人，从而加快了汽车制造过程，同时也降低了复杂性和制造成本。

据推测，网络卡车将由 3 个大型结构部件组成：后



the frontal crash structure. According to its initial estimations, Tesla was looking to start building the Cybertruck in 2021, but plans have changed and it has now moved its production start to early 2023. ■

部、托架和正面碰撞结构。根据最初的估计，特斯拉原本打算在 2021 年开始生产网络卡车，但计划已经改变，现在已经将生产启动推迟到 2023 年初。” ■

GENERAL KINEMATICS Began Expansion at its Headquarter

GENERAL KINEMATICS 公司总部扩建项目启动

General Kinematics recently broke ground on a 42,000-square-foot plant expansion at the United States corporate headquarters in Crystal Lake, IL.

The manufacturing expansion will be part of their existing 220,000 facility, and is needed to keep up with customer demands and the increasingly large machines being supplied to the mining, foundry, and recycling industries. Plans for the addition include high bay ceilings which will allow the installation of cranes with 80-ton lifting capacity. The new area will also provide space for further capital equipment purchases and increased material storage. The company plans to hire 15 new employees to support the increased throughput. Construction is expected to be completed in the first quarter of 2023. ■



最近，General Kinematics 公司在伊利诺伊州水晶湖的美国公司总部的 42,000 平方英尺的工厂扩建项目启动了。

本项目将成为公司现有的 22 万平方英尺工厂的一部分，以满足客户以及具备服务于采矿、铸

造和回收行业的大型机器的需求。扩建计划包括提高厂房屋顶，可以安装 80 吨起重能力的起重机。新厂还将为今后的新采购设备和材料存储预留了空间。公司计划新招聘 15 名员工来支持增加的投入。扩建项目预计将于 2023 年第一季度完工。 ■

Sinto Smart Foundry Coming To Purdue University

新东智能铸造即将来到普渡大学

Sinto America and Purdue University have finalized plans for integrating a Smart Foundry for Purdue's "Smart Manufacturing" curriculum. The Smart Foundry classroom, comprising a fully functioning, production-capable, green sand foundry, will be located on the ground level of the new "Gateway" building in the heart of Purdue's campus in West Lafayette, Indiana. It will be a standalone metals processing laboratory fully integrated with the "Sinto Smart Foundry" solutions.

Purdue's \$2.8-million investment in the foundry will change the landscape of foundry education by providing students with the practical experiences of a real greensand foundry, using Sinto Smart Foundry's latest data collection and remote monitoring technology.

A collaboration of the Purdue facility and staff, the Foundry Educational Foundation (FEF), and Sinto's Foundry Design and Engineering department, the design of the new foundry allows students to make molds using a Sinto FDNX automatic molding machine. Supporting the molding operation will be a complete sand system loop, a melting department with three furnaces, as well as robotic pouring integrated with one of the furnace locations. Additionally, the facility will feature a manual mold handling line with a vibratory shaker deck. ■

新东（美国）公司与普渡大学共同决定，计划将智能铸造融入普渡大学的“智能制造”课程。智能铸造教室其实就是功能齐全、生产能力强的湿型砂铸造工厂，将位于印第安纳州西拉斐特普渡大学校园中心的新“门户”建筑的一层。它将是一个独立的金属加工实验室，与“新东智能铸造”解决方案完全融为一体。

普渡大学为此项目投资 280 万美元，将改变铸造专业教育的环境。通过使用新东智能铸造厂的最新数据和远程监控技术，为学生提供真正的湿型砂铸造厂的实践经验。

一方面是普渡大学提供设施和员工，另一方面是铸造教育基金会 (FEF) 和新东的铸造设计和工程部，在双方的合作下，学生可以使用新东 FDNX 自动成型机生产铸型。支持造型作业的将是一个完整的砂系统，一个拥有三台熔炉的熔炼单元，以及与其中一个炉子配套集成的机器人浇注设备。此外，工厂还包括一条安装有振动落砂板的手动造型线。■

Rio Tinto To Build Aluminum Recycling Center In Quebec

力拓将在魁北克新建再生铝生产中心

Rio Tinto is investing \$29 million to build a new aluminum recycling facility at its Arvida plant in Saguenay-Lac-Saint-Jean, Quebec, to expand its offering of low-carbon aluminum solutions for customers in the automotive, packaging and construction markets.

The facility will make Rio Tinto the first primary aluminum producer in North America to incorporate recycled post-consumer aluminum into aluminum alloys.

Clean aluminum scrap sourced locally from used vehicles and construction materials will be remelted to produce recycled content that will be used in aluminum billets at the Arvida smelter as well as other products from Rio Tinto's Quebec facilities.

With construction beginning in coming months, the recycling center is expected to be operational in the second quarter of 2024 and will have an initial capacity of 30,000 tons per year. A remelting furnace equipped with regenerative burners and an automated scrap loading system will be installed in an existing building. The project is expected to generate over \$22 million (C\$30 million) of economic benefits in Quebec and will create about 10 new permanent jobs at the Arvida plant. ■

力拓集团宣布将投入 2900 万美元，在魁北克省 Arvida 工厂建设新的铝回收厂，以扩大其为汽车、包装和建筑行业客户提供的低碳铝原料解决方案。该项目将使力拓成为北美第一家在铝合金生产中使用再生铝的主要铝生产商。

力拓表示，新的铝回收工厂，最终将达到每年 3 万吨的设计产能，预计将在 2024 年第二季度投入运营。在未来几个月内，将开展现场施工。该项目包括安装带有蓄热式燃烧器的重熔炉以及自动铝废料上料系统，这两个系统都将安装在 Arvida 工厂的现有厂房中。新的铝回收工厂，将使用当地来源的清洁铝废料作为原料，主要来自汽车和建筑废料。废铝将在 Arvida 工厂和其它位于魁北克的力拓工厂熔化后制成挤压坯料。该铝回收厂预计将为魁北克省创造 2200 万美元（3000 万加元）的经济效益，并在该厂增加约 10 个新的工作岗位。■

Victaulic Acquires Tennessee Metal Fabricating Corp.

Victaulic 公司收购田纳西金属公司

AFS Corporate Member Victaulic, a manufacturer of mechanical pipe joining, fire protection, and flow control solutions, has acquired the business assets of Tennessee Metal Fabricating Corp. (TMF). The acquisition supports the company's growth in the infrastructure market and increases its capacity for large-diameter piping solutions.

The addition of the TMF business includes three buildings totaling 125,000 sq.ft. and over 36 acres of land. ■

美国铸造协会会员企业 Victaulic 公司是一家管道制造商及消防、工艺控制解决方案提供商，该公司收购了田纳西金属公司 (TMF) 的业务资产。此次收购支持了公司在基础设施方面的增长需求，并提高了其大直径管道解决方案的能力。

新增的田纳西金属公司资产包括三座建筑，总面积为 12.5 万平方英尺，以及超过 36 英亩的土地 ■

Winsert Buys Alloy Cast Products

Winsert 公司收购 Alloy Cast Products 公司

Wisconsin-based Winsert, a global advanced manufacturer of critical metal parts for Fortune 500 OEMs and Tier 1 suppliers, has acquired Alloy Cast Products, Inc. (ACP), an investment casting and machining manufacturer of exotic cobalt alloys headquartered in Kenilworth, New Jersey.

ACP's experience, manufacturing methods, and alloy portfolio will enhance Winsert's metal forming capabilities. The acquisition will allow for additional products and services to be offered to the two companies' current and prospective customers.

"I'm confident that the REXALLOY product line and all other products will be in good hands with Winsert's increased production capacity and attention to high quality," said Frank Panico, Alloy Cast Products president. "Winsert brings expanded services that Alloy Cast Products alone could not provide. We have entered this acquisition with great confidence and pleasure knowing that the business is in the very capable hands of Winsert."

