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挤塑 EXTRUSION

ASIA EDITION

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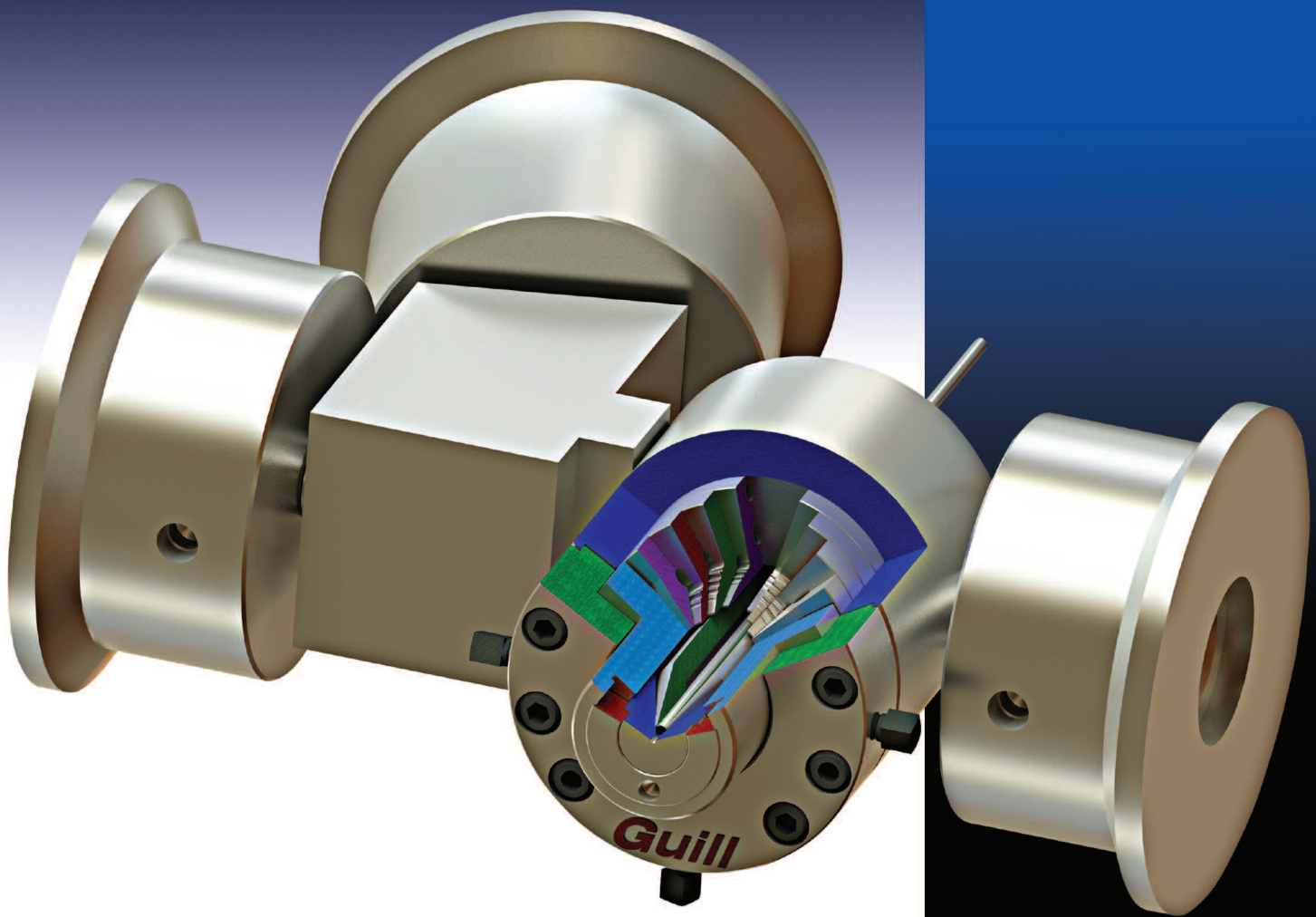

Guill
EXTRUSION TOOLING

3-layer Medical Tube Die

VM VERLAG GmbH
ЭКСТРУЗИЯ
ПЛАСТИКС

Organized by
Extrusion magazine
Plastiks magazine
interplastica show

January 25, 2021
Starting at 10.00
Official language
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• 1st International Conference •

Laboratory+ R&D in polymer processing

Conference key topics:

- Implementation of R&D process in the manufacturing company
- Modern laboratory, analytic and measuring equipment
- Pilot and testing lines
- Desktop mini IMMs and mini extruders
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- Plastics processing modeling and simulation software
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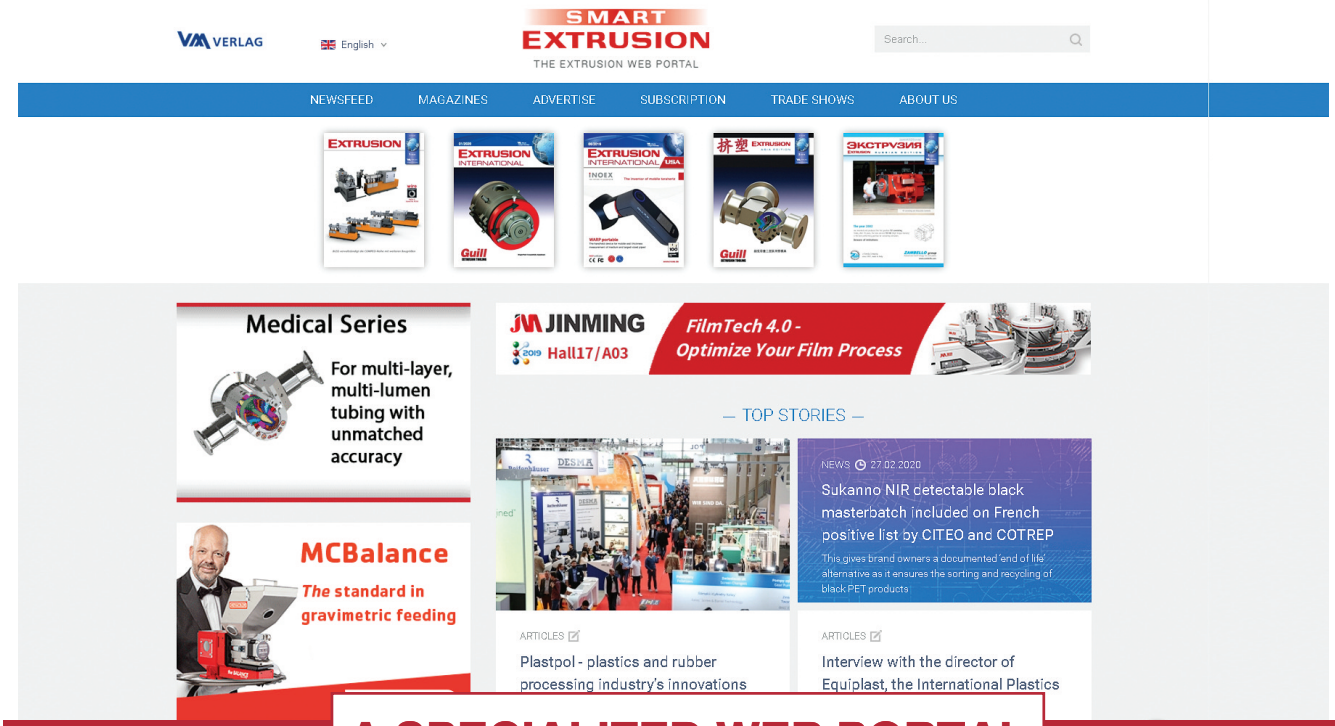
Learn more:

SMART EXTRUSION

The only website collecting information about smart technologies of extrusion



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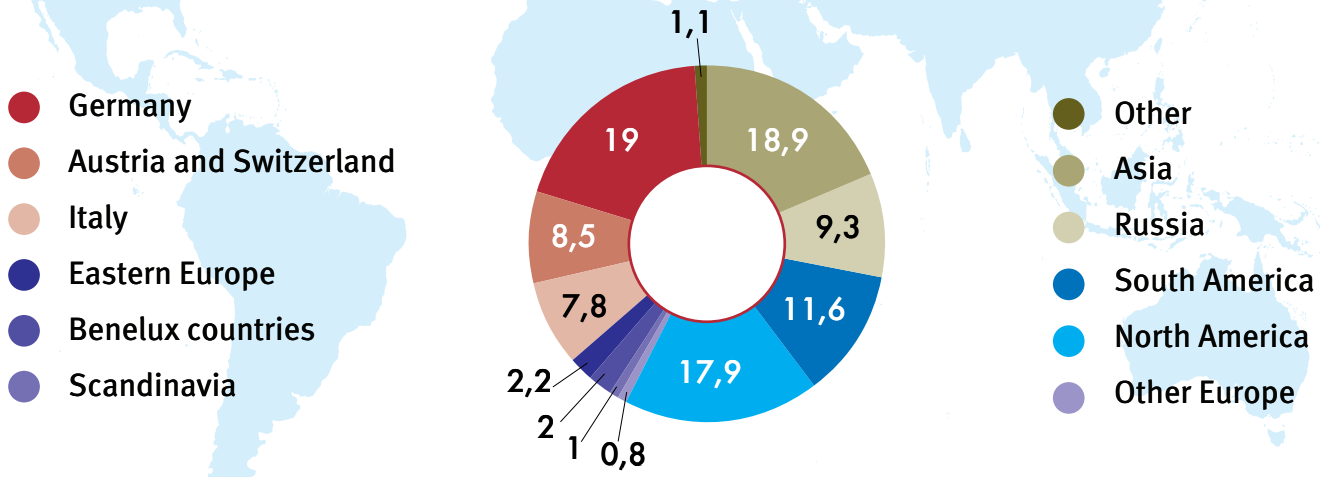
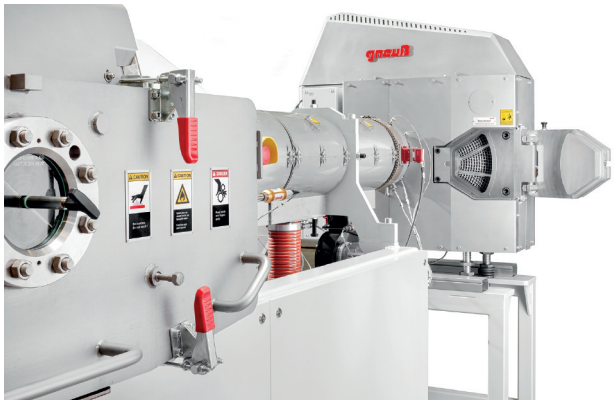
Geographic distribution of **Smart_Extrusion** readers, %



www.smart-extrusion.com



20 如今，塑料加工商对环境有责任，并始终希望优化其生产流程，实现可持续性和能源效率。这当然从谨慎使用资源开始：塑料。

Today, plastics processors feel a responsibility toward the environment and are always looking to optimise their production processes with regard to sustainability and energy efficiency. This of course starts with careful use of the resource: plastic.

24 在本文中，将介绍Tecnomatic公司如何持续改进技术和产品性能，生产出具有功能层的复杂多层管设备。

In this article will be showcased how Tecnomatic continues to improve the technology and performance for the production of complex multilayer pipes with functional layers.

在许多塑料加工行业中，与生产相关的造粒技术整合到注塑、挤出、吹塑和热成型生产线上的做法正在迅速发展。制粒机制造商Getecha响应了这一趋势。常务董事Burkhard Vogel在采访中介绍了这些重要的进展。

In many plastics processing industry sectors, the production-related integration of granulation technology in injection moulding, extrusion, blow moulding and thermoforming lines is advancing rapidly. Getecha responded to this trend. Managing director Burkhard Vogel explains what is important.

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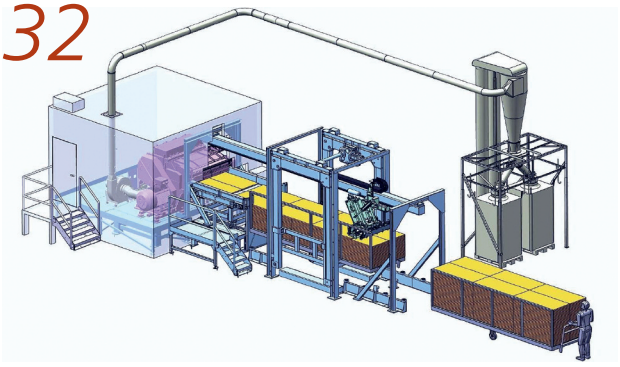

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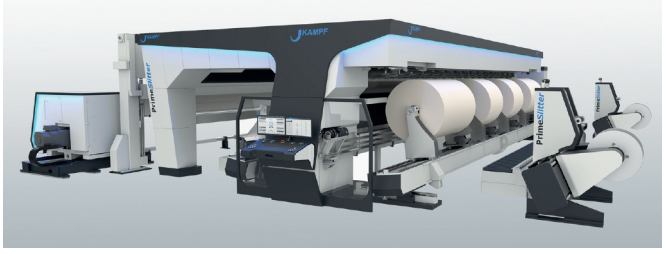
Palad HY Industries公司（位于以色列Migdal HaEmek）董事成员Fuad Dweik先生在评价最近安装调试的巴顿菲尔辛辛那提公司（德国巴腾奥茵豪森）solEX NG 75-40挤出机时说：“这种新型挤出机最突出的优点是熔融温度低，产量高。”

“The most outstanding advantages of the new extruder are low melt temperature with high output” is how Fuad Dweik, Managing Partner of Palad HY Industries Ltd., domiciled in Migdal HaEmek, Israel, sums up his assessment of the recently commissioned solEX NG 75-40 from battenfeld-cincinnati.



100年来，KAMPF（康甫）这个名字就一直以创新的分切和卷绕技术而闻名。 27

Since 100 years the name KAMPF has been known for innovative slitting and winding technology.

当它们进行工作时，您看不到它们。但是，现在出现了对能源管道群前所未有的关注。 管线项目，铺设在地下或海床上的能源管道群，始终是媒体头条上的恒星。 持续增长的趋势已经出现。

You can’t see them when they’re doing their job – yet the spotlight is on them more than ever now. Pipeline projects, energy bundles laid underground or on the seabed, yet they are the stars with a constant presence in media headlines.

35

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➠ http://plasteurasia.com/en/

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➠ The Plastics Industry Association (PLASTICS)
http://npe.org

Equiplast 2021
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2020年中国国际线缆和线材展览会和中国国际管材展览会：中国行业快速复苏后的成功交易会

■ 2020年9月23日至26日，作为中国最大的电线，电缆，管材和管道行业的贸易展览会， 中国国际线缆和线材展览会和中国国际管材展览会共同在上海新国际博览中心（SNIEC）举行。

在克服COVID-19病毒之后，中国的会展业务再次加快了速度，遵循所有适用的卫生法规，安全地进行了保持距离的交易会。大厅里真正的乐观气氛很明显。

共有725家参展商，其中包括640家中国公司，参加了中国国际线缆和线材展览会，并展示了他们在电线电缆行业的创新成果，展会总面积为54,000平方米。来自德国和法国的两个国家馆也在贸易展览会上开展了活动。

在中国国际管材展览会上，共有221家公司展示了他们在管材、管道、管材工艺和加工机械以及管材贸易领域的创新，展馆总面积为18,000平方米。

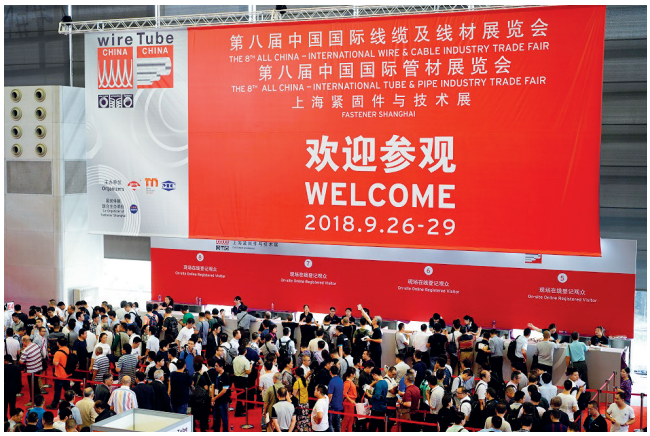
作为第一次，热处理专区和锯业专区也在中国国际管材展会上亮相。在主题馆中，来自热处理技术、锯切和替代切割技术领域的20家公司展示了他们的创新。

展期总共4天，超过36,000名参观者参加了上海的四个贸易展览会。

下一次贸易展览会的日期是2022年9月26日至29日，中国国际线缆和线材展览会、中国国际管材展览会将与中国热处理展和中国锯切展一起在上海举行。

wire China and Tube China 2020 – Successful trade fairs after rapid industry recovery in China

■ As the largest Chinese trade fairs for the wire, cable and tube and pipe industries, wire China and Tube China were jointly held at Shanghai New International Expo Centre (SNIEC) from September 23 to 26, 2020.
The trade fair business in China is picking up speed there again after COVID-19



(Pictures: Messe Düsseldorf GmbH)

was overcome. The trade fairs took place safely and at a distance, in compliance with all applicable hygiene regulations – a real atmosphere of optimism was noticeable in the halls.
A total of 725 exhibitors, including 640 Chinese companies, came to wire China and presented their innovations from the wire and cable industry on a total area of 54,000 square meters. Two national pavilions from Germany and France complemented the trade fair events.

At Tube China, 221 companies presented their innovations from the fields of tubes, pipes, tube processing and machining and the trade in tubes on a total area of 18,000 square meters.
For the first time, Tube China was supplemented by THERMPROCESS China and Saw EXPO China. In special theme pavilions, 20 companies from the fields of thermal process technology, sawing and alternative cutting technologies presented their innovations.