Winsert's President Mark Coduti said, "We are excited to add ACP's capabilities to the Winsert family. The combining of our advanced machining and vast alloy portfolio with their investment casting capabilities really creates significant opportunities in all the markets we serve. The customers of both Winsert and ACP will benefit from this complimentary acquisition." ■

总部位于美国威斯康辛州的 Winsert 公司是一家为 500 强 OEM 企业和一级供应商提供关键金属部件的全球领先制造商。公司收购了总部位于新泽西州的 Alloy Cast Products (ACP) 公司，该公司是一家生产精密铸件和加工特殊钴合金的公司。

ACP 公司的生产经验、技术和产品组合将增强 Winsert 公司的金属成型能力。此次收购将为两家公司的现有和潜在客户提供更多的产品和服务。

ACP 公司总裁 Frank Panico 说：“我相信，随着 Winsert 公司产能的增加和对高质量产品的关注，REXALLOY 产品线和其他所有产品将得到很好的效果。Winsert 公司为 ACP 提供了无法靠自身独立满足的生产服务。我们对此次收购充满信心并且感到非常高兴，因为我们知道 Winsert 公司是完全可以胜任的。”

Winsert 公司总裁 Mark Coduti 表示：“我们很高兴 ACP 公司加入到 Winsert 大家庭，我们先进的机加工能力和大量的合金产品组合与 ACP 公司的精密铸造能力相结合，必然将为我们服务的所有市场创造更大的机会。Winsert 和 ACP 的客户都将从这次互补合作的兼并中受益。” ■

Mingzhi Technology Leipzig-Erkunt Collaboration Continues

明志科技（德国莱比锡）与 Erkunt 集团（土耳其）持续合作

Based on a general increase in demand for foundry products within the Turkish market and the dedicated effort of our sales agent Mr. Yilmaz Ozkan of Kor Tek Makine Müh. Dış Tic. Ltd. Şti., the collaboration between Mingzhi Technology Leipzig GmbH and the Erkunt Group continues. Erkunt specializes in the production of iron castings destined to local and foreign companies with activities in automotive, tractor and construction equipment

In May 2021, Mingzhi supplied Erkunt with three new 40L cold box core shooting machines, known as MP40, and gas generators to meet their parts production growth. Production start was achieved by September. In May 2021, Mingzhi and Erkunt agreed on the supply of a new sand plant with a preparation capacity of 8T/h along with an additional 40L MP40 core shooter and 100L cold box core shooting machine,

the MP100. Production start of this equipment successfully occurred by January 2022. Most recently, Erkunt has ordered an additional MP40 40L core machine and gas generator for which production start began in the spring of 2022.

Mingzhi Technology is a forerunner in core shop equipment technology with almost 20 years of experience two production facilities and foundries (Leipzig, Germany and Suzhou, China), approximately 700 employees and an annual turnover of roughly 100 million euros. A wide range of Mingzhi Technology core machines meet varying production requirements including hotbox, coldbox and inorganic. The latest addition to Mingzhi's line up of core shooters include the MAs series and MDs series featuring intelligent operation controls known as MiCL. Our core centre solutions can be provided in a traditional layout or the most recent integrated packages known as MiCC (Mingzhi Integrated Core Centres).

Find out more about Mingzhi Technology core equipment: www.mingzhi-tech.eu



基于土耳其市场对铸造产品的需求日益增长，在明志科技土耳其代理 Kor Tek Makine Müh. 公司 Yilmaz Ozkan 先生的竭诚努力下，明志科技莱比锡有限公司与 Erkunt 集团持续合作。Erkunt 是一家专业生产汽车、拖拉机和建筑设备用铸铁零件的公司。

明志科技向 Erkunt 供货的首批三台射砂量为 40L 的 MP40 冷芯盒射芯机，于 2021 年 9 月正式投产，满足其增长的生产需求。同月，Erkunt 又订购了一整套制芯单元，包括两台射砂量分别为 40L 和 100L 的冷芯盒射芯机，以及一套 8 吨/小时混砂系统，已于 2022 年 1 月成功投产。随后，Erkunt 再次订购了一台 MP40 冷芯盒射芯机，也于 2022 年春

投产。

明志科技作为制芯生产及制芯装备技术的先行者，有着近 20 年的经验，拥有 2 个生产基地（德国莱比锡和中国苏州），约 700 名员工，年销售额约 1 亿欧元。明志科技的各系列制芯设备可满足不同的生产需求，包括热芯、冷芯和无机工艺。明志科技最新的 MAs 和 MDs 系列射芯机，配备智能制芯控制系统 MiCL1.0，提供给铸造厂一种全新的 MiCC 集成式智能制芯解决方案。

了解更多关于明志科技制芯装备：www.mingzhi-tech.eu

Key Milestone Achieved: SBTi Validates GF's Science-Based Targets

关键里程碑：GF 公司基于科学的目标获得 SBTi 认证

GF today announced that the Science-Based Target initiative (SBTi) has validated its science-based targets to reduce the company's greenhouse gas (GHG) emissions along its value chain.

By 2026, GF commits to reducing absolute scope 1 and 2 GHG emissions by 30%. The company also commits to reducing by 2030 scope 3 GHG emissions from purchased goods and services, and from the use of sold products by 34.6% per tonne of processed material, both targets measured against 2019 as a base year. These targets are fully aligned with the Paris Agreement to limit global warming to 1.5°C.

"The SBTi validation marks an important milestone in our journey to become a sustainability and innovation leader," said Andreas Müller, CEO of GF. "Working closely with our suppliers and customers, we are leading the way forward in our industry in mitigating the impact of climate change. The focus on the reduction of GHG emissions offers us also attractive business opportunities."

To deliver on its ambitious targets, GF will accelerate key GHG-reduction measures. All three divisions have put in place roadmaps to support both the company's own targets, as well as those of the customers in their sustainability journeys – for example, raising the amount of bio-based or recycled materials used in their products, supporting reduction of CO2e emissions with lightweight components for e-cars and improving the energy efficiency of equipment and machines. In addition, as highlighted in its Sustainability Report 2021, GF continues to increase the use of renewable energy in its facilities. ■

GF 公司宣布，基于科学的目标计划 (SBTi) 已经验证了公司的基于科学的目标，以减少公司价值链上的温室气体 (GHG) 排放。

到 2026 年，GF 公司承诺将在绝对减排范围 1 和 2 的温室气体排放量减少 30%。公司还承诺，到 2030 年，在减排范围 3，从产品和服务的采购，已销售产品的使用，每吨加工材料将减少 34.6% 的温室气体排放，这两个

目标都是以 2019 年为基准年。这些目标完全符合《巴黎协定》中将全球温度上升幅度限制在 1.5°C 以内的目标。

GF 公司首席执行官 Andreas Müller 表示：“SBTi 认证标志着我们成为可持续发展和创新领导者过程中的一个重要里程碑。我们与供应商和客户紧密合作，在减缓气候变化的影响方面走在行业的前列。对减少温室气体排放的关注也为我们提供了诱人的商业机会。”

为了实现其雄心勃勃的目标，GF 公司将加快采取关键的温室气体减排措施。所有三个部分都制定了路线图，以支持公司自身的目标，以及客户在可持续发展过程中的目标——例如，提高产品中生物基或回收材料的使用量，支持用电动汽车的轻量化组件减少二氧化碳排放，提高设备和机器的能源效率。此外，正如《2021 年可持续发展报告》所强调的那样，GF 公司将继续在其工厂增加可再生能源的使用。■



Simpson Technologies Joins Norican Group

Simpson 加入诺瑞肯集团

Norican Group have acquired US-based Simpson Technologies, experts in equipment for the mixing, cooling, handling, reclamation and analysis of sand.

The 110-year-old family business is based in Aurora, Illinois, and has subsidiaries in Germany and India and has a significant footprint in both foundry and chemical process industries. Joining us will expand Simpson's global reach, offer a one-stop shop for joint foundry customers and give chemical process industry customers access to our leading digital technologies through our Monitizer brand.

For Norican Group, the acquisition is a natural extension of our complete foundry offering, strengthening our capabilities in sand preparation, reclamation and laboratory testing.

The Simpson brand will sit alongside Norican's four technology brands: DISA, ItalPresseGauss, StrikoWestofen and Wheelabrator—as well as digital brand Monitizer.

The existing Simpson team remains in place. Simpson's Bruce W. Dienst will take over the leadership of all Norican activities in the North American region as well as continuing as President & CEO of Simpson Technologies.

"I'm delighted to welcome Simpson Technologies into the Norican family. It's a great match for both sides. We were particularly impressed with Simpson's outstanding sand reclamation and energy-efficient continuous sand mixing equipment, which perfectly complements our suite of sustainable foundry technologies. It's reflective of an ethos that values resources and works hard to reduce our industries' impact on the planet." Anders Wilhjelm, Norican CEO.

Bruce W. Dienst, President & CEO of Simpson Technologies says "We are very excited and honored to join the Norican family whose values, strategic vision and technologies fully align with and complement ours. In fact, we've already worked with and respected many of our new colleagues for decades. In North America, we will further integrate Simpson with Norican brands to provide a complete solution that produces castings of the highest quality. With Norican, Simpson will extend our innovative technologies to a global customer base with unequalled local support and technical assistance." ■

诺瑞肯集团收购了美国的 Simpson Technologies 公司。Simpson 是砂处理、砂再生和型砂实验室检测仪器领域的专业企业。

这家有着 110 年历史的家族企业总部位于美国伊利诺伊州的奥罗拉，在德国和印度设有子公司，并在铸造工业和化工工艺领域都有重要的业务分布。加入诺瑞肯集团将扩大 Simpson 公司的全球业务覆盖，有利于为其铸造客户提供一站式服务，并通过诺瑞肯集团的 Monitizer 品牌为化工行业客户提供我们领先的数字技术服务。

对于诺瑞肯集团来说，此次收购是我们整体铸造产品范围的有机延伸，加强了我们在砂处理、砂再生和实验室检测方面的能力。

结合集团旗下的四个行业领先品牌：DISA、ItalPresseGauss、StrikoWestofen 和 Wheelabrator，以及数字化技术品牌 Monitizer 等一系列铸造解决方案。

现有的 Simpson 团队仍将保留。Simpson 的 Bruce W. Dienst 将接管诺瑞肯集团位于北美地区的业务，并继续担任 Simpson Technologies 公司的总裁兼首席执行官。

诺瑞肯集团首席执行官 Anders Wilhjelm 表示：“我十分高兴地欢迎 Simpson Technologies 公司加入诺瑞肯大家庭。这对双方来说都是完美匹配。Simpson 卓越的型砂回收和节能型连续混砂设备给我们留下了特别深刻的印象，这为我们的整体可持续铸造技术提供了完美补充。它代表我们重视资源并努力减少行业对地球影响的精神。”

Simpson Technologies 公司总裁兼首席执行官 Bruce W. Dienst 说道：“我们非常兴奋和荣幸能加入诺瑞肯大家庭，集团的价值观、战略愿景和技术与我们完全一致且完美互补。事实上，我们与现在成为我们新同事的诺瑞肯集团旗下成员开展合作已有几十年，并且对他们满怀尊重。在北美，我们将进一步完成 Simpson 与诺瑞肯品牌的整合，以提供生产最高质量铸件的整体铸造解决方案。通过加入诺瑞肯集团，Simpson 将以无与伦比的本地支持和技术支持将我们的创新技术扩展到全球客户群。” ■

VOLVO Trucks: First in the World to Use Fossil-free Steel in its Trucks

沃尔沃卡车：全球首家应用“非化石钢”材料生产卡车

As the world's first truck manufacturer to do so, Volvo is now introducing fossil-free steel in its trucks. The steel is produced by the Swedish steel company SSAB and the heavy-duty electric Volvo trucks will be the first to include it.

The steel from SSAB is produced using a completely new technology, based on hydrogen. The result is a much lower climate impact than conventionally produced steel. Small scale introduction of the steel in Volvo's heavy electric trucks will begin in the third quarter of 2022.

"We will increase the use of fossil-free materials in all our trucks to make them net-zero not only in operation – but also when it comes to the materials they are built of," says Jessica Sandström, Senior Vice President Product Management, Volvo Trucks.

The first steel produced with hydrogen will be used in the truck's frame rails, the backbone of the truck upon which all other main components are mounted. As the availability of fossil-free steel increases, it will also be introduced in other parts of the truck.

90% of a Volvo truck can be recycled

Today, around 30% of the materials in a new Volvo truck come from recycled materials. And up to 90% of the truck can be recycled at the end of its life.

"We are continuously striving to further minimize our climate footprint. We are also moving towards greater circularity in both our operations and our trucks," says Jessica Sandström.

Volvo Group is collaborating with SSAB on fossil-free steel since 2021. The first machine, a load carrier made of fossil-free steel, was showcased in October 2021. Fossil-free steel will be an important complement to the traditional and recycled steel used in Volvo's trucks.

Volvo Trucks is committed to the Paris agreement and to achieving net-zero greenhouse gas emissions in the value-chain by 2040, at the latest. ■



作为全球首次应用“非化石钢”材料的企业，沃尔沃卡车正使用“非化石钢”制造卡车。“非化石钢”由 SSAB（瑞典钢材制造商）制造，沃尔沃电动重卡将首次使用这种钢材。

SSAB 采用全新技术，运用氢能源制造“非化石钢”。这种钢材对环境的影响远低于传统钢材。2022 年第三季度，此种钢

材将小规模应用于沃尔沃电动重卡车型。

“我们将所有卡车车型中提升使用无化石材料的比重，不仅在运营中实现净零排放，而且对于制造卡车的材料也将如此。”沃尔沃卡车产品管理高级副总裁 Jessica Sandström 表示。

首款氢能源制造的钢材将应用于沃尔沃卡车的车架纵梁——卡车最重要的部件，负责承载卡车主要零部件。随着“非化石钢”的应用领域越来越多，此种钢材在未来会应用于卡车其它部分。

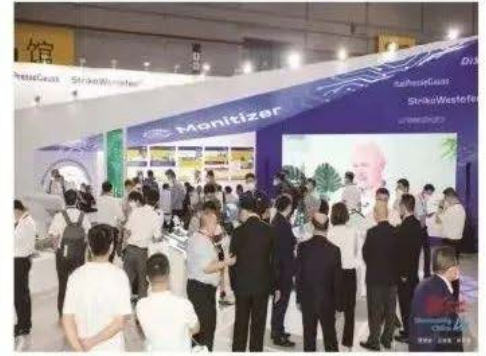
90% 的沃尔沃卡车均可回收利用

如今，新型沃尔沃卡车由大约 30% 的可回收材料制造。高达 90% 的沃尔沃卡车在报废年限后均可回收利用。

“我们正在持续不断地努力，进一步减少我们所产生的气候足迹。同时，在运营与卡车制造方面，我们也正努力使回收利用率更高。” Jessica Sandström 表示。

自 2021 年起，沃尔沃集团就一直与 SSAB 合作开发“非化石钢”材料，首款产品是一辆由“非化石钢”制造的运货汽车，于 2021 年 10 月首次发布。“非化石钢”将是沃尔沃卡车生产所使用的传统和再生钢材的重要补充。

沃尔沃卡车将致力于践行《巴黎协议》，最迟在 2040 年，其价值链将达到温室气体净零排放。■



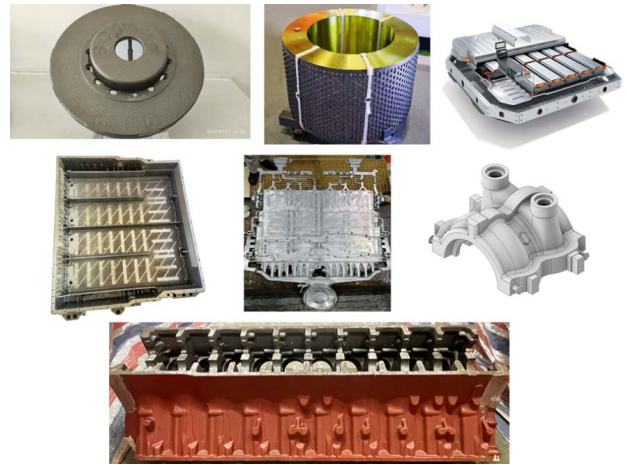
METAL CHINA 2022 Concludes and Exceeds Expectation

METAL CHINA 2022 圆满落幕，超越预期

From September 19 to 21, the 20th China International Foundry Expo (Metal China) and the 16th International Nonferrous and Special Casting Exhibition, hosted by China Foundry Association, is held successfully at National Exhibition and Convention Center(Shanghai), covering 55,000sqm space area with 750 professional exhibitors. Many leading foundry experts brought their top ranking equipment and products to Metal China and released their newest technologies and innovations. The 3-day exhibition, although held during the pandemic and comply with health restrictions, attracts 51,875 onsite visitors along with 808,132 online visitors. Metal China is one of the most professional and international foundry show in year of 2022.

As a wind vane leading the development of foundry industry, Metal China 2022, by capturing the upstream frontier technology, predicting the trend of market demands, and controlling the development trend of foundry industry, builds an international exhibition exchange and cooperation

9月19-21日，由中国铸造协会主办的第二十二届中国国际铸造博览会、第十六届中国国际压铸工业展览会暨第十六届国际有色及特种铸造展览会在国家会展中心（上海）成功举办，55000平米的展出面积中，750家优质展商携最新系列产品以及创新成果登台展示，参展商、观众热情高涨。虽然根据防疫要求控制现场流量，但观展人数仍络绎不绝，短短三天展期，线下观展人次达51875，专业观众质量较往年再度提升，安全、高效的防疫措施，确保了全体人员的健康和各项交易的有序进行；作为线下展会的有效补充，包括网上展厅、自媒体直播、视频号等多种形式的线上展示与互动，共吸引观众



platform for the accurate transmission of information and effective docking of demands for the upstream and downstream of the industrial chain in the strategic opportunity period when China is moving from a "foundry power" to a "foundry great power". The exhibition also opens a new stage in the changing situation, showing the achievements of continuous innovation and development of China Foundry Industry.