More than 36,000 visitors came to the four trade fairs in Shanghai on four days in total.
Next trade fair date wire China and Tube China with THERMPROCESS China and Saw EXPO China: September 26 to 29, 2022 in Shanghai.

Messe Düsseldorf GmbH
www.messe-duesseldorf.de

任命全球IT新负责人

Robert Kubotsch (© Kautex Maschinenbau GmbH 2020)

■ IT 专家 Robert Kubotsch 担任考特斯机械制造有限公司的全球 IT 总监，全权负责信息技术事务。作为全球挤出吹塑机市场的领导者，为掌控并支持自身变革，考特斯通过这一人事决策对相关重要岗位作出全新调整。Robert Kubotsch 计划将现有的 IT 系统标准化，通过优化来实现考特斯全球团队与客户及合作伙伴之间的协作共赢。各驻地将采用统一的 IT 架构来替换原先的独立解决方案，同时核心部门的 IT 服务与基础设施可用性将得到改善。

考特斯机械制造有限公司已历经足足两年的战略改组与重组过程。考特斯以“合而为一（BeOne）”为口号，加快建立统一的流程与标准，并敦促所有业务部门强化客户导向。生产解决方案变得愈发智能、灵活和模块化，旨在为客户创造增值。

而这些变革伴随着在通信、生产和服务方面日益明晰的数字化趋势。数据管理、通信系统和全面的远程服务都对 IT 性能、标准化与全球可用性提出很高的要求。此前，考特斯已宣布加大对该领域的投资。如今，Robert Kubotsch 将携手团队共同实现这一目标。

New Head of Global IT Appointed

■ As Head of Global IT, the IT specialist Robert Kubotsch is taking on overall responsibility for information technology at Kautex Maschinenbau. With this appointment, the global leader in extrusion blow molding machines has filled another key position to steer and support its process of change. Robert Kubotsch will harmonize the existing IT systems and optimize them for cooperation between the global Kautex team, customers and partners. Isolated solutions which have been used to date will be replaced with a uniform IT structure at all locations, and the availability of IT services and infrastructure at crucial points will be improved.

Kautex Maschinenbau has been involved in a process of strategic realignment and restructuring for over two years. The company is bringing about harmonized processes and standards in line with the BeOne motto, as well as placing even greater emphasis on customer focus in all business areas. The production solutions are becoming more intelligent, modular, and flexible, and the aim is primarily to generate added value for customers.

These changes are accompanied by increasing digitalization in communication, production, and service. Data management, communication systems and comprehensive remote services place high demands in terms of the efficiency, standardization and global availability of IT. Kautex announced enhanced investment in this area some time ago. Robert Kubotsch and his team will now put the philosophy into action.

➠ **Kautex Maschinenbau GmbH**
www.kautex-group.com

加强在亚洲的市场地位

■ Collin利用全球大流行疾病放缓这一时机，与中国和越南的强有力代理机构建立了新的战略伙伴关系。Collin Lab & Pilot Solutions GmbH的首席战略官 /联合合作伙伴Corné Verstraten指出：“在中国，我们有能力在不断发展的石化和化学行业增加新的代理商，并且首次确立了专注于增长中的医疗和药物市场的销售合作伙伴。”

自2020年6月1日起，Team Testing Equipment（测试设备团队，简称TTE）成为了Collin Lab & Pilot Lines在石化和塑料行业的代理。 TTE拥有70多名员工，分布在广州（总部），上海，北京和成都。

TTE总经理Barry Li说道：“我很高兴。我们的团队也为能够在中国市场上提供Collin产品而感到兴奋。凭借我们训练有素、密切联系着客户的销售团队，我们将巩固Collin在中国的市场地位。”TTE强大的技术团队拥有35名员工，为新的和已安装的Collin生产线提供技术服务和售后服务。

对于中国快速发展的医疗和药物市场而言，Collin Lab & Pilot Solutions能够吸引另一强大的销售合作伙伴：上海TECHWIN医学科学（简称TECHWIN）。

同样在2020年6月1日，TECHWIN开始代理COLLIN 的医疗生产线：压机、挤出机、吹膜生产线、辊式磨碎机等，为各种应用提供研发、中试和生产的解决方案。 TECHWIN位于上海（总部）、北京和武汉。 TECHWIN的首席执行官Jaime Gong及其团队在医疗产品市场上拥有超过12年的经验。TECHWIN是中国医疗器械行业协会的成员，拥有广泛的客户网络。

Collin还加强了在新兴市场越南的影响力。 2020年7月1日，这家机械工程专家企业开始与Song Song Co，Ltd，合作。Song Song拥有40名从事销售和技术支持的员工，完美地涵盖了蓬勃发展的越南塑料工业。 Song Song的销售总监Tuan Nguyen非常有信心，Collin这家国际集团的出现，将推动市场对高质量实验室和试验生产线的需求。

COLLIN的新代理商：越南Song Song，中国TECHWIN和TTE

New COLLIN Agencies: Song Song Vietnam, TECHWIN and TTE China
(© COLLIN Lab & Pilot Solutions GmbH)

Market Position in Asia Strengthened

■ Collin used the worldwide pandemic slow down to form new strategic partnerships with strong agencies in China and Vietnam. "In China, we were able to gain a new agency for the growing petrochemical & chemical industry and for the first time also a sales partner concentrating on the dynamic medical & pharmaceutical market," says Corné Verstraten, CSO / Joint Partner Collin Lab & Pilot Solutions GmbH.

Since June 01, 2020 Team Testing Equipment (Short TTE) represents Collin Lab & Pilot Lines in the petrochemical and plastics industry. TTE has more than 70 employees in Guangzhou (headquarter), Shanghai, Beijing and Chengdu.

Barry Li, GM of TTE:" I am resp. our team is excited to be able to offer Collin products in the Chinese market. With our well-trained and highly customer-oriented sales team, we will strengthen the market position of Collin in China." With a strong technical team of 35 employees, TTE provides technical service and after sales for new and already installed Collin lines.

For the rapidly growing medical & pharmaceutical market in China, Collin Lab & Pilot Solutions has been able to attract Shanghai TECHWIN Medical Science (Short TECHWIN), another strong sales partner.

Also on June 01, 2020 TECHWIN started to represent COLLIN Medical Lines – presses, extruders, blown film lines, roll mills etc. – providing R&D-, pilot- and production solutions for various applications. TECHWIN is located in Shanghai (headquarter), Beijing and Wuhan. Jaime Gong, CEO of TECHWIN and his team have more than 12 years' experience in the market for medical products. TECHWIN is a member of the China Association for Medical Devices Industry and has a broad customer network.

Collin intensifies also the presence in the emerging Vietnamese market. On July 01, 2020, the mechanical engineering specialist started the cooperation with Song Song Co, Ltd,. With 40 employees in sales and technical support, Song Song perfectly covers the flourishing Vietnamese plastic industry. Tuan Nguyen, Sales Director of Song Song is very confident that the raising presence of international groups will boost the demand for high quality Lab & Pilot Lines from Collin.

➠ **COLLIN Lab & Pilot Solutions**
www.collin-solutions.com

在新加坡开设新的子公司

■ Lindner在亚洲开展业务已有20多年了。特别是近年来，在世界上人口最稠密的地区，人们越来越意识到需要负责任地管理资源，尤其是回收废料。亚太地区已成为废料管理领域增长最强劲的市场之一。 Lindner 回收技术有限公司是全球领先的粉碎技术和系统解决方案供应商之一，现在通过在新加坡新开设的子公司来加强其在该地区的业务，从而扩展了其国际服务和分销网络。

Lindner亚太区销售总监Gerhard Gamper作出了说明："我们已经有非常强大的合作伙伴，我们与他们在中国、日本、韩国、泰国、马来西亚、菲律宾以及澳大利亚等国家成功地实施了许多项目。 借助位于新加坡新开设的服务和销售中心，我们为合作伙伴和客户建立了联系点， 以更好地满足当地的个性化需求， 并实现跨时区快速响应。" 除了销售和物流人员，以及有助于提供易损件的联系人之外，该地点还将是直接在Lindner总部接受过培训的高素质技术服务人员的驻扎地。这些本地化优势，再加上新的枢纽，在美国的子公司和欧州总部，意味着我们的支持团队现在可以向更大的国际客户群提供服务。 "我们为我们的设备，特别是为我们的全球服务设定了很高的标准。因此，令我感到高兴的是，我们现在与Lindner 亚太公司保持了联系，将来会更加接近我们的客户。这正是我们的服务策略目标所在。" Gamper总结道。

New Location in Singapore

■ Lindner has been doing business in Asia for over 20 years now. In recent years in particular, a greater awareness of the need to manage resources responsibly and, above all, to recover waste materials, has grown in the world's most densely populated region. The Asia-Pacific region has become one of the largest growth markets in the waste management sector. Lindner Recyclingtech, one of the world's leading suppliers of shredding technology and system solutions for recycling, is now strengthening its presence in the region with its new subsidiary in Singapore, thereby expanding its international service and distribution network.

"We already have very strong partners with whom we successfully implemented numerous projects in countries such as China, Japan, Korea, Thailand, Malaysia, the Philippines and also Australia. With the new service and sales hub in Singapore, we've created a point of contact for partners and clients to better respond to individual local needs and also react quickly across time zones," explains Gerhard Gamper, Sales Director at Lindner Asia-Pacific. Besides sales and logistics staff, and contacts to help with the supply of wear parts, the site will also be home to highly qualified service technicians trained directly at Lindner's headquarters. These regional advantages, combined with the new hub, the subsidiary in the US and the European headquarters, mean our support team is now readily available to a much larger international customer base. "We set very high standards for our machines and in particular for our services worldwide. I am therefore delighted that we are now closing the loop with Lindner Asia-Pacific and will be even closer to our clients in future. That's exactly what our service strategy is about," summarises Gamper.

➠ **Lindner-Recyclingtech GmbH**
www.lindner.com

诺信任命亚洲区销售总经理

Chew Yew Kwong

■ Chew Yew KWong 加入诺信公司聚合物加工系统（PPS）业务，担任Xaloy挤出和注塑组件的亚洲区销售总经理。

Chew 将负责销售Xaloy螺杆、机筒和前端部件。他将与诺信的其它团队协调，为采购各种PPS产品的客户提供服务。

PPS亚洲副总裁Teong HK说道："Chew Yew KWong在国际销售和运营

管理方面有超过20年的经验，他的聚合物行业知识和管理专长将是为亚洲各地客户提供优质支持的宝贵补充。”

诺信公司在亚洲生产Xaloy产品的工厂位于泰国春武里。

General Sales Manager in Asia Appointed

■ Chew Yew Kwong has joined Nordson Corporation's Polymer Processing Systems (PPS) business as general sales manager in Asia for Xaloy® extrusion and injection molding components.

Chew will be responsible for sales of Xaloy screws, barrels, and front end components. He will coordinate with other Nordson teams to serve customers ordering multiple PPS products.

"Chew Yew Kwong has more than twenty years of experience in international sales and operations management," said Teong HK, vice president of PPS Asia. "His polymer industry knowledge and management expertise will be a valuable addition to our mission of providing excellent support to customers throughout Asia."

The company's Asia manufacturing facility for Xaloy products is located in Chonburi, Thailand.

➠ **Nordson Polymer Processing Systems**
www.nordsonpolymerprocessing.com

中国增粘剂产能扩张公告

■ SI集团作为功能性添加剂、工艺解决方案、药物活性成分和化学中间体等领域技术创新的全球领导者，已宣布计划，扩大其在中国南京工厂的产能水平。此次扩建将使产能增加50%以上，从而推动该基地成为一流的增粘剂以及增强树脂产品的生产和技术区域枢纽。

SI 集团在南京的投资正紧随其后，希望重塑其商业模式，以应对轮胎行业的新兴趋势。 SI 集团橡胶与胶粘剂解决方案副总裁Robert Kaiser表示："我们已采取必要的适当步骤来增强我们在这一关键区域增长的能力。"他还补充说："这种扩展使我们能够提升我们的产品和市场地位，为我们的客户提供优质的解决方案。"SI集团在南京的扩张还将体现出在高度管控的中国化学工业中遵守节能法规和可持续发展方面的努力。

SI集团在制造用于增强轮胎性能和耐久性的增粘剂树脂方面拥有悠久的历史。除增粘树脂外，该公司还拥有在全球范围内生产的强大的粘合、固化和增强树脂产品组合。该公司目前正在按照所有中国地方政府的法规对南京工厂进行全面的环境和安全许可审查。

Tackifier Capacity Expansion in China Announced

■ SI Group, a global leader in the innovative technology of performance additives, process solutions, active pharmaceutical ingredients, and chemical intermediates announced plans to expand capacity levels at its Nanjing, China facility. The expansion will increase production by more than 50%, propelling the site to become a regional hub for best-in-class tackifier and reinforcing resin production and technology.

SI Group's Nanjing investment is in lockstep with the desire to reinvent its business model, addressing the emerging trends in the tire industry. "We have taken the appropriate steps necessary to

grow our capacity in this key regional growth area", stated Robert Kaiser, Vice President, Rubber & Adhesives Solutions at SI Group, adding: "This expansion allows us to differentiate our offerings and position in the market, providing superior solutions to our customers." SI Group's expansion in Nanjing will also address energy conservation initiatives and sustainability efforts in compliance within a highly-regulated Chinese chemical industry.

SI Group has a long history of manufacturing tackifier resins used to enhance the performance and durability of tires. In addition to tackifier resins, the company also has a robust portfolio of bonding, curing, and reinforcing resins, manufactured globally. The company is currently undergoing a thorough environmental and safety permit review for the Nanjing expansion, in accordance with all local Chinese government regulations.

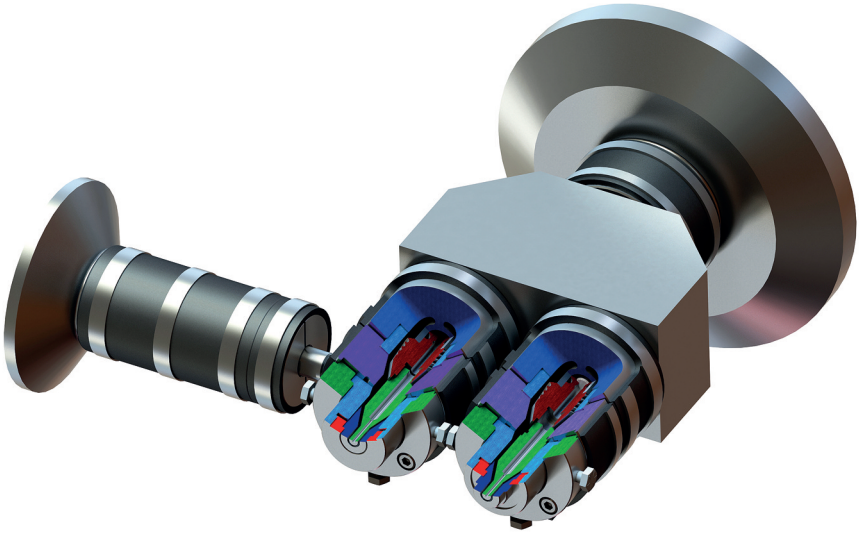
➠ **SI Group**
www.siigroup.com

挤出工具

■ Guill推出最新一代800系列产品，这是一种2至6层挤压模具，旨在为汽车、医疗、家电和工业应用生产高品质、高材料效率的1/8至6英寸外径管材。 经过重新设计的800系列可针对任何多层、多腔医用管路以及燃料管路结构、多层PEX管道和滴灌应用等生产完美平滑挤压及具有层定义的氟聚合物和其他材料。 Guill设计进一步允许薄层（0.02毫米以下）组合聚合物和粘合剂。

Guill提供各种十字头和内联管路模具，具有固定或可调节中心，适用于单挤压或共挤压应用。 该工具可用于加工任何化合物，并具有公司的专利精密Feather Touch同心度调节系统（即Seal Right系统），该系统与Feather Touch系统相结合，可消除聚合物泄漏。 Guill还提供独特的螺旋流量分配系统。

所有Guill工具都是通过使用计算流体动力学（CFD）程序对流动通道进行严格的计算机模拟生成的，从而优化均匀流动，而且没有焊接线。



Extrusion Tooling

■ Guill introduces the latest generation of its Series 800, the 2-to-6 layer extrusion tooling designed to produce the highest quality, highest material-efficient 1/8" to 6" OD tubing for automotive, medical, appliance and industrial applications. The redesigned Series 800 produces flawlessly smooth extrusion and layer definition of Fluropolymer and other materials for all multi-layer, multi-lumen medical tubing, as well as fuel line constructions, multi-layer PEX pipe and drip irrigation applications, among others. The Guill design further allows thin layer combinations of polymers and adhesives to .02mm or less.

Guill offers its extensive line of crossheads and inline tubing dies in fixed and adjustable center, for single or co-extrusion applications. The tooling is designed to process all compounds and features the company's patented, precision Feather Touch Concentricity adjustment, the Seal Right System, which combines with the Feather Touch system to eliminate polymer leaking. Guill also offers its unique spiral flow distribution system.

All Guill tooling is produced with rigorous computer simulation of the flow channels using Computational Fluid Dynamics (CFD) programs, resulting in optimum uniform flow with no weld lines.