Green, low-carbon, smart industrial reform

Currently China's foundry industry is developing rapidly to the direction of innovation, intelligence and environmental friendliness. There is a large demand for automotive lightweight, integrated die casting and 3D printing, which make foundry and casting revived. Focusing on hot topics and common difficulties in the industry, the special featured exhibition areas shine brightly in the exhibition and attract public attention:

"Die Casting Intelligent Low-Carbon Experience Zone" provides a reference model and communication platform for the small and medium-sized die casting enterprises to transform digital, intelligent, green and low-carbon manufacturing plants. In the "large-scale integrated die casting exhibition area", batches of enterprises that have obtained products and technology application in the large-scale integrated die casting molding process appeared, leading the industry into the era of large-scale die casting. China Casting high-end brand exhibition area gathered the industry's top 100 enterprises, new products, new technology, new achievements and new solutions gushed out. The low-pressure and extrusion casting exhibition area focuses on technical exchange and explains the development status and trend of the emerging die casting industry. Moreover, the exhibition area of foundry culture bearing a thousand years of history and inheriting ancient technology opens a new pattern for traditional industries.

High precision casting helps to build "The Pillars of a Great Power"

Regional exhibition groups and characteristic industrial clusters record the shining footprint of

达 808132 人次，成为 2022 年内全球成功举办的国际铸造大展。

作为引领行业发展的风向标，本届展会通过捕捉上游前沿技术、预测市场需求走向，把控行业发展趋势，在中国由“铸造大国”向“铸造强国”迈进的战略机遇期，为产业链上下游搭建起信息精准传递与诉求有效对接的国际会展交流合作平台，变局中开新局，展示出中国铸造不断创新发展的成绩。

绿色、低碳、智能新变革

当前，中国铸造业正朝着创新、智能、绿色方向快速前进，汽车轻量化需求大、一体化压铸、3D 打印让铸造焕发青春……围绕行业领域热点话题和共性难点“多点开花”的特色展区在展会上大放异彩、备受瞩目：

“压铸智能低碳体验区”为广大中小压铸企业进行数字化、智能、绿色低碳制造工厂改造提供可参考模式和交流平台；大型一体化压铸展示区内，一批批在大型一体化压铸成型工艺方面取得产品及技术应用的企业集中亮相，带领行业迈入大压铸时代；中国铸造高端品牌展示区集结行业百强企业，新产品、新技术、新成果、新方案井喷式涌现；低压、挤压铸造展区聚焦主题技术交流，诠释方兴未艾的压铸业发展现状与趋势；更有承载千年历史、传承古技的铸造文化展区为传统行业打开着崭新的格局……

高精尖铸件助力“大国重器”

地方展团及特色产业集群记录转型升级闪亮足迹

新产品、新设备、新技术尽展高质发展

transformation and upgrading

New products, new equipment and new technologies demonstrates high-quality development

Active business connection, constant intention to make a deal

Dazzling concurrent activities open the new future of the industry

During the three days, there were nearly 100 activities held, including the high-profile debut of 12000T super-large intelligent die casting unit, five series of awards for castings, diecastings, green materials and innovation equipment, the launch ceremony of the eighth National Casting Industry Vocational Skills Competition, and theme forums, academic salons and Award for the Most Attractive Exhibitors, focusing on the hot spots in the industry. sharing new information, carrying on in-depth interpretation of the industry, gaining insights into the development trend.

After onsite review and group discussion by the experts team, there are a total of 59 "Gold Medal Casting", 6 "Gold Medal Die Casting", 10 "Gold Medal of Art Casting", 19 (sets) "Innovation Award of Foundry Equipment", and another 29 enterprises' products won the "National Golden Tripod Award of Casting Materials".

During the three-day exhibition, business opportunities are interacting here, ideas are collided here, information is exchanged here, and emotions are integrated here. On the way to promote the development and advance of foundry industry, the shining mark of the endless struggle of Chinese foundry-men has been recorded, and the industry colleagues present have achieved substantial gains: Some are excited to find the desired product, some are happy to find the "bosom friend", and some are happy to be enlightened and develop new ideas...).



商贸对接活跃, 意向成交不断

丰富同期活动, 耀眼开启行业新未来

身处百年变局和全球疫情交织叠加的特殊节点, 如何在逆境中化危机为机遇? 三天里, 备受瞩目的12000T超大型智能压铸单元重磅首发, 星光耀眼的“优质铸件金奖”等五项系列评选颁奖, 红旗招展的第八届全国铸造行业职业技能竞赛启动仪式以及轮番登场的主题论坛、学术沙龙和独具特色的展商评选活动, 聚焦行业热点, 分享全新资讯、深度解读行业, 洞悉发展趋势。

在专家组成员经过资料评审和紧锣密鼓地现场查看和全面、充分的讨论评议后, 共有59件参评铸件获得“优质铸件金奖”、6件参评压铸件获得“优质压铸件金奖”、10件参评艺术铸品获得“艺术铸品金奖”、19台(套)参评铸造装备获得“铸造装备创新奖”、29家企业的产品获得“全国铸造材料金鼎奖”。

为期三天的展会, 商机在这里交织、思想在这里碰撞、信息在这里交流、情感在这里互融, 推动行业发展和前进的道路上又留下了中国铸造人顽强拼搏的闪光印记, 到场的业界同仁都取得了实质性收获: 有的为找到心仪的产品而兴奋、有的为觅得“知音”而欣喜、更有的为启迪发展新思路而愉悦……



2023 铸博会乘势起航 招展全面启动

Metal China 2023 is fully launched!

Aiming at keeping as the industry leader, full of innovation, development and service, the 21st China International Foundry Expo will be held on May 8-11, 2023 in the National Convention and Exhibition Center (Tianjin), a super large national exhibition hall located in Northern China.

With the goal of high-quality development and the guidance of meeting the development needs of the industry, Metal China has evaluated

the situation and returned to Northern China after four years. With Tianjin, an important gateway and advanced manufacturing research and development base in Northern China as the platform, the fair will radiate to the whole areas of China and create a grand event of the foundry industry with "smooth double circulation, enabling new development and achieving new growth".

With an exhibition area of nearly 100,000 square meters and more than 100 wonderful industry activities, the exhibition will attract more than 1,000 well-known exhibitors and hundreds of thousands of professional visitors from more than 30 countries and regions to participate online and offline. It will once again become an important platform to promote the transformation and upgrading of the foundry industry and take the high-quality development road.

Exhibits Profile:

The exhibition focuses on high-quality castings, casting equipment, casting materials, automation supporting and surrounding equipment, environmental protection equipment, etc. The exhibits also include the upstream and downstream industries such as machine tools, auto parts, construction machinery, agricultural machinery, general machinery, internal combustion engine, rail transit, petroleum and petrochemical industries.

For more information about the exhibition or inquire to exhibit, please visit: www.expochina.cn ■



秉承行业引领、创新发展、服务行业的宗旨，第二十一届中国国际铸造博览会将于2023年5月8-11日在商务部布局北方的超大型国家级展馆——国家会展中心（天津）盛大举办。

以高质量发展为目标，以满足行业发展需求为导向，铸博会审时度势，时隔4年重回北方，以北方重要门户、先进制造研发基地——天津为支点，辐射全中国，打造一个“畅通双循环、赋能新发展、实现新增长”的铸造行业盛会。

本届展会展览面积近10万平米，配套百余场精彩行业活动，将吸引来自30多个国家和地区的1000多家知名展商和数十万人次专业观众通过线上线下方式参与，将再次成为推动铸造行业转型升级、走高质量发展道路的重要平台。

展品范围:

集中展示铸造行业的优质铸件、铸造设备、铸造材料、自动化配套及周边设备、环保设备等，内容同时辐射机床、汽车零部件、工程机械、农机、通用机械、内燃机、轨道交通、石油石化等上下游行业。

更多展会信息或参展报名，请登录网站：www.expochina.cn ■

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XIANGYANG JULI HIGH TECHNOLOGY MATERIAL CO.,LTD.

www.julirefractory.com ; www.xyjllc.com +86-158 7223 3146 xiangyangjuli@xyjllc.com

JULI is a leading professional manufacturer in Furnace lining and Foundry coating materials, nearly 50 year's experience . Building long term business relationships with foundry leaders (IMPRO,FAW,WECAS,HENGLI,YUCHAI etc.) And also exporting nearly 30 countries globally

focus on JULI technical innovations
striving for the castings excellence

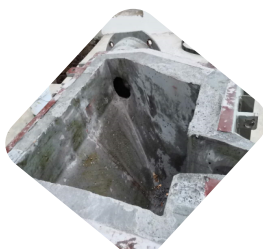
JULI New Products Launch :
Special water base coating for
Complex Turbo & Complex Cylinder Castings

好涂料, 聚力造, 凝心聚力, 铸造精品

Our main business scope:



Furnace lining



Ladle lining



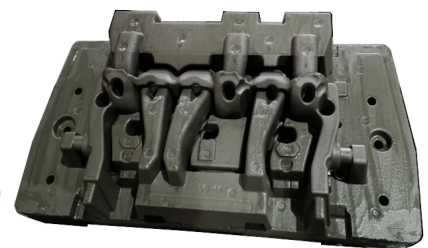
Water Based Coating



Alcohol Based Coating



EPC Coating



Inductotherm Multi-Pour™ Systems

应达多头浇注系统



Our patented MULTI-POUR™ Automated Pouring Equipment and Technology truly allows you to keep pace with the fastest molding machines for accuracy, repeatability and reliability.

Foundries that require the fastest Automated Pouring System on the market today choose MULTI-POUR™ Technology to handle molding machines that transfer two molds simultaneously. MULTI-POUR™ Automated Pouring Systems feature our advanced VISIPOUR® P³® (Predictive Pour Performance) Control Technology and utilize two or more adjustable vision-based cameras and two or more adjustable stopper rod systems to effectively pour each mold line from the same vessel or from separate vessels, depending on your application. This recent breakthrough delivers the most precise pouring control with the fastest production rates. Available for either series or parallel pouring, these systems are the most advanced in the field. ■

应达集团拥有专利权的多头浇注™自动浇注设备和技术，真正使您获得高效的造型生产线成为可能，它同时具有高准确性，可重复性和高可靠性。

在当前的市场背景下，铸造企业需要高效的自动浇注系统。选择多头浇注™技术可以满足同步浇注造型线上的两个铸型的需要。多头浇注™自动浇注系统所特有的先进的VISIPOUR® P³®（预测浇注性能）控制技术，利用两个或两个以上可调节的视觉摄像机和两个或多个可调塞

杆系统，根据客户的需求可以从同一浇包或不同的浇包，有效地浇注造型线上的每个铸型。这一最新的技术突破实现了最精确的浇注控制和最快的生产速率。可用于连续的串联浇注或并联浇注，因而其成为行业中最先进的浇注系统。■



Magma Software Optimises Metal Casting, Injection Moulding

迈格码软件优化金属铸造，注塑成型

Using simulation tools, MAGMA optimises customers' processes to help reduce their energy consumption and waste, and also provides implementation training

Gone are the days when foundries, die casters, plastic and rubber manufacturers were compelled to use trial-and-error methods in metal casting and injection moulding, which often lead to higher defect rates. MAGMA helps clients implement robust processes through MAGMASOFT and SIGMASOFT, its market-leading simulation software for the metal casting and injection moulding industries.

While MAGMA in Singapore began in 1996 and serves as headquarters for Asia today, the company's roots go back to its global headquarters in Germany in 1988. From there, MAGMA's customer-centrism, dedication to innovation and unrivalled expertise propelled its expansion. MAGMA now serves customers in more than 60 countries through 30 qualified partners, along with offices and subsidiaries in the United States, Brazil, China, South Korea, India, Türkiye and the Czech Republic.

"Metal casting has been around for thousands of years. We simulate the entire process on a computer to support a sustainable journey for the industries," says Jan Eilers, general manager of MAGMA Engineering Asia-Pacific. "When our customers want to produce a metal or plastic part, they want to produce something of good quality as efficiently possible, and reduce material wastage and energy consumption. As an integral part of Industry 4.0, we help digitise and optimise our customers' processes as all trial runs are done virtually, customers generate big data and waste no resources."

The software have aided a wide array of clientele through comprehensive 3D simulations and virtual design of experiments. The company also provides implementation, training programmes along with continuous technical support and maintenance services to licensed users.

SIGMASOFT simulates the injection moulding process, considering factors such as warpage, heat flux and flow including all details of the process, to help clients create well-founded design choices.

MAGMA is continuing its path as a solution provider to shape the metal casting and injection moulding industries globally, envisioning Asean, especially Thailand and Vietnam, as a prime market for substantial growth.

www.magmasoft.com.sg
www.sigmasoft.com.sg" ■

MAGMASOFT 可以帮助用户优化工艺，减少能源的消耗和浪费。MAGMA 并提供软件应用培训。

铸造厂、模具厂、塑料和橡胶制造商被迫在金属铸造和注塑成型中通过试错的方法验证工艺的日子已经一去不复返了。试错法往往会导致更高的不良率。迈格码公司通过铸造行业领先软件 MAGMASOFT 和注塑行业先进 SIGMASOFT 帮助客户实现稳健的工艺。

迈格码成立于 1988 年，位于德国。其后在 1996 年成立新加坡分公司，并作为亚洲分公司的中心。从那时起，迈格码以客户为中心、致力于创新，和专业知识的推动了企业的扩张。迈格码公司目前通过 30 多个合格的合作伙伴为 60 多个国家的客户提供服务，并在美国、巴西、中国、韩国、印度、土耳其和捷克设有办事处或子公司。

"金属铸造已经存续了几千年。我们在计算机上模拟整个工艺，以支持铸造行业的可持续发展。" 迈格码亚太区总经理 Jan. Eilers 说，"当我们的客户想要生产金属或塑料部件时，他们想要尽可能有效地生产出高质量的产品，并减少材料浪费和能源消耗。作为行业 4.0 中不可分割的一部分，我们通过数字化帮助客户优化工艺，因为所有的试运行都是虚拟完成的，客户通过大数据模拟生产，不浪费资源。"

软件能够通过全面的 3D 模拟和虚拟实验设计，帮助广大的客户。公司还向许可用户提供软件应用方案、培训计划，以及持续的技术支持和维护服务。

SIGMASOFT 软件模拟注塑成型工艺，考虑工艺的所有细节，诸如弯曲、热流和流量等因素，帮助客户创造有充分根据的设计选择。

迈格码公司正在继续以解决方案供应商的角度，塑造全球金属铸造和注塑行业，展望东盟，特别是泰国和越南，成为大幅增长的主要市场。■

Full Casting Traceability: The Missing Link For Foundry Scrap Reduction Is Here

完整的铸件可追溯性：找到减少废品的缺失环节



DISA has released Trace and Guidance (TAG), an innovative casting-level tracking system. It creates the missing link between process and quality data, allowing green sand foundries to achieve full casting traceability.

For the first time, foundries can trace every single casting they produce instead of relying on less accurate batch data. With DISA TAG, they can create an individual-casting-level view of their whole process.

“Finding the root cause of scrap can be extremely difficult, making it hard to reduce quality-related costs,” said Per Larsen, Innovation Manager at DISA. “DISA TAG adds a unique ID to each casting which operators simply scan to link the casting to a specific defect cause or to look up the process parameters used to make it. DISA TAG promises to be a game changer, helping to reduce quality costs to previously unseen levels.”

Harness the full power of process data

The DISA TAG system works in three steps. First, foundries install marking units in their pattern plates to give each casting a unique TAG ID. After casting sorting, a hand scanner is used to read the codes of scrapped castings and link them to specific defect types. That quality data is automatically stored in the TAG database.

In the final step, each casting’s unique code and specific defect are linked to that casting’s process data. Engineers can then correlate specific defects with the

DISA TAG 迪砂的铸件跟踪和指导，这是一种创新的铸件跟踪系统。它在工艺和质量数据之间建立了之前缺失的环节，使潮模砂铸造厂能够实现完整的铸件可追溯性。

铸造厂首次能够跟踪他们生产的每一个铸件，而不是依赖于不太准确的批量数据。借助 DISA TAG，他们可以创建整个生产过程的单个铸件级视图。

“找到废品的根本原因非常困难，因此很难降低与质量相关的成本，”迪砂创新经理 Per Larsen 说。“DISA TAG 为每个铸件添加一个唯一的 ID，只需扫描该 ID，即可将铸件与特定的缺陷原因联系起来，或找到该铸件的工艺参数。DISA TAG 有望成为游戏规则的改变者，帮助铸造厂将质量成本降低到前所未有的水平。”

充分利用过程数据的力量

DISA TAG 系统分三步工作。首先，铸造厂在型板中安装标记单元，为每个铸件提供唯一的代码。手动扫描仪用于读取报废铸件的代码，并将其链接到特定的缺陷类型。该质量数据自动存储在 TAG 数据库中。

在最后一步中，铸件的唯一代码和特定缺陷与铸件的工艺数据相关联。然后，工程师可以将特定检测与过程数

process data to find hidden insights and the root causes of defects.