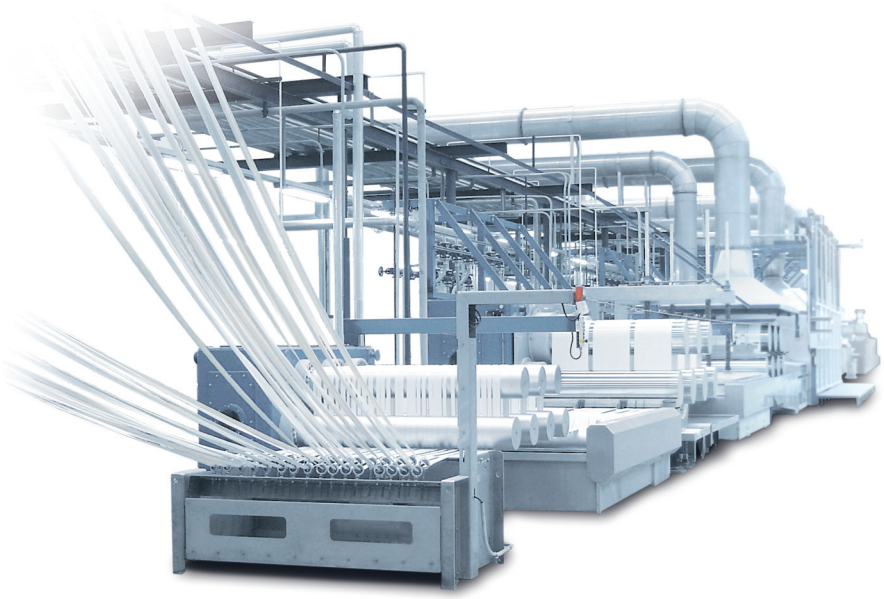
➠ **Guill Tool & Engineering**
Bill Conley: bconley@guill.com,
www.guill.com

三套短纤维双组分设备在亚洲成功投产

■ 欧瑞康纽马格的三套短纤维双组分设备在中国成功投入运行。每套设备的日生产能力为 50 吨，欧瑞康化学纤维的两个长期客户用其生产 PP/PE 或者 PET/PE 芯皮双组分纤维。这些纤维将被制成卫生用品。

尽管受到新冠疫情的影响，这三套设备仍能分别在三个月和五个月内顺利投产运行。

欧瑞康纽马格在双组分短纤维设备的建造领域拥有多年经验。早在 1995 年，第一套短纤维设备就已投产运行。欧瑞康纽马格提供各种纤维横截面的解决方案，包括“皮/芯型”、“并列型”、“海岛型”、“橙型”和“三叶型”等。应用目的也是多种多样：自卷曲纤维、粘合纤维、超微纤维和中空纤维等。



欧瑞康纽马格短纤纺丝系统代表着最高产品质量和绝对可靠性

Oerlikon Neumag staple fiber plants stand for highest product quality and absolute reliability

Three Staple Fiber Bicomponent Systems Successfully Commissioned in Asia

■ Oerlikon Neumag has successfully commissioned three staple fiber bicomponent systems in China. With capacities of 50 tons per day each, the systems are being used to manufacture core-sheath bi-component fibers made from PP/PE or PET/PE at two long-standing Oerlikon Manmade Fibers customers. These fibers are used to make hygiene products.

Despite coronavirus-related restrictions, the three new systems were installed within three and five months, all without any problems.

Oerlikon Neumag looks back on many years of experience in constructing bi-component staple fiber systems. The first system for this fiber type was commissioned as far back as 1995. Oerlikon Neumag offers solutions for the most varied cross-sections, ranging from sheath/core', 'side-by-side', 'island in the sea', 'orange type' as well as 'trilobal'. The applications are diverse: from self-crimping fibers, bonding fibers, super-microfibers all the way through to hollow fibers.

➠ **Oerlikon Segment Manmade Fibers**
www.oerlikon.com
www.oerlikon.com/manmade-fibers

2022年K展路线图

■ 2020年10月22日，K展参展商顾问委员会第一次会议举行，这标志着将于2022年10月19日至26日在杜塞尔多夫举办的下一届 K展活动正式启动。K展是全球塑料和橡胶行业的重要交易会，专家们聚集到一起,讨论了交易会具体的计划。参展商顾问委员会支持杜塞尔多夫展览公司为“ K 2022”做准备，并就基本的方案和组织问题提供了咨询。这届展会要特别关注的是：思考当前的发展、全球经济以及对前瞻性趋势和技术进行讨论。

“ K 2022”的顾问委员会由来自展览行业和塑料橡胶行业协会的主要代表组成。它反映了杜塞尔多夫“ K”展涵盖的范围，即：全部机械和设备工程、原辅材料以及半成品、专用零部件以及增强塑料产品。

乌尔里希·莱芬豪舍（Ulrich Reifenhäuser）先生将再次担任参展商顾问委员会主席，他是莱芬豪舍机械工程公司的执行合伙人，并兼任VDMA（德国机械设备制造业联合会）塑料橡胶机械委员会主席。 VDMA的塑料和橡胶机械委员会的常务理事Thorsten Kühmann将领导“ K 2022”的联络委员会。

除此以外，“杜塞尔多夫K 2022”展览会的顾问委员会还包括以下成员：Marc Gregor Baier（BBP Kunststoffwerk Marbach Baier GmbH），Michael Baumeister（Brückner Maschinenbau GmbH & Co. KG），Siamak Djafarian（Röhm GmbH），Boris Engelhardt（wdk - Wirtschaftsverband der deutschen Kautschuk-industrie e.V.），Guscard Glüc博士（BASF S），Manfred Hackl（EREMA Engineering Recycling），Juliane Hehl（Arburg GmbH & Co. KG），Vedran Kujundzic（Borealis AG），Matthias Lesch (Pöppelmann GmbH & Co. KG Kunststoff-Werkzeugbau)，Ulrich Liman博士（COVESTRO Deutschland AG），Oliver Möllenstädt博士（GKV Gesamtverband unststoffverarbeitende Invustrie eV），Klaus-Uwe Reiß（Pro-K），Dr. Michael Ruf (KraussMaffei Group GmbH)，Michael Ruf博士（KraussMaffei Group GmbH），Ingo Sartorius博士（PlasticsEurope Deutschland e.V.），Christoph Steger博士（Engel Holding GmbH），Peter Steinbeck博士（Windmöller & Hölscher KG），Pascal Streiff（EUROMAP）。

从左至右：Erhard Wienkamp（经营性交易会业务的执行总监），Petra Cullmann（执行性交易会业务的执行总监），UlrichReifenhäuser（主席参展商顾问委员会）和Thomas Franken（塑料和橡胶业务项目总监）(图片：Messe Düsseldorf GmbH)

From left to right: Erhard Wienkamp (Managing Director Operative Trade Fair Business), Petra Cullmann (Executive Director Operative Trade Fair Business), Ulrich Reifenhäuser (Chairman exhibitors' advisory board) and Thomas Franken (Project Director for the Portfolio Plastics & Rubber) (Image: Messe Düsseldorf GmbH)

杜塞尔多夫展览中心的职位分工在过去几个月中发生了变化，但仍然是熟悉的面孔继续围绕着杜塞尔多夫的“ K”展：自2002年起担任杜塞尔多夫展览有限公司执行董事的Erhard Wienkamp于2019年底被任命为杜塞尔多夫展览会公平贸易业务总经理。Petra Cullmann于2020年7月就任新执行董事，并因此成为杜塞尔多夫展览有限公司董事局的成员。 Thomas Franken担任塑料和橡胶业务组合的项目总监一职，他也是K展团队的资深成员，对行业也非常熟悉。

Course Charted for K 2022

■ On 22 October 2020, the first meeting of the exhibitors' advisory board marked the kick-off to the next 'K' in Düsseldorf to be held from 19 to 26 October 2022. The body of experts has met to chart the course for the most important trade fair for the plastics and rubber industries worldwide and to enter into the concrete planning stage. The exhibitors' advisory board supports Messe Düsseldorf in the preparations for 'K 2022' and provides consulting on basic conceptual and organisational issues. Here particular attention is paid to considering current developments as well as to the global economy and the discussion of forward-looking trends and technologies.

The advisory board of 'K 2022' is composed of representatives from the exhibiting industries and leading trade associations. It mirrors the complete spectrum of ranges represented at 'K' in Düsseldorf, mechanical and plant engineering, raw and auxiliary materials as well as semi-finished products, technical parts and reinforced plastic products.

Acting as the Chairman for the exhibitors' advisory board again will be Ulrich Reifenhäuser, Managing Partner of the mechanical engineering company of the same name and Chairman of VDMA's Plastics and Rubber Machinery Association. The communications committee of 'K 2022' will be headed by Thorsten Kühmann, Managing Director of VDMA's Plastics and Rubber Machinery Association.

Alongside them, the exhibitors' advisory board of 'K 2022 Düsseldorf' includes the following members: Marc Gregor Baier (BBP Kunststoffwerk Marbach Baier

GmbH), Michael Baumeister (Brückner Maschinenbau GmbH & Co. KG), Siamak Djafarian (Röhm GmbH), Boris Engelhardt (wdk - Wirtschaftsverband der deutschen Kautschukindustrie e.V.), Dr. Guiscard Glück (BASF SE), Manfred Hackl (EREMA Engineering Recycling), Juliane Hehl (Arburg GmbH & Co. KG), Vedran Kujundzic (Borealis AG), Matthias Lesch (Pöppelmann GmbH & Co. KG Kunststoff-Werkzeugbau), Dr. Ulrich Liman (COVESTRO Deutschland AG), Dr. Oliver Möllenstädt (GKV Gesamtverband Kunststoffverarbeitende Industrie e.V.), Klaus-Uwe Reiß (Pro-K), Dr. Michael Ruf (KraussMaffei Group GmbH), Dr. Ingo Sartorius (PlasticsEurope Deutschland e.V.), Dr. Christoph Steger (Engel Holding GmbH), Peter Steinbeck (Windmöller & Hölscher KG), Pascal Streiff (EUROMAP).
At Messe Düsseldorf responsibilities have changed over the past few months but the familiar faces will be around for 'K' in Düsseldorf: Erhard Wienkamp, acting as an Executive Director at Messe Düsseldorf since 2002, was appointed Managing Director of Operative Trade Fair Business at Messe Düsseldorf in late 2019. Petra Cullmann took office as a new Executive Director in July 2020 and therefore forms part of the Board of Managing Directors at Messe Düsseldorf. The position of Project Director for the Portfolio Plastics & Rubber was filled by Thomas Franken who is also thoroughly familiar with the industry as a long-standing member of the K Team.

Messe Düsseldorf GmbH
www.k-online.de

包装领域的产品创新计划专注于智能解决方案和可持续性

■ 作为挤出吹塑技术领域的全球市场领导者，考特斯在10月对外宣布，将在未来数月大幅升级及扩大其包装领域的产品组合。生产解决方案将以更加透明和模块化的方式来适应未来的客户需求。凭借新战略，公司将致力于开发制品的智能生产解决方案，使得制品可以以合理成本生产的同时增加附加值并提供最高的质量。而可持续性也将发挥决定性作用。

相比以往，产品组合的扩展更为受到客户需求的指导。考特斯将不同应用领域现有产品中经过良好验证的部件结合起来，并搭载全新技术加以补充。根据制品和具体应用领域，可分为液压型、混合动力型和全电动型的智能生产解决方案。今后，"Made by Kautex（考特斯制造）"也意味着相同部件将按照统一的质量标准在全球所有生产基地进行安装。此外，所有产品系列还将配备相同的智能操作系统。

"产品创新计划是我们对全球客户与市场需求的积极回应。"考特斯机械制造有限公司首席执行官 Thomas Hartkämper 解释，"整个挤出吹塑成型过程中的生产效率、最高的制品质量和生产的可持续性是这项持续数月的举措的重中之重。"最高的熔体质量、最大程度的能源与材料节省，以及 PCR 的加工成为关键动力。

在新战略的背景下，考特斯正在以全球化团队的形式努力扩大自身在变革以及与客户和合作伙伴共同创造附加值中的领导作用。作为战略的一部分，这还包括产量最大化、高可用性、快速安装、维护时间短以及操作简便等方面。

"我们在整个考特斯集团中弘扬全新的'BeOne（凝聚力）'文化。在过去几个月里，全球团队展现出了极大的热诚，在推行这项产品创新计划方面做得非常出色。"Thomas Hartkämper总结道。

Product Initiative in the Packaging Sector Focuses on Smart Solutions and Sustainability

■ Kautex Maschinenbau is going to modernize and extend its portfolio for the packaging sector significantly over the next few months. This is what the gobal market leader in the field of extrusion blow molding technology announced in October. The range of solutions will be tailored to future customer requirements in a considerably more modular and transparent way. With its new strategy, the company is aiming to develop smart production solutions for articles, which can be produced at a reasonable cost while adding value and providing the highest quality. The topic of sustainability will also have a decisive role to play.
The extension of the portfolio is guided by customer requirements even more than previously. Kautex Maschinenbau combines well-proven components from existing product ranges for various areas of application and complements them with new technologies. This results in smart production solutions which may be hydraulic, hybrid or fully electric, depending on the article and the specific application. "Made by Kautex" will also mean that the same components are installed at all global production locations with uniform quality standards. All product ranges will also be equipped with the same, smart operating system.
"The product initiative is our response to global customer and market requirements", Thomas Hartkämper, CEO at Kautex Maschinenbau, explains. "Production efficiency throughout the extrusion blow molding process, the highest article quality and sustainability in production have priority in this measure, which will last several months." Important drivers include the highest melt quality, maximum energy and material savings, plus PCR processing.
As a global Kautex team, the company is working on expanding its leading role in transition and in the creation of added value together with customers and partners as part of this strategy. This also includes aspects such as maximum output capacity, high availability, short set-up and servicing times, plus straightforward operation.
"We live the new 'BeOne' culture throughout the Kautex Group. The global team has demonstrated tremendous passion over the last few months while doing an unbelievable job of rolling out this product initiative", Thomas Hartkämper explains.

Kautex Maschinenbau GmbH
www.kautex-group.com

充分利用您的挤出模具

Getting the Most from Your Extrusion Tooling

作者：Glen Guillemette，总裁

模具维护可以提高医用管材应用的挤出效率，提升质量及整体生产力。

By Glen Guillemette,
President Guill Tool & Engineering

Tooling maintenance improves extrusion efficiency, enhances quality and boosts overall productivity for your medical tubing applications.

Guill 712 Series

通过使用最先进的生产设备和工艺，当今多腔和多层医用管材的加工公差可以降至最低。需要注意的重要一点是，模具的任何误差都可能在成品中被放大。清洁的零件，尤其是密封和定位表面，是保证产品性能和优质成品的关键。这些表面在制造过程中获得的关注最多，并且是确保整个管材一致性的控制表面。请记住，哪怕直径仅千分之几英寸的灰尘也会对精密机械加工的对位产生影响。人的发径约为0.003英寸（0.08毫米），由于高质量模具中有许多这样的表面，清洁度至关重要。

检查模具是否有任何变形也很重要。毛刺、划痕和刮伤通常是由粗心搬运和/或存放设备造成的。双层和三层挤出头的维护难度更高。密封和定心表面的数量倍增，从而会放大模具不洁净的影响。在更换时，您可以先拆卸挤出头，以便更换化合物和/或头端和模具。异物通常会在此时进入，您必须彻底清除残留物质。由于处理不当和储存技术不佳，通常会在此阶段给模具造成机械损坏。 这些零件是高精密零件，但同时也笨重、巨大，难以徒手拆卸。建议使用专门配备用于挤出头维护的专用工作车。该工作车配备有备件和硬件，建议购买和使用，特别是考虑到良好维护的模具可帮助您降低成本。 您应当注意以下事项：1.) 使用柔软、干净、可恢复的工作表面，保持工作区域干净整洁 2.) 使用软钳口的钳子，例如铜制钳口 3.) 使用特殊设备，如刀尖清除工具等 4.) 标准工具包括扳手、软面锤等 5.) 常备柔软干净的抹布 6.) 使用瓶装喷雾清洁剂 7.) 使用工具供应商建议的妥善管理和储存的备件 8.) 将设备维修/维护手册保存在方便查阅的地方 9.) 使用小型平板，以提供平坦表面 10.) 使用一套适当的量规和顶针进行初始工具位置调整 11.) 确保您拥有所有适当的举升辅助工具，包括高架起重机、液压升降机等。

在大多数情况下，挤出头和模具将仍然处于高温，因此搬运时需要戴配衬里的手套。如今，管路制造商需要与全球的公司竞争。要想成为一家成功、盈利的公司，质量和效率至关重要。在挤出领域尤其如此，因为材料成本通常远高于人工成本。就像一辆身陷凹坑的赛车一样，许多挤出机由于模具不良或损坏而处于闲置状态，并且需要过多的维护时间。管理费用会迅速上升，最终造成亏损。 有些挤出机能够快速启动，但只是在制造废料，而另一些挤出机制造的产品超大，无法达到最小容差的要求。10%到20%的材料被浪费，占产品成本的50%到90%。模具供应商在竭尽全力将头端和模具加工到确定的规格，以确保完美的同心度和对位。然后，材料将作为成品的一部分被安放到适当的位置。

了解维护程序

例1： 在这个例子中，未能正确居中的模具导致计算出的超容差面积达到0.059平方英寸（38平方毫米）。比较这两个表面积时，计算出的材料浪费率占成品的11.8%。公式为：壁厚% = 最小壁厚 / 最大壁厚 X 100。例2： 或者，如果壁厚%可以从80%增加到95%，则可以节约大约12%的总成本。当然，成本节约情况会因设计而异。处理沉重和笨重部件时，请寻求帮助。 表面和边缘很硬，有点脆，因此零件坠落或相互碰撞可能导致损坏。将模具妥善存放在干燥清洁的地方一最好是每个模具都有专门的存放位置。这些区域应该有柔软的表面，每个器械在清洁后均应盖好。另外，模具应该彼此隔离，以免它们彼此接触。 模具和所有器械在储存前应彻底清洁。