DISA TAG is also a perfect match for automated analytics that leverage Artificial Intelligence (AI). The casting-level data helps the AI self-learn much more quickly, improves optimisation accuracy and so maximises scrap reduction. It's an essential part of the journey to zero defect manufacturing and a more sustainable future.

“Granular, casting-level data makes it much easier to decide exactly which combination of process parameters created a bad casting,” explained Per. “DISA TAG helps to solve complex quality problems, reveals hidden insights and enhances AI-driven process quality optimisation.”

A step change in traceability and accuracy

DISA TAG cuts wasted material, energy and time in more than one way. For example, operators can classify a set of castings as “bad”, use hand scanners to quickly identify them after shot blasting –ensuring that good castings aren’t scrapped and re-melted too.

If a customer enquires about an issue with a casting months later, the foundry can simply sc

“For foundries that collect and analyse data on their process – or are planning to – DISA TAG takes them to the next level of traceability and accuracy,” said Per. “It helps guide them to the correct actions that improve quality, reduce reworking and scrap, cut costs and increase sustainability.” ■

据相关联，以找到隐藏的见解和缺陷的根本原因。

DISA TAG 也是利用人工智能 (AI) 的自动化分析的完美匹配。铸件级别数据有助于 AI 更快地自学，提高优化精度，从而最大限度地减少废品。这是实现零缺陷制造和更可持续的未来之旅的重要组成部分。

“细化到铸件级别的数据可以确定是哪些工艺流程组合最终造成了铸造不良，” Per 解释说。“DISA TAG 有助于解决复杂的质量问题，揭示隐藏的信息，同时加强 AI 人工智能驱动的流程质量优化。

可追溯性和准确性的阶跃变化

DISA TAG 以多种方式减少材料、能源和时间的浪费。例如，操作员可以将一组铸件分类为“坏”，使用手持扫描仪在抛丸清理后快速识别它们，确保合格铸件也不会报废和重新熔化。

如果客户在几个月后询问铸件的相关情况，铸造厂只需扫描铸件的代码即可找到其工艺数据并进行跟踪调查。

Per 说：“对于收集和分析其工艺数据或计划收集和分析其工艺数据的铸造厂而言，DISA TAG 可以将铸造厂的可追溯性和准确性提升一个水平。它将有助于指导铸造厂采取正确的行动，提高质量，减少返工和废品，降低成本并提高可持续性。” ■

Ceramic Foundry Sand Expert and manufacturer in China



- ◆ Little thermal expansion
- ◆ High refractoriness (1800° C)
- ◆ Excellent renewable rate(>98%)
- ◆ Stable grain size distribution and air permeability
- ◆ High resistance to wear, crush and thermal shock
- ◆ Reduce Resin & Hardener percentage by 40% lower cost
- ◆ Excellent fluidity and filling efficiency owing to ball shape

Chemical composition

Composition	Al ₂ O ₃	SiO ₂	Fe ₂ O ₃	TiO ₂	Others
%	≥55	≤38	<3	<2.5	<1.5

Physical properties

PH	Bulk density g/cm ³	True density g/cm ³	Fire resistance °C	Coefficient of thermal expansion (1200°C)	Acid consumption value ml	LOI %
7-8	1.4 ~1.6	2.7~2.8	≥1800	4.5-6.5 ×10 ⁻⁶ /k	<2	<0.1

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ON HOW ARTIFICIAL INTELLIGENCE (AI) CAN SUPPORT THE FOUNDRY INDUSTRY

关于人工智能如何助力铸造行业发展

Present meets Future: a conversation with Johannes Messer and Jürgen Schmiezek

当现在遇见未来：与约翰内斯·梅塞尔和于尔根·施密兹克的对话

Thomas Fritsch, Chief Editor

托马斯·弗里奇 主编

Casting of aluminium components is one of the most important production processes, both technologically and economically, in lightweight automotive engineering – true now, and in the future, too. The percentage of aluminium castings found in a modern car has increased continuously during the past 50 years.

After years of unceasing growth, production figures fell, for the first time in 50 years (with the exception of 1994/95 and 2008/09), as from the 4th quarter of 2018. Since then, a large number of occurrences (CO2 discussions/transformation in the automotive industry, Corona, war in Ukraine, etc.) have resulted in the failure of any sustained reversal of this trend. On a long-term view, it can be assumed that the competition for potential growth will be decided even more critically on price and on the criterion of sustainability, particularly in lightweight automotive engineering (e.g. structural components).

What strategies should the industry therefore pursue, in view of this difficult starting point? An industry-specific technology based on the use of Artificial Intelligence (AI) has recently proven to be particularly promising: highly specialised AI software can support foundries in surviving against competition. Software supplier TVARIT is the innovation leader in this segment: this technology company has launched an AI software package which has been developed specifically for foundries and is already in successful use.

Thomas Fritsch (Managing Director, Foundry Planet) spoke to Johannes Messer (Foundry-Industry Consultant) and Jürgen Schmiezek (Chief Growth Officer, TVARIT) on the current situation in the foundry industry and the question of the contribution that Artificial Intelligence can make to the future of this industry.

Foundry industry in the competition of materials and processes

Question: Herr Messer, you posed the thesis recently that future competition in the field of aluminium castings would not centre so much on competition between the aluminium foundries with each other, but those aluminium

铝结构件的压铸生产是汽车轻量化生产流程中的重要组成部分，不论在技术上还是经济效益上都至关重要，这一点在现在和未来都是如此。事实上在过去五十年里，现代汽车中铸铝件的比重一直在持续增长。

在经过多年持续增长后，从2018年第四季度开始，生产数据出现了50年以来的首次下降（1994年、1995年和2008年9月除外）。从那时开始，大量事件的出现导致这一下降趋势变得不可逆转，这些事件包括汽车行业中的二氧化碳排放控制和转化、新冠疫情和乌克兰战争等。从长期角度来看，可以预见到今后行业内，对于潜在增长的竞争将更加关键地取决于价格和可持续性标准化，特别是集中在轻量化汽车工程（例如结构部件）之中。

在这种困难的起点之下，行业政策应该往何处去？一项基于人工智能（AI）的行业特定技术最近被证明了极富发展前景：高度专业化的AI软件可以支持铸造厂在竞争中生存下来。软件供应商TVARIT是该领域的创新领导者。该科技公司已经推出了专为铸造厂开发的AI软件包，并且已经成功投入应用。

托马斯·弗里奇（Foundry Planet 董事总经理）与约翰内斯·梅塞尔（铸造行业顾问）和于尔根·施密兹克（TVARIT 首席增长经理）就铸造行业现状和人工智能技术可以为铸造行业未来做出何种贡献的问题进行了交流。

铸造行业在材料和工艺方面的竞争

提问：梅塞尔先生，您最近提出了一个观点，认为铸铝件领域的未来竞争将不会过多集中在各个铝铸造厂之间，您认为竞争将出现在铝的加工工艺和其他材料以及加工工艺领域上。为什么会这样认为？

约翰内斯·梅塞尔：汽车轻量化工程的趋势将持续

castings would now be in competition with other processes and other materials. Why do you think that?

Johannes Messer: The trend toward lightweight automotive engineering is continuing unabated. Experts actually assume that this trend will become even more intensive, thanks to the transition to e-mobility. Ultimately, vehicle weight is a critical parameter in increasing vehicle range. This is why developers focus on structural vehicle components.

Weight reductions do not necessarily mean that the parts needed will be produced in the form of aluminium castings. Other materials (steel), and also other processes (extrusion, sheet metal processes) also promise benefits. In many cases, the weight of parts produced in such materials or using such processes is only slightly higher. Technological properties are comparable, on the other hand, with the result that costs are the decisive factor.

So, what can Artificial Intelligence (AI) contribute?

Question: Herr Schmielek, the foundry industry is undergoing fundamental changes. And now comes TVARIT, offering a new foundry technology. Do you really think that this is the right time for this?

Jürgen Schmielek: We're not offering a new foundry technology. Instead, we've developed an industry-specific software technology, based on Artificial Intelligence (AI), which registers the up-to-date process parameters on the basis of existing processes and from that supplies totally specific recommendations for optimisation of the process for the particular machine.

So we're not actually changing the process, instead we determine in real time the relevant process parameters and configurations in each case. This includes their interactions and interdependencies with one another, and these have, correspondingly, a production-relevant influence on a specific optimisation criterion, such as product quality, for example. Then we compute for each individual parameter the optimum process setting. This at all times takes place, dynamically updated to the current production and process situation, for each component to be produced. Since the casting process is extremely complex, as a result of the number of influencing parameters (Ishikawa diagram), casting is especially suited to our technology.

This is the right time for our software, because the transformation in the automotive industry, i.e. the transition from the classical internal combustion engine to electrical propulsion systems, has now started. The trend toward lightweight engineering now offers great opportunities for the foundry industry. Our technology will help foundries to close in some cases already existing price deltas to make potential new components the industry benchmark at extremely short notice and, in particular, to achieve very quickly an extremely high process capability, process quality and process stability for new

下去, 有增无减。实际上专家们估计, 由于向电动汽车过渡, 这一变化将更加显著。最终, 车辆重量是增加车辆续航里程的关键参数。这就是开发人员关注车辆结构部件的原因。

减轻重量并不一定意味着所需的零件将以铸铝件的形式生产出来。其他材料(比如钢材)以及其他生产工艺(比如挤压和钣金工艺)也有望为汽车轻量化带来帮助。在许多情况下, 用其他材料和工艺生产出来的部件的重量只是稍重了一点。此外这些技术特性是可以进行比较的, 其实也可以说很多时候成本是决定性因素。

那么, 人工智能可以做出什么贡献呢?

提问: 施密兹克先生, 铸造业正在经历根本性的变化。TVARIT 公司的出现, 代表了一种新的铸造技术的方向。您认为现在是新技术推出的正确时机吗?

于尔根·施密兹克: 我们提供的并不是一种新的铸造技术。相反, 我们开发出来的是一种基于人工智能(AI)的行业专用软件技术, 该技术在现有流程的基础上录入最新的加工参数, 并为特定机器的加工流程优化提供具有针对性的建议。

因此我们实际上并没有改变加工流程, 而是在实时状态下, 随时校准每种不同加工情况下的相关参数和配置。这包括它们之间的相互作用和相互依赖关系, 以及与之对应地, 特定的优化标准(如产品质量)将对生产结果产生相关影响。然后, 我们为每个参数计算最佳过程并进行设置, 对于要生产的每个组件, 这始终会根据当前的生产和加工情况进行动态更新。正因为压铸过程非常复杂, 且由于影响参数的数量众多(石川图), 压铸流程特别适合使用我们的软件技术。

现在正是时候来推出我们的软件, 因为汽车行业的转型, 即从经典内燃机到电力驱动系统的转变, 现在已经开始。这一汽车轻量化的趋势目前为铸造行业带来了巨大的机会。我们的技术将帮助, 或者说正在帮助铸造厂消化掉价格差异, 并使潜在的新部件能够在极短时间内成为行业新基准, 特别是可以为初创期的新企业们快速实现极高的加工能力, 提高加工质量和加工工艺稳定性。

提问: 梅赛尔先生, 这也是您的观点吗?

约翰·梅赛尔: 目前正在进行的行业转型是铸造行业历史上的一个里程碑。这种转型给铸造厂带来的风险是现实且复杂的, 但我认为其带来的机遇也同样巨大。将来, 你将能够通过以下两个因素来甄别出成功的铸造厂和不太

product start-ups.

Question: Is this also your view, Herr Messer?

Jürgen Schmielek: The transformation currently taking place is a milestone in the history of the foundry industry. The risks for foundries caused by this transformation are realistic and complex, but I consider the opportunities arising to be just as great. In future, you will be able to differentiate successful foundries from less successful on the basis of their willingness to implement changes and the speed in which they accomplish this.

Question: Herr Schmielek, you've already briefly mentioned the software technology you've developed. Could you tell us more details about the topic of Artificial Intelligence for foundries?

Jürgen Schmielek: The term "Artificial Intelligence", or "AI" for short, is, unfortunately, very frequently misinterpreted. People get the impression that it takes place without human intelligence or that human intelligence is actually replaced. This, of course, is not the case.

AI is, in general, the ability of a system to interpret external data correctly in the particular context. In the case of camera data, for example, the system must be capable of recognising the difference between a person and a shadow. AI must learn from such data; the fact, for instance, that it's OK to drive over shadows, but not over people! And ultimately, AI must then use these perceptions to achieve, via flexible adaptation, certain targets and certain tasks, such as autonomous safe control of a vehicle, for example.

Applied to a potential foundry project, this means that, related to a desired criterion (e.g. reduction of porosity), for example, the main influencing parameters would firstly be determined in consultation with the foundry engineers. These parameters would then be compared against the parameters already known to us and contained in our technology. These are acquired directly on the machine and the interdependencies among them correlated with the various process data. This takes place with reference to the specified criterion, e.g. positive control of the microstructure of the casting for ultimate product quality.

In order to achieve practically 100 percent production-relevant reality in the accuracy of forecasts of parameter settings, we additionally combine the mathematical AI model, in a process patented by ourselves, with physical simulations (FEM). These computations require gigantic computer capacities, in view of the sheer quantity of potential combinations and correlations. Even with only twenty influencing parameters, this would result in 2.4×10^{18} pairs of combinations. And only using AI technology is it at all possible to evaluate such a large number of influencing parameters - as is found, inter alia, in the case of high-pressure die casting - in terms of mutual dependency and/or correlation. And all this in real time. This is the great difference compared to process optimisation as performed by humans. There, the number of influencing parameters that can be taken simultaneously into account is reduced to one to a maximum of two.

But: As in the case of classical learning, industrial AI also becomes more and more precise, the longer it learns via

成功的铸造厂：他们是否有意愿参与到实施变革中来，以及他们完成变革的速度。

提问：施密兹克先生，您已经简要提到了您开发的软件技术。您能告诉我们有关铸造厂人工智能主题的更详细情况吗？

于尔根·施密兹克：“人工智能”一词，简称AI，经常会被人们误解。通常人们会觉得它发生在没有人类智能的情况下，或者人类智能实际上被人工智能取代了。然而事实显然并非如此。

一般来说，人工智能指的是某一系统在特定情境下正确解读外部数据的能力。例如，对于相机数据而言，系统必须能够识别人和影子之间的差异。人工智能必须从这些数据中学习，例如驾驶时候可以越过阴影，但是不能越过人！最终，人工智能必须利用这些感知，通过灵活适应的方式来实现某些目标和任务，例如车辆的自主安全控制功能。

关于应用人工智能到潜在的铸造项目中，这意味着，比如与期望的标准（例如孔隙率的降低）相关时，主要影响参数将首先通过与铸造工程师协商来确定；然后将这些参数与我们已经知道并包含在我们技术中的参数进行比较。这些可以直接在机器上获取，它们之间的相互依赖关系与各种过程数据相关联。这是参照指定的标准进行的，例如，对铸件的微观结构进行积极干预与控制，以确保最终产品质量。

为了在参数设置预测的准确性方面能够尽可能实现100%与生产现实相符合，我们还将数学AI模型（这是我们自有专利）与物理模拟（FEM）相结合。这些计算需要巨大的计算机容量，因为潜在的组合和相关性的数量存在非常多的可能。即使只有20个影响参数变化，也将导致产生出 2.4×10^{19} 对组合。因此，只有使用人工智能技术，才有可能评估如此大量的影响参数——特别是在高压压铸的案例中——从相互依赖和/或相关性方面上看更是如此。而这一切进程都是实时的。与人工操作的优化流程相比，这是巨大的区别。比如在人工操作情况下，可以同时兼顾的影响参数的数量会减少到只有一个或者最多两个。

但是，与经典学习的情况一样，工业用的人工智能，随着它针对各种不同情况下铸造周期学习的时间变得越长，也变得越来越精确；随之而来的结果是：加工参数和设置建议完美地优化了个性化生产环境，而且我觉得特别值得一提的是这引出了一种扩展和“赋能”了铸造从业者

the in every case differing casting cycles. The result: Process parameters and recommendations for settings optimised virtually perfectly to the individual production environment. And – something which I find especially important to mention – a technology that expands and "empowers" the caster. This combination will be the key to success in the future.

Question: Herr Schmiezek, you mentioned improvement of quality as a typical example of the use of AI in foundries. Many foundries have already achieved an extremely good quality status, however. Is improvement of quality really a significant factor for the required cost benchmark?

Jürgen Schmiezek: In this respect, improvement of quality is only one approach among many. In our experience, foundries very frequently have potentials for cutting the reject rate, and thus achieving lower wastage of energy and resources. Also important are improvements of overall equipment efficiency (OEE) and the reduction of per casting energy consumption. In principle, all complex processes can be improved with the help of Artificial Intelligence. The question of which processes and which criteria are to be improved are something that each foundry must decide for itself. But we, of course, support and advise our foundries in advance for this purpose.