拆卸模具时，必须使用专用工具来帮助拆卸。您的供应商可以提供这些专用工具。如果他们不能提供专用工具，请联系信誉良好的工具厂商购买替换件。这些工具的成本很容易就被潜在的损坏所抵消，而损坏通常是由不适当的设备

（如锤子）和位置偏移造成的。请遵循操作手册中的说明。个别模具可能会有特殊要求，所以，如果有任何不清楚的地方，请联系您的供应商。您的供应商明白，最佳性能取决于正确的保养和维护。 这里提供一些有用的提示：1.) 请在设备还热的时候清洁设备，因为此时更容易清除残留物。一次应仅拆卸和清洁一个模具，这样可以保持模具有较高的温度。2.) 清洁双成分十字头时（塑料和橡胶），先清洁塑料模具，然后再清洁橡胶模具。3.) 切勿使用刮刀或螺丝刀等钢制工具 ，因为这些工具可能划伤和损坏模具。4.) 不要使用明火，因为这会产生过多的热量，特别是在较薄的部分，从而影响部件的硬度、同心度和容差。推荐的清洁工具和材料包括：a.) 黄铜钳子，用于抓lao材料并协助拉动 b.) 不同宽度的黄铜刮刀，用于清洁平坦的暴露表面 c.) 黄铜丝管刷，直径从1/16英寸到1英寸，增量为1/16英寸（适用于清洁孔和凹槽） d.) 黄铜棒一不同直径的黄铜棒适用于将材料推出流孔 e.) 铜丝网，用于清洁和抛光暴露的圆形或圆锥形表面 f.) 铜刀，用于清除凹槽和其他难触及区域的残留物。另外，抛光化合物用于修复抛光表面 g.) 压缩空气可以更有效地吹除塑料，同时也有助于去除橡胶。小心不要用压缩空气将残留物压入凹槽 h.) 清洁液也会有帮助，请记住使用新的干净抹布（旧抹布通常嵌有金属屑，可能会划伤抛光表面） i.) 清洁烤箱一一仅限用于塑料部件。 遵循制造商的建议。 如果没有指定温度，不要超过850华氏度（454摄氏度）。不要淬火冷却模具，这可能会影响模具的硬度、同心度和容差。 j.) 清洗化合物一几种清洗化合物可以用来清洗挤出机螺杆/筒体残留的聚合物和橡胶化合物 清除过量材料以实现最佳的加工效率清洁的零件对挤出模具的性能和加工质量至关重要。密封和定位表面尤其如此，因为它们控制生产过程的一致性。对于工具的一般维护，在储存或工具转换之前，彻底清洁和清除多余材料可确保生产具有精准容差成品所需的精密加工对位。设备应在温度仍然很高时清洁，因为会更容易清除残留的聚合物和橡胶。 加热工具时请务必遵守所有MSDS建议。请戴防热手套，以保护手部因接触加热工具表面而受伤。建议使用黄铜刮刀和黄铜或铜绒清洁布，因为它们足够柔软，不会划伤表面。

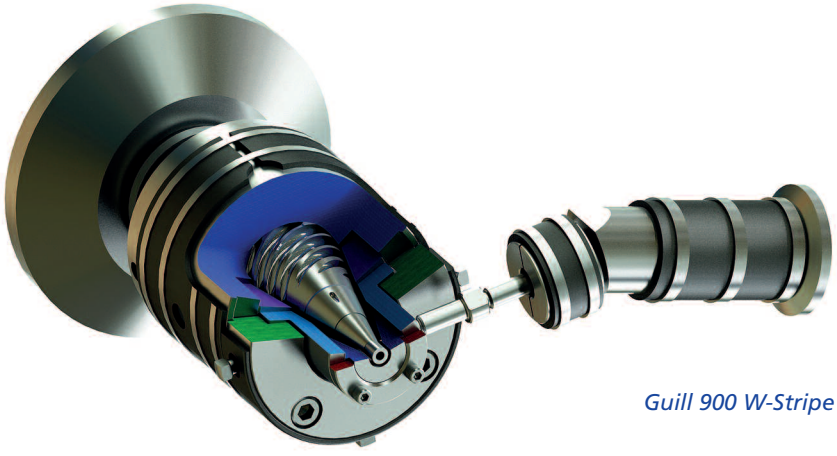
让清洁模具更容易 取出模具的最快方法是利用挤出机的压力将其推出。 使用空气压缩机和黄铜钳清洁模具体部，以便材料冷却，从而增加熔体强度，使其成为一体，而不会成为难以去除的弹性胶状物质。使用压缩空气和黄铜钳清洁体部进料口，以同时冷却和去除进料口上多余的残留物。完成此步骤后，用圆形黄铜刷刷表面，以抛光表面。使用黄铜刷仔细清洁2英寸（51毫米）法兰接合器的流动区域。

检查所有表面是否有任何不平整的地方，如毛刺和划痕，因为在重新组装挤出头前必须修复上述现象。大多数制造商建议使用手工抛光石来去除有害的毛刺。 使用抛光石清洁后，必要时使用600目砂布进行轻微磨光，但不要打磨本应锐利的边缘。平坦的密封表面也可以用抛光石清洁，然后用600目砂布磨光。 将布放在干净、平整的表面上，最好是平板上，然后用手以画圆的方式施加摩擦，直至相应区域干净平整。这些部件应全部为硬化钢合金，不会因使用上述方法而受到不利影响。铬镍铁合金、蒙乃尔合金和哈氏合金通常没有经过热处理，因此需要特殊的养护和处理以避免损坏。

不要忽视维修

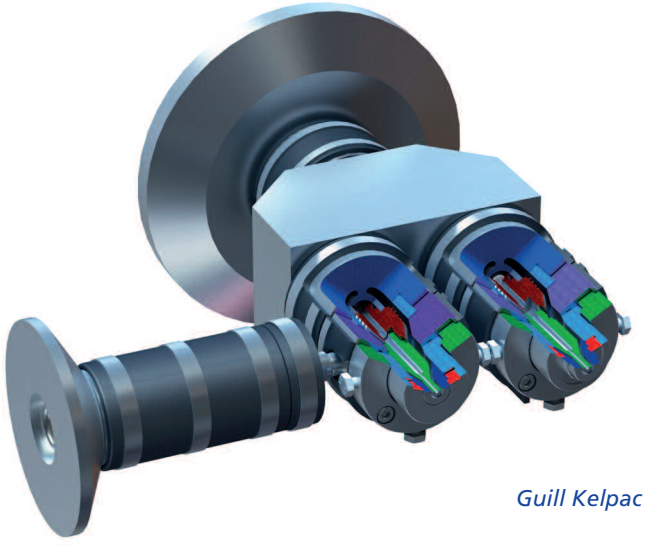
模具保养有助于确保高质量的挤出产品，即符合尺寸规格、保持指定的最小容差且经济实惠的产品。沾污、未经适当维护和未经妥善调整的模具会导致施用过多的化合物，从而使 维持最小厚度容差变得更复杂。过多的材料会导致不必要的成本支出，这会直接影响贵公司的盈利能力以及客户关系。 重要的最后一步一重新组装使用专用工具车，按照制造商的说明进行重新组装。在安装之前，请使用干净的抹布对每个部件进行最后的擦拭。必须清除哪怕是极微量的砂砾、污垢和残留物质。对于沉重和笨重部件，使用机械或请他人帮助，以避免不必要的事故。如果需要，在所有紧固件上重涂一次防卡化合物。 按照制造商推荐的规格以及建议的顺序拧紧紧固件。手册应当规定了这种紧固顺序， 通常以星形图的方式呈现。逐渐拧紧紧固件，直到达到适当的扭矩，以防止模具变形。模具制造商的一个主要目标是尽可能在挤出物刚刚从模具的分布毛细管中被挤出时，快速、准确地在模具的主要部分形成同心圆锥体。设计和制造适当的模具在挤出物入口点附近具有均匀的分布，但是一旦模具被调整，这种分布就会受到影响，从而使挤出物向一侧偏移。在主要区域形成一个偏心圆锥体，并且在该过程中仅在一个点存在同心圆锥体，而不是形成体积逐渐减小的平滑连续的流动路径。正确制造和对位精确的挤出头以及良好维护的模具只需很少的调整直至不需要调整。不必要的模具调整的另一个不利影响是不平衡流动对挤出物产生压力。最终结果是最终产品保留了所产生的这种 不平衡，并且发生了不可预测的模口膨胀。

By utilizing state-of-the-art production equipment and processes, machining tolerances are held extremely close on today's multi-lumen and multi-layer medical tubing. It is important to note that any misalignment of the tools may be exaggerated in the final product output. Clean parts, especially with sealing and locating surfaces, are key to product performance and successful end products. These surfaces receive the most care and attention during manufacturing and are the control surfaces that ensure uniformity throughout the tubing. Remember, precision-machined alignments are affected by even a speck of dirt measuring only a few thousandths of an inch. A human hair is about 0.003" (0.08 mm), and since there are ma-



Guill 900 W-Stripe

ny such surfaces in a quality tool, cleanliness is critical.
Checking of the tools for any deformities is also important. Burrs, scratches and scrapes are usually a result of careless handling and/or storage of equipment. Double and triple-layer extrusion heads pose an even greater challenge for maintenance. The number of sealing and centering surfaces multiplies and can magnify the results of dirty tools. During changeovers, the head may be disassembled in order to change compounds and/or tips and dies. Foreign matter is usually introduced at this point and residual materials must be thoroughly removed. Physical tool damage often occurs during this phase, due to mishandling and poor storage techniques. These are highly precise parts, but can also be heavy and bulky to remove by hand. Use of a dedicated work cart exclusively reserved and equipped for extruder head maintenance is recommended. This cart along with a supply of spare components and hardware is easily justified, especially when examining the potential cost savings that result from well-maintained tools. The following should be considered: 1.) Maintain a clean, organized work area with soft and clean renewable work surfaces; 2.) Use a vise with soft jaws, such as copper; 3.) Use special equipment, such as tip removal tools, etc.; 4.) Standard tools include wrenches, soft-faced hammers, etc.; 5.) Maintain a supply of soft, clean rags; 6.) Use cleaning solutions in spray bottle; 7.) Use spare parts as suggested by your tooling supplier, properly organized and stored; 8.) Keep handy your equipment's repair/maintenance manual; 9.) Have a small surface plate to provide a true flat surface; 10.) Use a set of appropriate gauge and tip pins for initial tool location adjustment; 11.) Make sure you have all the proper lifting aids available, including overhead hoists, hydraulic lifts, etc. In most situations, the head and tooling will still be at elevated temperatures, therefore lined gloves are needed when handling.
Today, tubing manufacturers compete with companies all over the world. To be a successful and profitable company, quality and efficiency are essential. This is especially true in extrusion, where material costs are usually much higher than labor costs. Like a racing car stuck in the pit, many extruders sit idle because of poor or damaged tooling, plus excess maintenance time. Overhead costs add up and losing money is the result. Some start up quickly and make scrap, whereas others start up and run a product oversized to hold minimum tolerance. They waste 10% to 20% of the material, which can run from 50% to 90% of the product cost. The tooling supplier goes to great lengths so that tips and dies are machined to a determined specification, ensuring perfect concentricity and alignment. The material is then distributed in the proper location as part of the finished product.

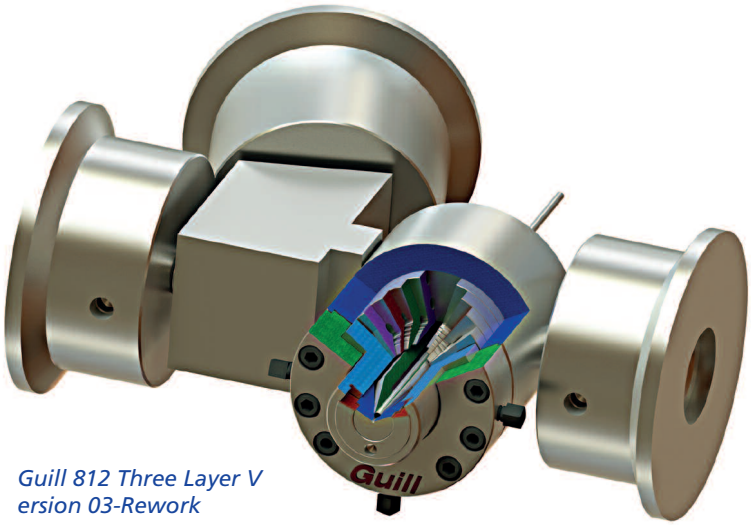


Guill Kelpac

Understanding Maintenance Procedures

Example 1: In this example, with an improperly centered tool, a calculated out-of-tolerance area of 0.059 in^2 (38 mm^2) was derived. When the two surface areas were compared, the calculated material waste was 11.8% of the finished product. The formula is % wall = min. wall thickness, max. wall thickness X 100. ***Example 2***: Alternatively, if the % wall can be increased from 80 to 95%, a savings of about 12% of total cost can result. Savings will vary depending on the designs, of course. Get help for heavy parts and awkward situations. Surfaces and edges are hard and therefore somewhat brittle, so dropping a part or striking parts together can result in damage. Store your tools properly in a dry, clean area – a dedicated spot for each tool is best. These areas should have soft surfaces and each instrument should be covered after cleaning. Also, tools should be segregated so that they do not come into contact with each other. And tools and all instruments should be cleaned thoroughly before storage.
For disassembly of tools, it is imperative to use purpose-built tooling to facilitate disassembly. These should be available from your supplier. If they are not, consult with a reputable tooling house for replacements. The cost of these tools is easily offset by potential damages, frequently caused by improper equipment such as hammers and drifts. Follow the guidelines outlined in your operator's manual. Individual tools may have specific recommendations, so contact your supplier if anything is unclear. Your supplier understands that optimum performance relies on proper care and maintenance. Here are some useful tips: 1.) Clean your equipment while it is still hot as the residue is easier to remove. It helps to remove and clean one piece of tooling at a time in order to maintain elevated temperatures. 2.) When cleaning a dual compound crosshead, (plastic and rubber) clean the plastic tooling first; the rubber second. 3.) Never use steel tools such as scrapers or screwdrivers because these can scratch and mar the tooling. 4.) Do not use open flames because this generates excessive heat especially in thin sections, which can affect hardness, concentricity and tolerances of components. Recommended cleaning tools and materials include: a.) Brass pliers to grip material and aid in pulling; b.) Brass scrapers available in different widths for cleaning flat exposed surfaces; c.) Brass bristle tube brushes that are available in diameters from 1/16" to 1" in 1 /16" increments (ideal for cleaning holes and recesses); d.)Brass rods – different diameter rods are good for pushing material out of flow holes; e.) Copper gauze for cleaning and polishing exposed round or conical surfaces; f.) Copper knives for removing residue from recesses and other hard-to-reach areas. Also, polishing compound restores polished surfaces; g.) Compressed air, which is more effective for releasing plastic, but also aids in rubber removal. Be careful not to force debris into recesses with com-

pressed air; h.) Cleaning solutions may be useful, so remember to use fresh, clean rags (used rags often have metal chips embedded in them, which may scratch polished surfaces); i.) Cleaning oven – for plastic only. Follow manufacturer's recommendations. If no temperatures are specified do not exceed 850 degrees F (454 degrees C). Don't quench tooling to cool, as this could affect tooling hardness, concentricity and tolerances. j.) Purging compounds – several are offered to purge the extruder screw/barrel of residual polymer and rubber compounds.



Guill 812 Three Layer V ersion 03-Rework

Removing Excess Material for Optimum Machining Efficiency

Clean parts are critical to extrusion tooling performance and quality manufacturing. This is especially true for the sealing and locating surfaces – that control uniformity of the production process. For general maintenance of the tools, before storage or tooling changeover, a thorough cleaning and removal of the excess material assures the precision machining alignments required to produce end products to the precise tolerances. Equipment should be cleaned while it is still hot, since residual polymer and rubber will be easier to remove. Be sure to follow all MSDS recommendations when heating the tooling. Thermal gloves are used to protect the hands from the heated tooling surfaces. A brass scraper, as well as a brass or copper wool cleaning cloth are recommended because they are soft enough not to scratch the surface.

Make Tool Cleaning Easier The quickest way to remove the die is to employ the pressure of the extruder to push it out. Clean the body by using an air compressor and brass pliers so that the material cools down which increases the melt strength, making it into one-lump versus an elastic, gummy-like substance that is harder to remove. Cleaning the body feed port using compressed air and brass pliers to simultaneously cool and remove the excess residue from the feed ports. This procedure is followed by brushing with a round brass brush that polishes the surface. The flow area of the 2" (51 mm) flange adapter should be cleaned by carefully using a brass brush.

Examine all surfaces for any irregularities such as burrs and scratches since these must be repaired before the head is reassembled. Most manufacturers recommend using a hand polishing stone to remove the offending burr. Follow stoning with a light application of 600-grit emery cloth if necessary, but avoid rounding edges that are intended to be sharp. Flat sealing surfaces can also be cleaned using a stone, followed by a 600-grit emery cloth. Place the cloth on a clean, flat surface, preferably a surface plate, then apply friction in a circular hand motion until the area is clean and even. The parts in question should all be hardened steel alloys and will not be adversely affected using these methods. Inconel, monel and Hastalloy® are typically not heat-treated, requiring special care and handling to avoid any damage.