Johannes Messer: Yes, that's quite true! Top priority is improvement of product results (costs per component) and corporate results (EBITDA). Both are, of course, directly associated with and dependent on each other. The essential operational financial-performance indicator in foundries is OEE. Here, foundries predominantly have a poorer ranking than other industries.

In addition to cost optimisation – energy costs can be approx. 4 to 5 percent in foundries' income statements – reduction of energy consumption also has the additional incentive of CO2 reduction. CO2-neutrality is now an award criterion for many contracts and thus a "must have", particularly in the automotive industry.

Knowledge Drain and shortage of skilled workers, how can AI help?

Question: Herr Messer, a few weeks ago, you published a survey, performed by yourself, of thirty top managers from the foundry industry network. The result was that the managers stated the subjects of energy, improvement of financial performance, transformation in the automotive industry and loss of know-how as the essential challenges to the foundry industry. How do you view the topic of loss of know-how?

Johannes Messer: Loss of know-how, along with the scarcity of skilled personnel, is one of the great challenges. To actively tackle this subject, we must make the foundry industry interesting for young people again. The use of modern technologies, such as simulations, Foundry 4.0, AI, etc., will certainly not be a universal cure-all. I am convinced, however, that the use of these technologies will make a contribution. In total, the foundry industry as a whole must again take on a

的技术。这种组合将是未来成功的关键。

提问：施密兹克先生，您提到质量的提升是铸造厂使用 AI 的典型例子。然而目前许多铸造厂已经达到了非常好的质量水平，那么质量的提高真的是所需成本基准的重要因素吗？

于尔根·施密兹克：在这方面，提升质量只是众多方法中的一种。根据我们的经验，铸造厂经常可以通过降低废品率，从而减少能源和资源的浪费。同样重要的是，提高整体设备效率 (OEE) 和降低每个铸件的能耗。原则上，所有复杂的过程都可以在人工智能的帮助下得到改进。哪些加工工艺和哪些标准需要改进，这是每个铸造厂必须自己决定的问题。我们当然也会以此为目的，提前我们的铸造厂提出建议和支持。

约翰内斯·梅塞尔：是的，的确如此！当务之急是改善产品业绩(每家公司的成本)和企业业绩(EBITDA)。当然，两者是直接关联和相互依赖的。铸造厂的基本运营财务绩效指标是 OEE (提高整体设备效率)。在这方面，铸造厂的排名低于其他工业行业。

除了成本优化(能源成本在铸造厂的损益表中约为 4% 到 5%) 之外，降低能耗还可以有助于减少二氧化碳排放。二氧化碳中和是现在很多合同的硬性标准，因此是“必须的”，特别是在汽车行业。

知识流失和技术工人短缺，人工智能如何提供帮助？

提问：梅塞尔先生，几周前，您发表了一项由您自己进行的调查，调查对象是铸造行业领域的三十位高层管理人员。结论是，经理们将能源、财务业绩改善、汽车行业转型和专有技术流失等主题列为铸造行业面临的基本挑战。您如何看待专有技术流失的话题？

约翰内斯·梅塞尔：专业知识的流失，以及技术人员的稀缺，是我们行业面临的重大挑战之一。几年前，我们注意到学徒和实习生人数有所下降。现在我们也注意到了这一趋势，令人遗憾的是在学生方面依然下降明显。此外，许多铸造厂中的专有技术承载者正在不断老去。

为了积极解决这一问题，我们必须让铸造行业再次引起年轻人的兴趣。使用现代技术如模拟仿真、铸造 4.0、人工智能等，肯定不会是万能的灵丹妙药。然而我相信，使用这些技术将对改善人才流失有所帮助。总体而言，整个铸造行业必须再次呈现出积极的形象来。这在我看来是铸造厂经营者们的共同责任。

positive image. This is, in my opinion, the responsibility of the foundry managers.

Jürgen Schmiezek: I can only underline what Herr Messer says. The attractiveness of the image of the "caster" profession can be boosted very significantly by consistent orientation around digitally assisted and expanded production. This will include, for instance, integrated AI, "digital twins" (i.e. the digital display of production) and smart "cobots" (collaborative robots designed for direct interaction and collaboration with humans).

Industrial AI is highly capable of solving the serious challenges of "loss of know-how" effectively and, in particular, within a relatively short period of time. Valuable process and foundry knowledge can not only be effectively stored in such a technology, it can, instead, be successively expanded. Such "preserved and expanded" knowledge can then, for its part, be applied to every individual machine and thus made scalable. Not only the foundry occupation will thus be further developed, AI technology can also effectively "digitally qualify and expand" less well-trained employees.

Question: Herr Messer, Herr Schmiezek, is AI the future of the foundry industry?

Johannes Messer: AI can and will help foundries to be more successful in the long-term, and also in the short-term. The barriers to rapid and successful implementation can be found, in my opinion, less in AI technology and more in implementation within the foundries. The provision of the necessary process data and the required personnel resources will necessitate a certain input, and the foundries must be aware of that.

I personally am convinced that only those foundries will be successful that establish in their strategy and promptly and consistently implement continuous improvement programs, technology optimisation and AI as the short-term and long-term indicators.

Jürgen Schmiezek: As far as short-term success is concerned, I am more optimistic, on the basis of our experience gained from previous projects in the foundry industry. With our AI technology developed specifically for the foundry industry, we can guarantee significant savings on, for example, rejection rates and energy of more than 20 percent within three months, and thus return on investment (ROI) within less than six months.

I do, however, share Herr Messer's assessment that the provision of the necessary process parameters is challenging, in some cases. We have recognised this and have been able to co-opt experienced partners, with whom we cooperate on our projects, for this purpose. So we are able to offer foundries an extremely far-reaching service. The necessary foundry know-how must, however, come from the foundries. Here, we are not the experts.

Our experience from the more than fifty projects with foundries up to now have, in total, and referred to these topics, been extremely good, despite the in some cases extremely challenging heterogeneity of the "brownfield". The results achieved were, with respect to the minimum promised savings and the necessary project duration, better in all cases than had been agreed. ■

于尔根·施密泽克 我要强调梅赛尔先生所说的话，“铸造师”职业形象的吸引力，可以通过围绕数字辅助和扩展生产的一致定位得到非常显著的提升。这其中将包括集成人工智能、“数字孪生”（即生产的数字显示）和智能“协作机器人”（专为与人类直接互动和协作而设计的协作机器人）。

工业人工智能有能力做到十分有效地解决“专有关键技术流失”的严重挑战，特别是在相对较短的时间内。宝贵的工艺和铸造知识不仅可以有效地存储在这种技术中，而且可以连续扩展。然后，这种“保存和发展”的知识可以应用于每台机器，从而具有可扩展性。因此，不仅铸造行业将得到进一步发展，人工智能技术还可以有效地“数字化资格认证和扩展”那些需要进一步加强培训的员工。

提问：梅赛尔先生、施密泽克先生，人工智能是铸造行业的未来吗？

约翰内斯·梅赛尔先生：人工智能可以而且将帮助铸造厂在长期和短期内更加成功。在我看来，达到快速成功的障碍可以在人工智能技术中达到有效避免，而在铸造厂内部实施中可以更好发现这些阻碍成功的因素。提供必要的过程数据和所需的人力资源将需要一定的投入，铸造厂必须意识到这一点。

我个人相信，只有那些在战略中建立并迅速、持续地实施持续改造计划、技术优化和人工智能作为短期和长期指标的铸造厂才能取得成功。

于尔根·施密泽克：就短期成功而言，我更加乐观，基于我们从以前的行业项目中获得的经验。凭借我们专为铸造行业开发的人工智能技术，我们可以保证在三个月内节省大量废品率和超过 20% 的能源，从而在不到六个月的时间内获得投资回报（ROI）。

然而，我的确同意梅赛尔先生的评估，即在某些情况下，提供必要的加工参数具有挑战性。我们已经认识到这一点，并能够为此目的选择经验丰富的合作伙伴，在我们的项目中与他们合作。因此，我们能够为铸造厂提供极其深入全面的服务。然而，必要的铸造专有技术必须来自铸造厂。在这方面我们不是专家。

迄今为止，我们在五十多个铸造厂的相关项目中积攒了不少非常有益的经验，这之中也包括了非常多富有挑战性的开拓性新项目。我们所实施的这些项目，不论是从实现承诺的最低结余，还是从达到必要的项目期限而言，整体上都达到并超出了预期效果。■



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