Don't Overlook Repairs

Tooling maintenance helps ensure a quality extruded product – one that meets dimensional specifications, maintains the specified minimum tolerance and is economically produced. Dirty, neglected and improperly adjusted tools contribute to excessive compound applications, which in turn complicate maintenance of minimum thickness tolerance. Excess material results in unnecessary costs and these directly affect the profitability of your company and the relationships with your customers.

The Important Final Step – Reassembly

Working from your dedicated tool cart, follow the manufacturer's instructions for reassembly. Give each component a final wipe down with a clean rag before installing. Even the smallest amount of grit, dirt and residual material must always be removed. Use mechanical or manual assistance for heavy and awkward components to avoid unnecessary mishaps. Reapply anti seize compound to all fasteners if required. Tighten fasteners to manufacturer's recommended specifications as well as in the recommended sequence. This fastening sequence should be specified in the manual and is generally in a star pattern. Tighten gradually until the proper torque is achieved to prevent distortion of the tooling. One of a die manufacturer's main goals is to form a concentric cone as quickly and accurately as possible in the primary section of the die – when the extrudate first emerges from the die's distribution capillaries. A properly designed and manufactured die has even distribution close to the extrudate entrance point, but this effort is negated once the die is adjusted, shifting the extrudate off to one side. An eccentric cone is formed in the primary area, and a concentric cone exists at only one point in the process, rather than a smooth, continuous flow path with decreasing volume. A properly manufactured and aligned extruded head, along with well-maintained tooling should require little or no adjustment. Another adverse affect of unnecessary die adjustment is the stress introduced to the extrudate caused by unbalanced flow. The net effect is the final product retains memory of this imbalance and unpredictable die swell occurs.

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针对ABS 和 PS 片板材的技术组件：熔体过滤是提高效率和回收内容的关键

Sheet Extrusion, Recycling: ABS and PS Sheet for Technical Components – Melt Filtration as the Key to Increased Efficiency and Recycled Content

如今，塑料加工商对环境有责任，并始终希望优化其生产流程，实现可持续性和能源效率。这当然从谨慎使用资源开始：塑料。内部工厂废物被视为一种有价值的原材料，可以收集和回收，在许多情况下，原生新料可以被二级再生的材料尽可能取代。

Today, plastics processors feel a responsibility toward the environment and are always looking to optimise their production processes with regard to sustainability and energy efficiency. This of course starts with careful use of the resource: plastic. Internal factory waste is seen as a valuable raw material, collected and recycled and in many cases virgin material is replaced as far as possible by secondary, repelletised material.

这也适用于用于技术应用的 ABS 和 PS 片板材的制造。热塑性塑料（如 PS 和 ABS）的特性特别适合回收利用。

熔体过滤是提高再生材料比例的关键

当考虑在 ABS 和 PS 板材等工艺中将回收材料用于技术应用时，不仅考虑回收材料对产品性能的影响也很重要，因为必须达到严格的质量要求。在考虑将回收材料用于诸如 ABS 和 PS 片板材等工艺以用于技术应用时，不仅考虑回收材料对产品性能的影响也很重要，因为产品性能必须达到严格和严格的质量要求。

熔体过滤系统也许是在不降低生产效率的同时实现回收材料使用的关键，同时保持尽可能高的产品质量。

然而：虽然通常作为原始设备提供挤出线的典型过滤器在只加工原生新料时通常是可以接受的，但一旦回收材料以任何数量使用，它们很快就会成为生产过程的瓶颈。

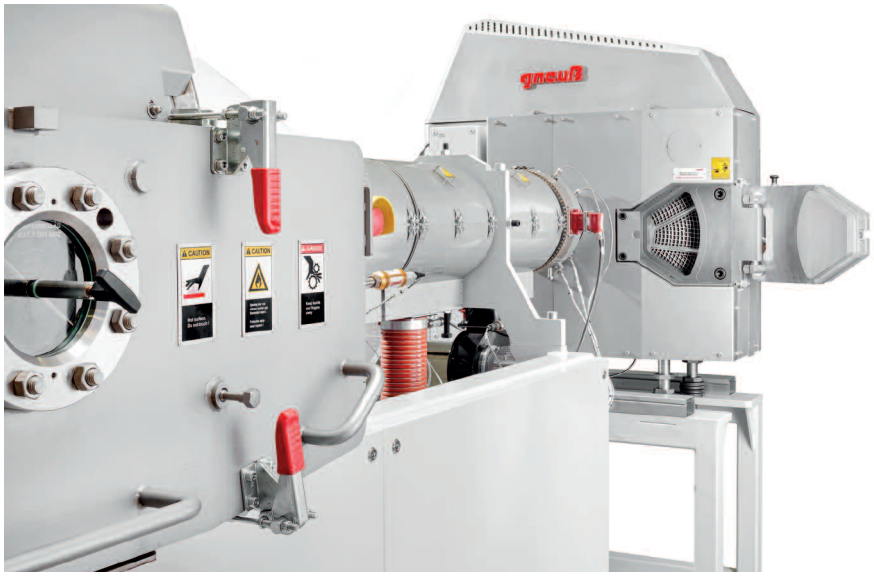
一家德国生产主要用于技术部件的热成型PS片板材制造商很早就认识到了这一方面，并配备了三条带 Gneuss RSFgenius 熔体过滤系统的挤出线。通过用这些系统改造挤出生产线，他们能够重新使用所有内部生产的边角料：不仅边缘修剪边料，而且还有框架废料，以及加工热成型产品生产过程中产生的切断废料。

另一家著名的德国ABS和PS板材制造商（例如，用于车辆内饰）用Gneuss的RSFgenius熔体过滤系统改装了其挤出生产线，以代替与挤出线一起配套提供的原始设备换网器。在为特定应用加工选择熔体过滤系统时，不仅必须考虑系统处理回收材料带来的污染负荷的能力，并实现所需的过滤细度，还要考虑系统对工艺一致性的影响。这是 Gneuss 旋转熔体过滤系统提供主要优势的另一个领域：例如，Gneuss RSFgenius 系统即使在处理严重污染的回收材料时，也可以保证压力一致性为 +/- 2 bar。得益于高效、电子控制的高压自清洁系统，过滤网片可重复使用多达 400 次。这可能意味着过滤网片更换可间隔几个月（在此期间系统自动运行无需关注）和更换网片期间不会造成生产干扰。

大多数为回收而开发的过滤器都是为再生造粒生产线而开发的，在那里会有一些空间方面的限制。然而，Gneuss 旋转式过滤系统结构紧凑，要对现有生产线进行改造进行专业设计。

Gneuss 加工过程恒定，全自动自清洁连续过滤器 RSFgenius

Gneuss Process-constant, Fully-Automatic Self-Cleaning Screen Changer RSFgenius



得益于独立设计、量身定制的解决方案，快速获得投资回报

除了提供一系列高效、工艺恒定的熔体过滤系统外，Gneuss 还拥有一支经验丰富的专家团队，他们的专业是将其系统集成到现有的挤出生产线中。在与客户的紧密对话中，制定出单独的解决方案，使加工商能够将 Gneuss 系统改造到其现有的挤出生产线中，从而以绝对最少的更换网片和生产中断，从而确保客户能够立即利用效率的提高，并确保快速的投资回报。

This also applies to the manufacture of ABS and PS sheet for technical applications. The properties of thermoplastics such as PS and ABS are particularly well suited to recycling.

Melt Filtration as the Key to Increasing the Proportion of Recycled Material

When considering the use of recycled material in a process such as ABS and PS sheet for technical applications, it is important not only to consider the effect of the recycled material on the properties of the product, which has to achieve strict and stringent quality requirements.

The process and the economics of the process itself must not be compromised by down time, variations etc.

The Melt Filtration system is perhaps "the" key to enabling the use of recycled material without compromising production efficiency whilst maintaining the highest possible product quality.

However: whilst the typical screen changers usually supplied as original equipment with extrusion lines are generally acceptable when processing only virgin material, they quickly become a bottleneck in the production process as soon as recycled material is used in any quantity.

A major German manufacturer of PS sheet for thermoforming to technical parts recognised this aspect early and equipped three extrusion lines with Gneuss RSFgenius Melt Filtration Systems. By retrofitting the extrusion lines with these systems, they were able to re-use all their internal waste: not only edge trim but also the skeletal waste and off cuts from the production of the thermoformed parts themselves.

Another well known German manufacturer of ABS and PS sheet for technical applications (e.g. for vehicle interiors) retrofitted their extrusion lines with the Gneuss RSFgenius Melt Filtration System in place of the original equipment screen changer which was supplied with the extrusion line.

When selecting a Melt Filtration System for a given application, it is important to consider not only the ability of the system to handle the contamination load which the recycled material brings - and to achieve the required filtration fineness, but also the impact of the system on the process consistency. This is another area where the Gneuss Rotary Melt Filtration Systems offer a major advantage: The Gneuss RSFgenius system for example, can operate with a guaranteed pressure consistency of +/- 2 bar even when processing heavily contaminated recycled material. Thanks to the efficient, electronically controlled high pressure purging system, the screen packs can be regenerated in situ up to 400 times. This can mean intervals between screen pack changes of several months (during which the system operates without attention) and replacement of the screen packs takes place without production disturbances.

Most screen changers developed for recycling were developed for repelletising lines, where there are few space constrictions. The Gneuss Rotary Filtration Systems however are compact and designed with retrofitting to existing lines in mind.

Fast Return on Investment Thanks to Individually Engineered, Tailor Made Solutions

In addition to offering a range of highly efficient, process-constant Melt Filtration Systems, Gneuss also has a team of experienced specialists whose speciality is integrating their systems into existing extrusion lines. In close dialogue with the customer, individual solutions are worked out so that the processor can retrofit a Gneuss system into their existing extrusion line with an absolute minimum of conversion work and disruption, thereby ensuring that the customer can immediately take advantage of the efficiency improvements and a fast return on investment is ensured.

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大口径管材挤出生产的理想设备——减少熔垂、提高质量

Pipe Extrusion – Case Study: Ideal for Large-Diameter Pipes – Less Sagging, Better Quality

Palad HY Industries公司（位于以色列Migdal HaEmek）董事成员Fuad Dweik先生在评价最近安装调试的巴顿菲尔辛辛那提公司（德国巴腾奥茵豪森）solEX NG 75-40挤出机时说：“这种新型挤出机最突出的优点是熔融温度低，产量高。”Palad HY Industries公司是该德国设备制造商的长期客户，也是以色列第一家选择这款最新一代单螺杆挤出机的管材制造商。这款新一代单螺杆挤出机具有许多突出的优点。

Next Generation Extruder solEX NG

“The most outstanding advantages of the new extruder are low melt temperature with high output” is how Fuad Dweik, Managing Partner of Palad HY Industries Ltd., domiciled in Migdal HaEmek, Israel, sums up his assessment of the recently commissioned solEX NG 75-40 from battenfeld-cincinnati GmbH, Bad Oeynhausen. He is a long-standing customer of the German machine manufacturer and was the first pipe manufacturer in Israel to opt for the single screw extruder of the latest generation, which offers many additional advantages.

Palad HY公司创立于1997年，是以色列HDPE和PVC管材生产的领先制造商之一。公司通过了ISO 9001：2008质量体系认证，主要产品为人所熟知的大口径管材，其中HDPE管材的最大直径为1200 mm，PVC管材的最大直径为500 mm。除了其国内市场外，Palad HY公司还为东欧和西欧，南美和非洲的客户提供服务。目前其年产20000吨的管材中，约25%出口到这些地区。该公司的产品范围包括供水管和排污管，还有用于天然气输配系统的管道，以及用于电力和通信线路的保护套管。

Palad HY公司从成立伊始到现今一直是巴顿菲尔辛辛那提公司的客户，现在运行多条来自巴顿菲尔辛辛那提公司的生产线设备。

该公司所有人的儿子，生产副经理Rami Dweik表示：“鉴于我们对德国机器技术方面积累的丰富经验，最近的投资项目我们再次选择了巴顿菲尔辛辛那提公司的一台挤出机，结果未让我们失望。”而且，今年年初安装的solEX NG 75-40新一代高性能单螺杆挤出机同属于巴顿菲尔辛辛那提公司的。

Palad HY公司用solEX NG 75-40替换了PE 100管材挤出生产线中的旧挤出机。Fuad Dweik先生补充说：“与以前使用的挤出机相比，较低的熔体温度给我们留下了深刻的印象，并具有更好的熔体均匀性，因而提高了管材质量。”由于熔体温度较低，还能实现更均匀的壁厚分布，公差范围极窄，并减轻了不利的熔体下垂现象。当然，较好的管材质量还可以降低材料消耗，减少废料。Fuad Dweik先生总结说：“材料节省，再加上由于较低的加热速率使能耗降低了约10%，使该挤出机成为一种特别经济的挤出解决方案。”公司已经在考虑再为其他现有生产线投资购买另一台新一代solEX NG挤出机。

新型solEX NG挤出机的上述优势得益于经全面重新设计的加工单元，与之前成熟的当前仍在销售的旧系列相比，solEX NG挤出机目前有螺杆直径为60、75、90和120 mm的型号，产量范围为750到2500 kg/h。内部带有沟槽衬套的机筒与之相匹配的螺杆和开槽衬套相结合，大幅改进了工艺技术：较低的轴向压力分布减少了机器磨损，高单位输出速率和较低的螺杆速度可确保高效率，并且熔体加工过程轻柔但

高效、均匀，与传统加工设备相比熔体温度大约低10°C，因而可达到较高的最终产品质量，并大量节省生产成本。

假设能源成本为0.10欧元/度，在满负荷生产时仅由于能耗降低10%就可以节省约18000欧元的运营成本。根据与之相比较的机器型号不同，最多可节省15%。而且由于熔体温度低，通过减小熔体下垂可以节省材料，从而可进一步降低生产成本，在大口径管材生产中尤其如此。

管材制造商Palad HY公司也非常赞赏该挤出机直观操作的BCtouch UX控制系统。该系统除了具有现代功能之外，还可以实现个性化或个性化用户界面。“对于我们的员工来说，设备甚至可以用希伯来语操作，而且巴顿菲尔辛辛那提服务团队可以全天候提供服务，这是一个巨大的好处。”这是Rami Dweik先生对挤出设备供应商的最终称赞话语。

左：Rami Dweik, 副经理
右：Fuad Dweik，Palad H.Y.公司董事会成员

Left: Rami Dweik, Deputy Manager
Right: Fuad Dweik Managing Partner of Palad H.Y.

Palad HY, which was founded in 1997, ranks among the leading manufacturers of HDPE and PVC pipes in Israel. The ISO 9001:2008-certified pipe producer is well known for its range of large-diameter pipes with maximum diameters of 1,200 mm for HDPE pipes and 500 mm for PVC pipes. In addition to its domestic market, Palad HY also serves customers in Eastern and Western Europe, South America and Africa, to which about 25% of its annual production volume of currently about 20,000 t is exported. The company's product range includes fresh water and sewage pipes as well as pipes for natural gas distribution systems, and protective conduits for electricity and communication lines.

Palad has been a customer of battenfeld-cincinnati right from the beginning and now operates several lines with machines from the extrusion specialist.

"In view of our positive experience with the machine technology from Germany, we have again chosen an extruder from battenfeld-cincinnati for our most recent investment, and we were not disappointed", Rami Dweik, son of the proprietor and responsible for the production as Deputy Manager, reports. On the contrary! The solEX NG 75-40 installed at the beginning of this year belongs to the new generation of high-performance single screw extruders from battenfeld-cincinnati.

At Palad, it has replaced an old extruder in a PE 100 pipe extrusion line. "We are particularly impressed with the lower melt temperature compared to the previously used extruder, combined with better melt homogeneity and consequently better pipe quality", Fuad Dweik adds. Thanks to the lower melt temperature, Palad also achieves significantly more even wall thickness distributions within extremely narrow tolerances, plus less undesirable sagging. Of course, the better pipe quality also reduces material consumption and produces less scrap. "Both the material savings and the roughly 10% reduction in energy consumption due to the lower heating rates make this extruder a particularly cost-efficient alternative", concludes the General Manager, who is already thinking about a further investment in another solEX NG extruder of the new generation for other existing lines.

The completely redesigned processing unit is responsible for the above-mentioned advantages of the new solEX NG extruders, which are available with screw diameters of 60, 75, 90 and 120 mm and cover a throughput range from 750 to 2,500 kg/h, compared to the well-established and still available predecessor series. The internally grooved barrel in combination with a matching screw and grooved bushing geometry offers substantial improvements in process technology: a reduced axial pressure profile lessens machine wear, high specific output rates with lower screw speeds ensure high efficiency, and the gentle but highly effective and homogeneous melting performance at about 10 °C lower melt temperatures compared to conventional processing units delivers high end product quality with significant cost savings in production.

Assuming that energy costs are 0.10 EUR/kWh, about 18,000 EUR in operating costs can be saved due to the 10% lower energy consumption at full output capacity alone. Depending on the machine model compared with, savings of up to 15% are possible. Even higher cost cuts can also be achieved in production by material savings through reduced sagging as a result of low melt temperatures, especially in large-diameter pipe production.

Finally, the pipe manufacturer Palad HY appreciates the extruder's intuitively operated BCtouch UX control system which, in addition to modern functionalities also includes the possibility of individualization or personalized user interfaces. "For our staff, it is a great benefit that the equipment can now even be operated in Hebrew, and that the battenfeld-cincinnati service team is available 24/7", is the final praise for his extrusion equipment supplier expressed by Rami Dweik.

battenfeld-cincinnati
www.battenfeld-cincinnati.com

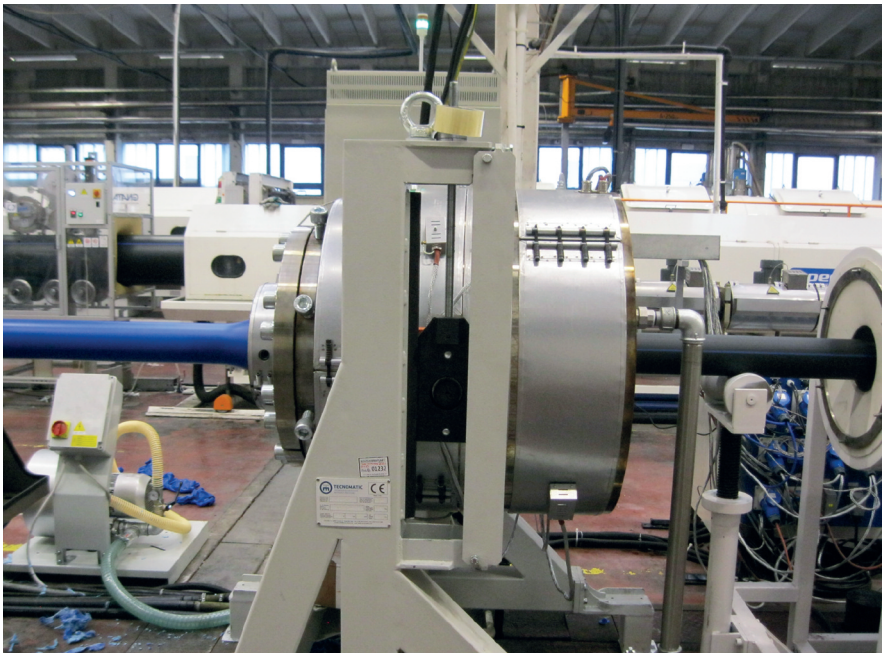
Palad H.Y. Industries
www.paladhy.com

多层管生产中的创新和性能的提升

Pipe Extrusion: Innovation and Enhanced Performance in the Production of Multilayer Pipes

Tecnomatic SRL Massimiliano Vailati博士

聚烯烃管材的市场在不断发展中，并且，产品需要满足越来越高的客户和应用的需求。 尽管聚烯烃性能在不断地提高，但单层实壁管仍不能始终满足某些客户或应用的要求。 在这种情况下，多层管是一种可行的解决方案。 生产优质多层管的关键是模头。位于意大利贝加莫的Tecnomatic SRL是聚烯烃和PVC管材加工设备行业领先的制造商。 在本文中，将介绍Tecnomatic公司如何持续改进技术和产品性能，生产出具有功能层的复杂多层管设备。



HSCR PE100 共挤，使用涂敷模头在标准的PE100 管材外进行包覆

Co-extrusion of HSCR PE100 using a coating die head on a standard PE100 pipe

By Dr. Massimiliano Vailati (Tecnomatic SRL)

The market for polyolefin pipes is constantly evolving with more demanding customer and application requirements. Despite the constant improvement in polyolefin properties, single-layer solid wall pipes are still not able to always fulfil certain customer or application requirements. For such situations, multilayer pipes may be a solution. The key to producing a good multilayer pipe is the die-head. In this article will be showcased how Tecnomatic, a leading manufacturer of processing equipment for polyolefin and PVC pipes based in Bergamo, Italy continues to improve the technology and performance for the production of complex multilayer pipes with functional layers.

Tecnomatic是在VENUS单层模头理念的基础上开发的，基于多年来的可靠的经验，Tecnomatic目前能够提供全系列带有多螺旋流道的模头，用于生产两层、三层或四层的聚烯烃管，包括生产大直径的聚烯烃多层管的高性能生产线。公司最近向缅甸的Authentic Production公司交付了一条生产线，用于生产最大直径630毫米的多层管，这表明亚太市场正在拥抱能够提供更优异性能的高水平创新产品。

Authentic Production是Authentic 企业集团的一部分，该公司于几年前开始生产PE管，由于其对质量的重视，从而迅速赢得了市场份额和声誉。他们从Tecnomatic生产线的运行中获取了效益，这些生产线能够生产最大直径为1200毫米的管道，在生产其最新推出的多层管材产品时，生产效率和可靠性得到了提高，同时废品率有所降低。新型管材的外层采用了BorSafeTM HE3494-LS-H PE100高强度抗开裂（HSCR）原料，为客户提供了最大的安全性能，可以防止管材的点载荷和表面损坏，而这种现象在管材的安装过程中是可能发生的。

在欧洲，这种多层管材已得到了广泛应用，例如：采用非开挖技术铺设管道，或通过使用从沟渠中挖出的原有材料，不用添加额外的回填物的情况下铺设管道。安装人员能够减少将沙子或其他回填材料运到现场的成本，减少了对环境的影响。 HSCR PE100管道现在也可以在亚洲为承包商和施工方提供这样的选择。

由Authentic Production生产的多层管的管壁由两层组成，分别占总厚度的10%和90%。外层由HSCR PE100材料制成，芯层由标准的PE100制成。采用两台独立的挤出机，

Authentic公司的 M.H. Aung和Tecnomaict公司的 Massimiliano Vailati博士

M.H. Aung, Authentic and Dr. Massimiliano Vailati, Tecnomatic

外层通过L / D 40的ZEPHYR系列挤出机加工，该挤出机具有出色的挤出性能，同时能够降低熔体的温度和能耗。而内层则由L / D30的ATLAS系列挤出机来加工。.两台挤出机都各自使用称重计量进料系统，这样就能实现同步，以保持连续的原料进料并记录产品重量的变化，从而实现了对管材的每米重量和壁厚分布的完美控制。

VENUS MULTI系列管材模头经过了精心设计，能够以非常高的产量加工多种原材料，并具有出色的加工性能。螺旋流道的几何形状已经针对最新一代的PE和PP原料进行了优化，同时,在减小模头的总体长度、体积和工作压力方面都取得了进步。 VENUS MULTI模头的主体以及具有新颖几何形状的流道，在设计计算时都已考虑到了适应当前的原材料特性。这种几何形状即使在非常高的生产速率下，也能确保在该范围内的所有管模头中，熔体的压力和分布具有相同的行为特性。这种新的进料系统以及匹配范围和小型化的模具有助于降低工作压力。由于通常需要高达10%的挤出机功率来实现熔体输送能力，因此可以减少挤出过程中的能耗。较低的压力导致较低的熔体温度，并与较短的滞留时间一起，确保了管道特性的提升，例如管材的OIT（抗氧化性），并降低了管材内部的热应力和剪切应力。

自从多层生产线投产以来，客户Authentic对这种生产线的质量表示出了很高的满意度。新产品将为项目的业主在困难条件下铺设的管道提供额外的安全保障。可以为管道添加其他功能（例如可剥离的外套层），这为水和气体的分支管道提供了进一步的经济效益和环境效益。这种可剥离的外套层通常由经过特殊改性的聚丙烯制成，在使用诸如爆管法或冲水钻孔之类的铺设方法时，可进一步保护管道表面免受潜在的缺口和裂纹的影响。当保护套最承受使用中的压力时，保护套中可能存在的深切划痕不会传送到内管上去。

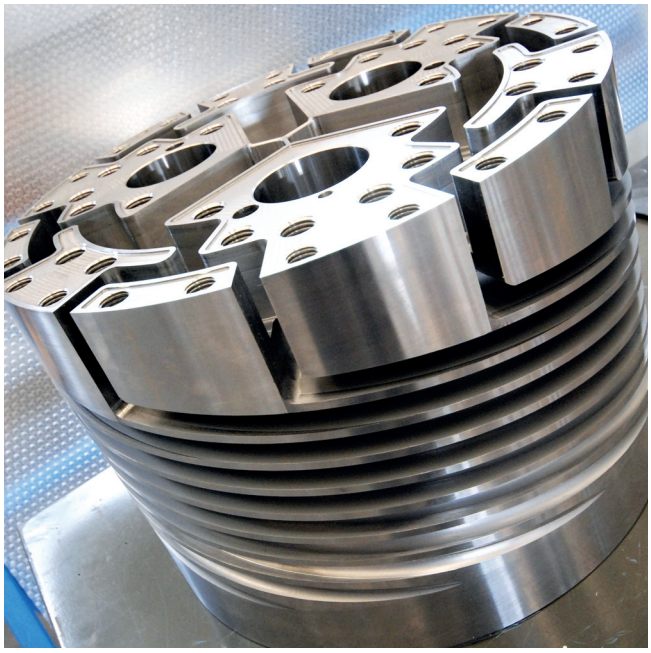
对于这种新型多层管而言，当前对于所有尺寸的管材，粘附在PE管芯层外壁上的可剥离护套的厚度通常为0.6到0.7 mm，生产中是通过安装在最后一个冷却罐的前端的十字型模头添加覆盖层。 Tecnomatic能提供基于螺旋式或径向技术的全系列模头，适用管材直径为5到800毫米，最多4层的塑料管或金属管道涂层。涂覆模头基于典型的螺旋技术，适用于共挤涂敷大直径和单层管材。根据物料特性的不同，例如PA，EVOH，PVDF或粘合剂，作为替代的选择方案，可采用径向分配器或短程螺旋流道的方式。

外径1200mm的PE100多层管材，带有HSCR外防护层，在缅甸进行焊接

Multilayer 1200 mm OD PE100 with HSCR outer layer pipes being welded in Myanmar

VENUS 630 模头的螺旋分配器

VENUS 630 die-head spiral distributor



Developed on the basis of the VENUS monolayer concept, Tecnomatic currently has a full range of die-heads with multi helical spirals, for the production of two, three or four layers polyolefin pipes, even for large diameters, building on years of experience supplying reliable and high performing lines for multilayer pipes. A recent delivery of a line to Authentic Production in Myanmar for the production of multi-layer pipes up to 630mm shows that the Asia Pacific market is embracing innovations that may provide higher levels of performance.

Authentic Production, part of the Authentic Group of Companies, which started its PE pipe production several years ago, has rapidly gained market share and reputation because of its focus on quality. They benefited from running Tecnomatic lines capable of producing pipes up to 1,200 mm that offered production efficiency, reliability and reduced scrap rates when producing their recently launched multilayer product. The new product featured the BorSafeTM HE3494-LS-H PE100 High Stress Crack Resistant (HSCR) material in the outer layer to offer their clients maximum security against point loads and surface damage that may occur during installation.

Such multilayer pipes have been used extensively in Europe for installations either using trenchless techniques or where no imported backfill is used. By using the same material dug from the trench, the installers were able to reduce the costs and environmental impact of bringing sand or other backfill materials to the site. HSCR PE100 pipes can now offer contractors and installers such options in Asia as well.

The wall of the multilayer pipe produced by Authentic Production is made up of two layers equal to 10 % and 90 % of the total thickness. The outer layer is produced from HSCR PE100 material and the core from standard PE100. This requires two separate extruders, which was achieved by a main extruder from the ZEPHYR series in L/D 40, which offers extreme output performance and lower melt temperature and energy consumption, while the inner layer is produced from an ATLAS series in L/D 30. Both extruders are synchronised using gravimetric feed on each extruder to maintain a continuous raw material feed and to record variations in mass throughput, thereby ensuring perfect control of the weight per meter and wall thickness distribution.

The VENUS MULTI pipe head series have been designed to achieve excellent processing using a wide range of materials at very high output. The spiral geometry has been optimised for the latest generation of PE and PP raw materials, while achieving improvements in reducing its overall length, volume and operating pressure. The heart of the VENUS MULTI heads consist of an innovative flow channel geometry, which has been calculated to take into consideration the current raw materials. This geometry ensures the same behaviour for pressure and distribution of the melt, in all the pipe heads in the range even at very high output rates. This new feeding system, as well as for the matching ranges and the small die sets contributes to the reduced working pressure. This reduces the energy consumption during extrusion since up to 10 % of the extruder power is usually required for pumping capacity. Lower pressure results in a lower melt temperature and together with lower residence times ensures improved pipe characteristics such as its OIT (oxidation resistance) and reduction of thermal and sheer stresses.

Authentic Production has expressed a high degree of satisfaction for the quality of the multilayer line since its commissioning. The new product will offer project owners additional security for pipelines that are installed in demanding conditions. Additional features can be added to the pipe such as a peelable outer skin, which provides further economic and environmental benefits for water and gas distribution pipelines. This peelable outer jacket, frequently made from specially modified polypropylene, further protects the pipe surface against potential notches and cracks when using installation methods such as pipe bursting or wash-boring. Potentially deep scores in the protective jacket will not be transferred to the inner pipe when it is eventually exposed to service-related stresses.

The peelable jacket that is adhered to the outer wall of the core PE pipe is typically 0.6 to 0.7 mm thick for all current dimensions of this new multi-layered pipe and the skin is added by a cross-head positioned before the last cooling bath. Tecnomatic has a full range of die-heads, based on spiral or radial technology suitable for plastic or metal pipes coating ranging from 5 to 800 mm and up to 4 layers. The die-heads are based on a typical spiral technology for large and single layer co-extrusion or a mixed solution with radial distributors or short path spiral alternative depending on material characteristics such as PA, EVOH, PVDF or adhesive bonds.

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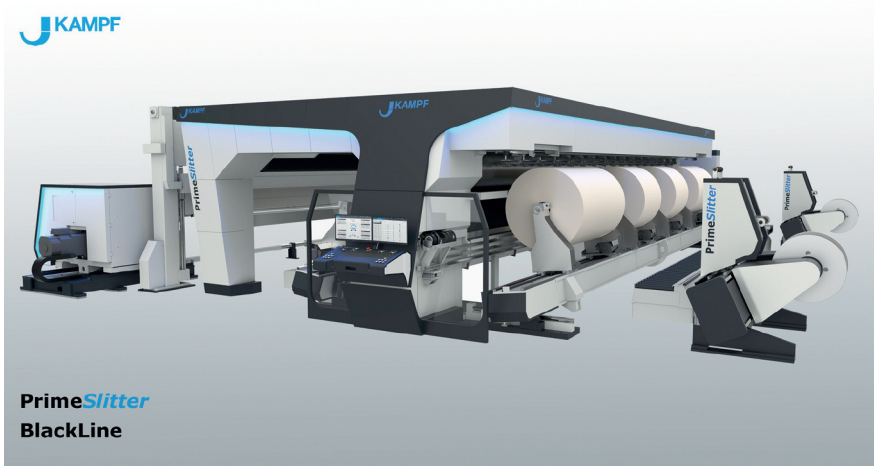
从行业先锋到世界市场领导者 – 100年来专注于创新

Slitting and Winding Technology: From Pioneer to World Market Leader – 100 Years of Focus on Innovation

100年来，KAMPF（康甫）这个名字就一直以创新的分切和卷绕技术而闻名。 对于世界各地的客户而言，“ KAMPF制造”的设备就意味着可靠性、质量和生产效率。 该公司为此感到非常自豪。

Since 100 years the name KAMPF has been known for innovative slitting and winding technology. For customers all over the world machines "Made by KAMPF" mean reliability, quality and productivity. The company is very proud of this.



正在设计新型设备：现代化的 PrimeSlitter

The modern PrimeSlitter in new machine design

1920年10月2日，具有开拓精神的Erwin Kampf开始为各种高质量的卷筒材料生产分切复卷机和收卷机。他几乎无法想象：100年后的康甫公司成为了该领域的全球市场领导者。自1988年以来，康甫便是Jagenberg AG的全资子公司，总部位于德国Krefeld（克雷费尔德），如今，它已拥有位于德国、美国、中国和印度的子公司、服务分支机构以及遍布全球的代表处所构成的网络，且均获得了极大的成功。

康甫丰富多彩的产品组合包括各种纵向分切和卷绕设备、复卷机和专用设备，这些设备可广泛用于生产和加工带材形状的塑料薄膜、复合材料、精制纸和工业薄膜。 康甫还提供众多解决方案，用于处理锂离子电池中使用的新材料。该公司的典型产品包括分切机和复卷机，工作宽度可达11米，生产速度可达每分钟1,500米。

作为这一领域的全球最大制造商，康甫始终面对市场挑战，并不断致力于其产品种类的进一步完善。设有两个康甫技术中心，可为客户进行材料测试，以及在实验室条件下进行多种多样的系列测试和产品开发。

除了开发新设备以外，客户还可以从康甫的全寿命周期服务中获益。这个全球服务网络的专家全天候值班，还提供众多服务，例如康甫学院及其全面的资格认证措施。

但是，康甫周年纪念年是特殊的一年：如果公司和世界其他地方都没有面对新型冠状病毒所带来的巨大挑战，那真是太好了。尽管到现在为止，康甫的“病毒”感染过程相对较为温和，并且由于采取了错开工作时间的模式、更多地使用数字技术、以及借助于KSP（康甫服务门户）的帮助，危机管理取得了成功。不过，计划的庆祝活动被完全取消。

我们将来会期待什么？

康甫面对着进一步的挑战性任务，并且已经积极参与模块化、自动化和数字化的课题。借助于“ the @ vanced”（康普推出的工业4.0一体化平台），康甫正在为价值链中的网络机器和组件开发领先的一体化平台。 康甫还是Converting 4.0网络的联合创始人，该网络将人与具有前瞻性的产业联系在一起。该网络现在有80多家公司和协会参与。新的 “自动化”和“工业4.0”正在支持技术部门从机器制造商到系统提供商的转变。

100年的公司历史表明，除了勇气之外，员工的能力和热情是设备制造商成功的关键。因此，康甫致力于可持续的人力资源开发和年轻人才的培养。培训和最现代的教学方法一直是康甫的首要任务。该公司通过与几所学校的合作伙伴关系参与了支持学习和早期教育措施，以激励孩子们和年轻人从事被称为MINT的专业（数学，计算机科学，自然科学和技术），并使他们深刻理解机械工程的工作原理。

公司已有100年的历史，这对于康甫既是激励又是挑战。因为在当今网络化和数字化的世界中，对人和机器的需求正在迅速变化。 康甫在这一方面处于理想的位置，并将继续以专业知识和热情，不断挑战新技术，开发出新的技术和现代化解决方案。在康甫，我们始终以勇气和好奇心面对变化中的世界。

When on October 2, 1920 Erwin Kampf with pioneering spirit starts to build slitter rewinders and winders for a wide range of web materials of the highest quality, he can hardly imagine that KAMPF – 100 years later – is the world market leader in this field.

KAMPF, since 1988 a wholly owned subsidiary of Jagenberg AG, headquartered in Krefeld, Germany, is today extremely successfully positioned with locations in Germany, subsidiaries in the USA, China and India, service branches and a worldwide network of representatives.

The extensive KAMPF portfolio includes slitting and winding machines, winders and special machines for the production and processing of web-shaped plastic films, composite materials, refined papers and technical films. KAMPF also offers numerous solutions for processing new materials used in lithium-ion batteries. The company's classics include slitter rewinders and winders for up to eleven meters working width and production speeds of up to 1,500 meters per minute.

KAMPF, as the world's largest manufacturer in this segment, always faces the challenges of the markets and works continuously on the further development of its product portfolio. The two KAMPF Technical Centers can be used for tests with customer material as well as for numerous test series and developments under laboratory conditions.

In addition to new machine developments, customers benefit from the KAMPF Lifecycle Service. The experts of this worldwide service network are on duty around the clock and also offer numerous services, such as the KAMPF Academy with its comprehensive qualification measures.

However, the KAMPF anniversary year is a special year – it could have been so wonderful if the company, and the rest of the world, had not faced the SARS-CoV2 with enormous challenges. Although KAMPF had a relatively mild "corona" course and the crisis management has been successful so far, thanks to different working time models, a much higher use of digital technology and with the help of KSP (KAMPF Service Portal), the planned celebrations had to be cancelled completely.

What can we expect in the future?

KAMPF is facing further challenging tasks and is already intensively engaged in the topics of modularization, automation and digitalization. With "the@vanced", KAMPF is developing a leading, integrative platform for networking machines and components along the value chain. KAMPF is also co-founder of the Converting 4.0 network, which connects people and forward-looking industries. The network now counts more than 80 participating companies and associations. The new technical departments "Automation" and "Industry 4.0" are supporting the transformation from a machine manufacturer to a system provider.

100 years of company history show that, in addition to courage, the competence and enthusiasm of the employees is the central success factor of the machine manufacturer. Therefore, KAMPF focuses on sustainable human resources development and the promotion of young talents. Training and the most modern teaching methods have always been a priority at KAMPF. The company is involved in support and early education measures through learning partnerships with several schools in order to inspire children and young people for the

现在已经有八十多家公司和协会加入了 "Converting 4.0" 网络

The "Converting 4.0" network now counts more than 80 participating companies and associations

在现场安装 Wiehler

Installation at the Wiehler site

so-called MINT professions (mathematics, computer science, natural science and technology) and to give them an insight into the working world of mechanical engineering.
100 years of company history – for KAMPF both incentive and challenge. Because in today's networked and digitalized world, the demands placed on man and machine are changing rapidly. KAMPF is ideally positioned for this and will continue to develop new technologies and modern solutions for ever new challenges with expertise and passion. At KAMPF we always face change with courage and curiosity.

跨学科的团队开发出了一体化平台 the@vanced

Interdisciplinary teams developed the integrative platform the@vanced

康甫公司(Kampf Schneid- und Wickeltechnik GmbH & Co)总部

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“即使在充满挑战的时期，我们也在这里为客户服务。”

Processing – Interview: „We are here for our customers, even in challenging times.“

ECON集团首席执行官Gerhard Hehenberger的访谈

Interview with Gerhard Hehenberger, CEO ECON Group

作为一家公司，ECON引以为荣的是哪些方面？

Gerhard Hehenberger: 自1999年成立以来，ECON一直保持稳定而坚实的增长，这使我们成为了一家成功的公司。非常高兴的是，我们能够在很短的时间内在世界市场上树立起了自己的品牌。 ECON在全球范围内的成功得益于ECON创新的技术。 众多专利和奖项，例如国家创新奖，证明了我们的创造精神。

ECON的水下造粒系统有什么突出之处？

Hehenberger: 首先，我们的设备在工艺稳定性高方面脱颖而出。持有专利的隔热材料是我们独特的技术，这使得完美的产品成为可能。为了满足目标群体的需求，我们为每个客户提供个性化的解决方案。作为开发合作伙伴，我们不断实施针对特定客户的创新解决方案。我们的客户特别赞赏我们的快速及时的决策流程以及技术卓越、坚固耐用的产品。我们的客户服务部门也是一个非常重要的组成部分。快速而及时的响应和高水平的技术人员是我们客户服务的特色。我们希望对员工进行培训，因为我们要确保提供优质的服务。此外，我们提供各种定制服务合同，以确保快速交付备件。作为一家现代化的公司，我们确保可以随时为我们的客户提供支持，因此，我们正不断改善我们的远程服务程序。

您为哪些引以为荣的杰出产品/项目感到骄傲？

Hehenberger: 在2019年，我们推出了创新产品ECONia ，这是第一套全自动造粒系统。因此，这是非常重要的产品发展。在我看来，这台机器为我们树立了另一个里程碑。这台专用设备将热分离和工业4.0的优势结合起来了。 一体化的机器人负责通常的操作过程，例如启动机器以及更换刀架。 该自动化装置能够让操作人员从其控制中心同时操作和控制10条以上的生产线。 一体化的人工智能使生产更加简便和高效。 在线监测系统监测粒子，以确保产品具有最佳的质量。

ECON如何处理当前的状况？

Hehenberger:与其他许多公司一样，由于当前的形势，我们也面临着新的挑战。 ECON正在利用这段特殊的时间来培养未来的人才，并为员工提供充实专业知识的机会。 这样，我们为疾病大流行之后的时期做好了准备。 作为可靠的合作伙伴，我们现在已向美国派遣出服务技术人员，这样，即使在困难时期，我们也能为客户提供最佳的本地支持。

公司面临哪些挑战？如何克服？

Hehenberger: 当前的国际旅行限制，以及作为最重要沟通渠道的交易会被取消，使市场发展成为我们必须重新思考的任务。 但是，数字世界为我们的客户提供了一种很好的可能性。 这里的挑战是找到正确的沟通渠道，以实现我们的多种目标。 因此，永久保持最前沿的状态是必不可少的。

ECON未来将如何发展？

Hehenberger: 与以往一样，ECON将继续专注于创新产品的开发，以尽最大可能来满足客户的需求。 我们还计划开拓新的市场，从而为ECON创造美好的未来。

谢谢您的谈话，Hehenberger先生。

What does ECON pride itself in as a company?
Gerhard Hehenberger: Since its foundation in 1999, ECON has recorded a steady and stable growth, which has made us a successful company. It is particularly pleasing that we were able to establish our brand on the world market in this very short period of time. The worldwide success of ECON is based on the innovative ECON-technology. Numerous patents and awards, such as the State Prize of Innovation, verify our inventive spirit.

What stands out about ECON's underwater pelletizing systems?
Hehenberger: First of all, our machines offer a high process stability. Our unique technology - the patented thermal insulation – makes a perfect production possible. To meet the needs of our target group we offer tailor-made solutions for every customer. As a development partner, we constantly implement new customer-specific solutions. Our customers especially appreciate our fast and short decision-making processes, as well as technically excellent and durable products.
Our customer service department is also a very important part of the company. Fast response times and high availability of technicians characterize our customer service. The training of our employees is our focus, as we want to ensure a high service quality. Furthermore, we offer various customized service agreements to guarantee a fast delivery of spare parts. As a modern company, we ensure that we can support our customers at any time. Therefore, we are permanently improving our remote service system.

Which products/projects are you very proud of?
Hehenberger: In 2019 we introduced our innovative product ECONia – the first fully automated pelletizing system. From my point of view, we were able to set another milestone with this machine. Therefore, it is a very important product development. This special machine combines the advantages of thermal separation and industry 4.0. An integrated robot takes over the usual operating processes, such as starting the machine, as well as changing the knife carrier. This automation step enables the operator to operate and control more than 10 lines simultaneously from his control center. The integrated artificial intelligence makes the production much more simple and efficient. An inline monitoring system measures the pellets to ensure the best quality.

How does ECON deal with the current situation?
Hehenberger: Like many other companies, we are facing new challenges due to the current situation. ECON is using this extraordinary time to build up personnel for the future and to offer employees the opportunity to expand their expertise. Thus, we are preparing for the time after the pandemic. As a reliable partner, we have even sent a service technician to the USA in order to provide our customers the best possible local support – even in challenging times.

What are some of the challenges facing the company and how are they overcome?
Hehenberger: The current international travel restrictions and the cancellation of trade fairs – as the most important communication channel – make market development a task that we had to rethink. However, the digital world offers a real possibility to be there for our customers. The challenge here is to find the right communication channels to reach our target group. It is therefore essential to stay up-to-date permanently.

What does the future hold for ECON?
Hehenberger: As in the past, ECON will continue to focus on the development of innovative products in order to meet customer needs as good as possible. We have also planned to develop new markets and thus create a positive future for ECON.

Thank you for our conversation Mr. Hehenberger.

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„数字化创造了高透明度“

Size Reduction Technology – Interview: "Digitisation Creates High Transparency"

Getecha 董事总经理Burkhard Vogel 谈工业4.0应用于造粒技术

在许多塑料加工行业中，与生产相关的造粒技术整合到注塑、挤出、吹塑和热成型生产线上的做法正在迅速发展。造粒机制造商Getecha在早期就对这种趋势作出了回应，现在，依据工业4.0标准，其“ RotoSchneider” 系列的料斗和喂料造粒机已经配备了许多智能化的功能。常务董事Burkhard Vogel在采访中介绍了这些重要的进展。

Getecha Managing Director Burkhard Vogel about Industry 4.0 in Granulating Technology

In many plastics processing industry sectors, the production-related integration of granulation technology in injection moulding, extrusion, blow moulding and thermoforming lines is advancing rapidly. The granulator manufacturer Getecha responded to this trend at an early stage and now equips the hopper and infeed granulators of its "RotoSchneider" series with numerous intelligent functionalities according to Industry 4.0 criteria. Managing director Burkhard Vogel explains in an interview what is important.

Getecha 董事总经理 Burkhard Vogel
(所有图像：Getecha)

Getecha Managing Director Burkhard Vogel (All images: Getecha)

Vogel先生，对您的开发工程师而言，配备工业4.0功能对于Getecha造粒机有多重要？

Burkhard Vogel: “除了对转子、切割室以及进料和出料系统等核心性能组件不断进行优化以及持续创新以外，为造粒机开发实用的工业4.0功能，其重要性也得到了极大提升，在过去的三到四年中更是如此，这些功能适用于除压实造粒机系列以外的小型和紧凑型造粒机系列，以及大型中央造粒机和喂料造粒机。

您认为这里的决定性因素是什么？

Vogel: 无论您考虑的是汽车行业及其供应商、包装材料制造行业还是巨大的消费品制造行业，在所有这些行业中，进一步实现自动化的愿望正在推动着生产工艺的数字化。按照工业4.0标准进行制造不仅限于物料加工和造粒技术领域。我们的工程师几年前就意识到了这一点，因此我们已经能够在这一领域制造出拥有相当多专有技术的产品 ，并且现在能够为RotoSchneider造粒机配备各式各样的智能信息和通讯方面的特色功能。

这些工业4.0功能是否同时是造粒机标准设备的一部分？

Vogel: 并非在所有情况下都如此。仅当客户想要将造粒技术整合到主要的塑料产品加工自动化过程中时，工业4.0功能才成为客户关注的焦点。遇到这种情况时，若要将信息和通信技术整合到生产技术的基础架构中，造粒机起着核心作用，因此，其效率和实用性也可以在数字化的级别上得以确保。

您能在这方面更具体介绍一下吗？

Vogel: 想象一下，一个塑料加工商，打算将我们的一台或几台中央式或旁路式造粒机整合到他的物料加工流程中，并且通过使用传送带、倾斜机构、喂料站和其他外围系统自动进行生产，以回收边角料和废料。通过回收利用，以节省资源的方式生产。 作为该项目的一部分，我们能提供各种配备了工业4.0功能的造粒机，可以提供有价值的服务。 这是因为这种造粒机不仅支持连续的系统优化，而且还能提供质量保证，能够进行工艺过程的监控，并且可以显著地提高生产线的工作效率。

在任何情况下，造粒机都应配备这些工业4.0功能吗？

Vogel: 这要根据项目的具体要求和客户的目标来确定。现在有许多事情是可以实现的，因为我们采用的是现代传感器和接口技术，加上一系列已实现的现场总线系统，这样就具备了多种可能性。许多重要的工艺和设备数据都可以被发掘、记录和处理、实现可视化并进行评估。

你能举一个例子进行说明吗？

Vogel: 如果造粒机和生产线之间的信号交换已经进行了组态，则可以记录和分发所有状态、活动和故障信息。根据这些信息，可以将关键的情况按照预先设定的预警等级报告给上一级生产控制系统，从而能够在早期阶段采取适当的对策和纠正措施。此外，还可以记录所有与生产相关的性能参数和造粒机物料的关键指标（例如产量或研磨物料的质量），并将它们发送到塑料加工商的“生产数据采集系统”或“主要诊断分类系统”处理器作进一步评估。这种方式也适用于运行时间、能耗、性能峰值以及造粒机运行的许多其他参数。我们还可以安排将所有的系统信息传递到主机，并在那里进行存档、分析和记录。所有这些都为自动化系统的性能创造出了最大的透明度。

这样一来，设备运营商还会收到有关重要工艺实施和质量改进方面的数据吗？

Vogel: 对。尤其重要的是，还可应用工业4.0功能，通过生产线和造粒设备之间的信号交换，以及对部分数据材料进行处理，就可以实现被称为“预测性监视”的功能，并提高设备的利用率。

例如，可以收集许多信息以备预测性维护系统使用，这些信息由Getecha远程维护工具进行检索。为此，可以将造粒机链接并整合到客户的设备维护基础架构中。从中获得的知识也将被纳入到Getecha造粒机手册的故障排除目录中来。然后，生产设备的主控制系统可以将该信息向相关操作人员显示。

Getecha当前正在从事哪些特定的行业4.0项目？

Vogel: 好吧，这些是与客户合作的正在进行中的项目，我不能透露太多。但是我可以告诉您，不管是厚聚丙烯片材挤出所造成的废料，还是咖啡胶囊热成型制造过程中所产生的不合格产品，或者是薄膜生产过程中所产生的切边余料，在许多地方，具有工业4.0功能的Getecha造粒机已经成为被生产线广泛使用的一个组成部分。除了选择合适的转子、电机、料斗和许多其他组件之外，现在数字化已成为我们以客户为导向进行造粒机设计的主要考虑因素。我们坚信，该课题将在未来继续变得越来越重要。

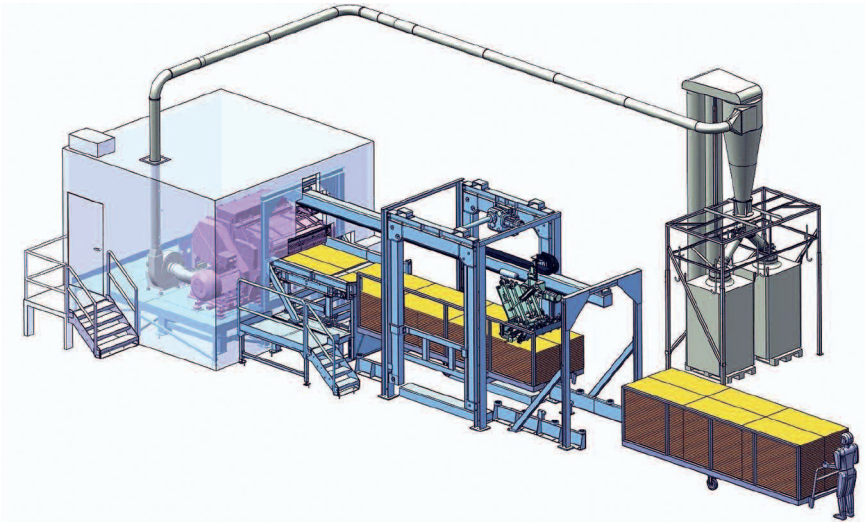
Vogel先生，谢谢您接受我们的采访。

Mr. Vogel, how significant is the equipping of Getecha granulators with Industry 4.0 functions currently for your development engineers?

Burkhard Vogel: In addition to the continuous innovation process for optimising the central performance components for the rotors, the cutting chamber as well as the infeed and discharge systems, the development of useful Industry 4.0 functions for our granulators has gained enormously in importance, especially in the last three to four years. This applies to the series with the small and compact beside the press granulator series as well as to the large central granulators and the infeed granulators.

What do you think is the decisive factor here?

Vogel: Whether you consider the automotive industry and its suppliers, the manufacture of packaging materials or the large sector of the consumer products - in all industries the desire for further automatisation is pushing the digitalisation of production processes. The realisation of structures according to the standards of Industry 4.0 does not stop at the fields of material conditioning and granulation technology. Our engineers recognised this several years ago, so that we have already been able to build up a considerable know-how in this area and are now able to equip our RotoSchneider granulators with a range of intelligent information and communication features.



全智能化的工业4.0功能:自动化造粒技术复杂系统的解决方案。图为Getecha PP板材粉碎设备的示意图，该设备包括进料装置、卡爪、排气系统和包装系统

Full of intelligent Industry 4.0 functions: Complex system solutions for automated granulation technology. The picture shows a schematic view of a Getecha plant for grinding PP sheets with an infeed device, a gripper, an exhaust air system and a packaging system

Are these Industry 4.0 functionalities meanwhile parts of the standard equipment of granulators?

Vogel: Not in all cases. Industry 4.0 functionality only gets into the focus of a customer when he wants to integrate granulation technology into his mainly automated processes of plastics processing. When this occurs, the information and communication technology integration of the granulators into the production technology infrastructure plays a central role, so that their efficiency and availability can also be secured on a digital level.

Can you be more specific about this aspect?

Vogel: Imagine a plastics processor with the intention of integrating one or even several of our central or beside-the-press granulators into his material flow and automated production processes using conveyor belts, tilting devices, filling stations and other peripheral systems, in order to return residues and waste to production via a recycling circuit in a resource-saving manner. As part of such a project, various Industry 4.0 features in our granulators can provide valuable services. This is because it not only supports continuous system optimisation, but also serves quality assurance, allows process-accompanying monitoring and can significantly improve the availability of a production line.

一切都一目了然:Getecha造粒机触摸屏控制面板，以及综合的进、出料技术

Everything at a glance: Control panel with touch screen on a Getecha granulator with integrated infeed and discharge technology

Which Industry 4.0 functions should a granulator be equipped with in any case?

Vogel: This is decided based on the concrete requirements of a project and the customer's goals. Many things are now feasible because we use numerous possibilities of modern sensor and interface technology as well as a range of established field bus systems. In this way many important process and machine data can be tapped, documented, processed, visualised and evaluated.

Do you have an illustrative example of this?

Vogel: If the signal exchange between granulator and production line is configured, all statuses, actions and error events can be recorded and assigned. Based on this, critical situations can be reported with defined warning levels to the higher-level production control system, which then initiates suitable counter and corrective measures at an early stage. In addition, it is possible to record all production-relevant performance parameters and material key figures of a granulator – such as throughput or the quality of the ground material – and to send them to the Operating Data Acquisition or Major Diagnostic Category systems of the plastics processor for further evaluation. This also applies to the runtimes, energy consumption, performance peaks and many other parameters from the operation of the granulators. We can also arrange for all system messages to be communicated to the host computer and archived there for analysis and documentation. All this creates maximum transparency about the performance of an automated system.

So the plant operator also receives data on the implementation of important process and quality improvements?

Vogel: Correct. Not least because part of the data material processed via the signal exchange between the production line and the granulating plant is also available for Industry 4.0 functions, which enable a so-called Predictive Monitoring and increase the plant availability. For example, much of the collected information can be prepared for predictive maintenance and

Getecha的能源消耗优化工具可以对粉碎设备的效率进行监控，并实现性能最佳化

Getecha's energy consumption tool enables efficiency monitoring and performance optimisation of grinding plants

then retrieved by the Getecha remote maintenance tool. For this purpose, the granulators can be linked and integrated into the customer's MRO infrastructure. The knowledge gained from this also flows into the troubleshooting catalogue of the integrated "manual" of the Getecha granulators. The master control system of the production machine can then display this information to the operator.

What specific industry 4.0 projects is Getecha currently working on?

Vogel: Well, these are ongoing projects with customers, and I cannot reveal too much about them. But I can tell you that whether it is about the waste from the extrusion of thick polypropylene sheets, faulty parts from the thermoforming of coffee capsules or edge trims from film production – in many places Getecha granulators with Industry 4.0 functions are now an established part of production lines. Digitalisation – in addition to the selection of the appropriate rotors, drives, hoppers and many other components – is now a major factor in the customer-oriented design of our granulators. And we firmly expect that this topic will continue to gain in importance in the future.

Mr. Vogel, thank you for this interview.

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管材挤出：前所未有的对能源管道群的需求

Pipe Extrusion: Pipeline Projects – Energy Bundles In Demand More Than Ever

当它们进行工作时，您看不到它们。但是，现在出现了对能源管道群前所未有的关注。 管线项目，铺设在地下或海床上的能源管道群，始终是媒体头条上的恒星。 持续增长的趋势已经出现。新的管线如 TurkStream，Nord Stream 2，EastMed 以及 Baltic 管线项目等正在使能源供应商和他们的用户感到兴奋。必须使用最优质的产品迅速满足这种渴求。

(所有图片：Messe Düsseldorf GmbH) *(All pictures: Messe Düsseldorf GmbH)*

You can't see them when they're doing their job – yet the spotlight is on them more than ever now. Pipeline projects, energy bundles laid underground or on the seabed, yet they are the stars with a constant presence in media headlines. An ever-growing trend. New pipelines such as the TurkStream, Nord Stream 2, EastMed and the Baltic Pipe Project are delighting energy providers and users alike, and their suppliers too. There is a huge thirst for piping – it must be quenched swiftly using the best quality products.

TurkStream管线于今年年初加入了黑海现有的众多管线群，这条管线是连接俄罗斯和土耳其的天然气输送系统。 一条管线向土耳其供应天然气，而更多的天然气通过土耳其输送到南欧和东南欧。 这些管道合计供应315亿立方米天然气，这本身就具有新闻价值。 然而，这些管道如同明星在红地毯上脱颖而出，还因为这是全球范围内首次铺设直径超过810毫米的管道，铺设深度达2200米。 然而，更多的局限正在被突破，管道制造商也正在进行意义深远的产品开发。

开放式施工

Nord Stream 2通过两条计划中的输送线，展示其创新成果，这两条输送线将大致平行于已铺设的穿过波罗的海的Nord Stream管道。 它们每年应从俄罗斯向德国输送约550亿立方米的天然气，然后再在整个欧盟范围内进行分配。 Nord Stream 2 股份公司报道说：“基于海岸线的直线段是使用沟槽式围堰通过创新的开放式施工方法建造的。” 由于将管道拉过预先准备好的壕沟并在岸边区域的中间进行连接，因此这种方法使施工现场实现了最小化。

管道供应商必须承担艰巨的任务：交付二十多万个管段。 总产量为220万吨，延伸2500公里。 Europipe（其合作伙伴公司为Salzgitter Group和Dillinger Hüttenwerk AG）承担了其中89万吨的产量，长度约1100公里

管线与环境保护

还有更多的管线正在筹备中：1月，Gaz-System与Europipe签署了一份合同，为波罗的海管线项目的近海部分提供水下管道。从2022年10月起，计划中的管道将从挪威的沉积大陆架连接到波兰，这样就能有更多天然气进口（可达100亿立方米）。

项目合作伙伴Energinet和Gaz-System解释道：“Europipe生产的管材公称直径为900毫米，每节公称长度为12.2米。”合同还包括从天然气总管到接收终端的短岸边段直径相同的管道。它还将包括项目中的所有防护涂层，“将保护管道并最大程度地减少对其周围环境的影响。”

气体总管的钢壁厚度将在20.6毫米至23.8毫米之间。项目合作伙伴指出：“该管道将镀有4.2毫米厚的特殊腐蚀保护涂层，这将在其使用寿命内保护海床。”波罗的海管道还将受到60至110毫米厚的混凝土涂层的保护。

气体切换

长达216公里的远程天然气管道Zeelink的建设工作已于2019年4月正式开始。该项目还包括建设一条新的天然气管道，该管道将从比利时-德国边境延伸至莱格登贝·阿豪斯（德国莱茵威斯特法伦州西北（NRW））。天然气总管应确保北威州的L气向H气的转换，即从低热值的天然气到高热值的天然气的转换，供北威州的数百万家庭，商业和工业客户使用。背景：由于荷兰的产量下降，L气的份额正在下降。该项目公司是欧洲开放电网（75%）和蒂森加斯（25%）之间的合资企业。计划于2021年3月进行调试。

该项目为曼内斯曼大直径管（Mannesmann Großrohr）带来了一份订单，其中包括约215公里长的天然气管道，直径为1,016毫米（DN 1,000）。采用聚乙烯的管道长约18米，重达8吨。 Salzgitter Flachstahl生产了100,000吨的热轧宽带钢，作为螺旋缝焊天然气总管的原料。该集团自己的弯管工厂生产了543个天然气总管拱弯，该工厂使用Salzgitter Mannesmann Grobblech的原材料加工了长缝焊接主管道。

快速的订单处理

管道行业继续走上天然气之路：东地中海管线（East-Med）的时间表正在制订中。 1月，希腊、塞浦路斯和以色列签署了建造EastMed管线的协议，从2025年起，天然气将从地中海的利维坦油田经塞浦路斯和克里特岛输送到希腊大陆。这条管线将与波塞冬和IGB管线一起，将天然气进一步输送到意大利和其他欧洲地区。计划显示，EastMed管道的长度应为1900公里，年输送能力为100亿立方米。

有许多管线项目正在等待管道供应商。为了尽可能快地完成高质量的订单，必须进行投资。Butting的准备就是一个例子。迄今为止，该公司拥有一台12米长的液压成形压力机，在该压力机中，可以将耐腐蚀的Butting不锈钢管和碳锰钢管机械地连接起来以形成BuBi®管。从长远来看，该公司希望将其产量增加一倍左右,月产15公里左右的平均管道尺寸BuBi®管道。通过建造新的厂房并进行相应的工艺调整，实现优化生产流程并提高生产率。

此外，还计划与一家机械工程公司合作，建造一台新的12米液压成形压力机，这台机器已调试完成。作为新的生产周期，第一批BuBi®管道的生产应在2020年第三季度开始。

双赢的局面

回报丰厚的投资。 随着管道数量的增加，不仅可以确保能源供应，还可以增加能源供应商和管道制造商的收入，对于所有相关人员来说，这都是双赢的局面。 如果质量合适，没有人会质疑这些管道。

TurkStream joined the numerous existing pipelines in the Black Sea at the beginning of the year – it connects the Russian and Turkish gas transport system. One line supplies gas to Turkey and more gas through Turkey to south and south-east Europe. Together the pipelines supply 31.5 billion cubic metres – newsworthy in itself. The pipeline stars stand out on the red carpet, however, also because it is the first time, worldwide, that a pipe with a diameter of more than 810 mm has been laid as deep as 2,200 metres. More boundaries are shifting, however, as also pipe manufacturers are making monumental product developments.

Open construction

Nord Stream 2 is also showing off its innovation with two lines planned, that will run broadly parallel to the already laid Nord

Stream pipe, running through the Baltic Sea. They should carry some 55 billion cubic metres of gas a year from Russia to Germany, where it will be further distributed throughout the European Union. "The rectilinear shore-based section was built using an innovative open construction method using trench coffers," reported Nord Stream 2 AG. This procedure minimised the construction site, as the pipework was pulled through pre-prepared trenches and connected in the middle of the shore-based section.

The pipe supplier had to shoulder a mammoth task: Over 200,000 pipe segments were delivered. The total volume came to 2.2 million tonnes for a total stretch of 2,500 kilometres. Europipe – whose partner companies are Salzgitter Group and Dillinger Hüttenwerk AG – made 890,000 tonnes of this amount for around 1,100 kilometres.

Pipelines and environment protection

And there's more in the pipeline: In January Gaz-System signed a contract with Europipe for the delivery of underwater pipes for the offshore segment of the Baltic Pipe Project. From October 2022, the scheduled pipeline should enable the import of more gas – up to 10 billion cubic metres – from the deposits on the Norwegian continental shelf to Poland.

"Europipe manufactures pipes with a nominal diameter of 900 mm, and a nominal length of 12.2 metres per section," explain the project partners, Energinet and Gaz-System. The contract also includes pipes of the same diameter for the short, shore-based section from the gas main to the receiving terminal. It will also include all the protective coatings in the project, "that will protect the pipeline as well as minimise the effects on its surroundings and the environment."

The steel wall thickness of the gas main will be between 20.6 mm and 23.8 mm. "The pipeline will be plated with a special 4.2 mm thick corrosion protection coating, which will protect the seabed during its operating life," the project partners point out. The Baltic Sea pipeline will also be protected by a 60 tol 110 mm thick concrete coating.

Gas switch-over

Construction work on the 216-kilometre long remote gas pipeline Zeelink has officially begun in April 2019. The project also include the construction of a new gas pipeline from the Belgian-German border to Legden bei Ahaus (Northwest Rhine Westphalia (NRW)/Germany). The gas main should guarantee the switch-over from L- to H-gas, i.e. from natural gas with a low calorific content to natural gas with a higher calorific content for millions of household, commercial and industry clients in NRW among other places. Background: The share of L-gas is dropping due to declining outputs in the Netherlands. The project company is a joint venture between Open Grid Europe (75 per cent) and Thyssengas (25 per cent). The commissioning is planned for March 2021.

The project brings Mannesmann Großrohr an order that includes around 215 km of gas piping with a diameter of 1,016 mm (DN 1,000). The pipes, coated with polyethylene, are about 18 metres long and weight up to 8 tonnes. The ca. 100,000 tonnes of hot wide strip as a raw material for the spiral seam-welded gas main come from Salzgitter Flachstahl. The 543 arches for the gas main were produced in the Group's own pipe-bending plant, where long seam-welded main pipelines from raw materials from Salzgitter Mannesmann Grobblech were processed.

Speedy order processing

And the industry continues to step on the gas: Schedules for the Eastern Mediterranean Pipeline (EastMed) are taking shape. In January, Greece, Cyprus and Israel signed a deal to build the EastMed, that from 2025 should be carrying natural gas from the Leviathan field in the Mediterranean, via Cyprus and Crete to the Greek mainland. This, together with the Poseidon and IGB pipelines, that further transport natural gas on to Italy and other European regions. The plans show that the EastMed pipeline should be 1,900 km in length and have an annual capacity of 10 billion cubic metres.

There are numerous pipeline projects awaiting pipe suppliers. Investment is necessary for speedy order processing with the best possible quality. An example is Butting's readiness. Up to now, the company has had a 12-metre hydro-forming press in which a corrosion-resistant Butting stainless steel pipe and a carbon-manganese steel pipe can be mechanically joined to form a BuBi® pipe. The company would like, in the long term, to double its monthly output of ca. 15 km of BuBi® pipe with average pipe dimensions. By building a new hall and making the accompanying adjustments to processes, production processes should be optimised and productivity increased.

In addition, working with a mechanical engineering company, a new 12-m hydro-forming press was planned and commissioned for production. Production of the first BuBi® pipes in the new production cycle should begin in the third quarter of 2020.

A win-win situation

Investment that pays off. As the increasing number of pipelines not only secures energy supply, but also provides for increased earnings at energy providers and pipe manufacturers, this is a win-win situation for all those involved. If the quality is right, nobody has to take a peek into the pipes.

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PET纤维生产 – 零浪费循环得益于改装的组件

Recycling: PET Fiber Production – Zero-Waste Cycle Thanks to Retrofitted Components

透气运动和户外服装很流行。结合"快速时尚座右铭"和"质量而不是阶级原则"，这正在创造全球对PET纤维的需求增加。这反过来又会导致生产浪费的增加，因为这种浪费是在纤维生产过程中自动产生的。出于生态和经济原因，必须适当加工和再利用纤维残渣，在某些情况下，这给纤维制造商和加工商带来了重大挑战。因此，包括中国和白俄罗斯的大型纤维制造商在内的几个客户决定使用位于德国Bad Oeynhausen市的格诺斯塑胶技术有限公司的关键部件。有了这些，他们能够以较低的投资成本转换现有的纤维生产线，使完整的纤维废物可以加工成高质量的纤维。这甚至有可能用于生产拉伸纱线，如POY或FDY，其中使用回收材料去生产到目前为止还无法实现。

Breathable sports and outdoor clothing are in vogue. Combined with the "fast fashion motto" and the "mass instead of class principle", this is creating increased demand for PET fibers worldwide. This, in turn, leads to an increase in production waste, as this is automatically generated during fiber production. For ecological and economic reasons, the fiber residues must be appropriately processed and reused, which in some cases poses major challenges for fiber manufacturers and processors. Several customers, including large fiber manufacturers in China and Belarus, have therefore decided to use key components from Gneuss Kunststofftechnik in Bad Oeynhausen, Germany. With these they were able to convert existing fiber lines with low investment costs, so that the complete fiber waste can be processed into high quality fibers. And this is even possible for the production of drawn yarns such as POY or FDY, where the use of recycled material has up to now not been possible.

在过去20年中，纺织品生产总量翻了一番，从2000年到2016年，仅聚酯服装的用量就从830万吨上升到2130万吨。与此同时，公众对避免塑料废物的呼声日益高涨，欧盟的法律指令旨在制止塑料废物。例如，除了收集塑料、玻璃、纸张和金属外，到2025年，所有欧盟国家将实施单独的纺织品收集系统，以实现高质量的回收利用。此外，通过扩展生产者责任（EPR）的环境保护战略，产品制造商正在变得更加负责。它们旨在确保产品从制造到处置的整个生命周期，以便更快地实现生态设计和资源效率等目标。除了产品的可回收性之外，使用回收材料也是实现这些目标的一种方式。然而，这正是经常出现问题的地方：

对增加在纺织品中使用再生材料的需求要求这些材料有充分和定期的供应。市场上有饮料瓶回收的PET，由于清洁收集系统，质量非常好。然而，r-PET的使用增加，特别是用于包装应用和纺织纤维生产，近年来导致需求强劲增长，因此，除了市场价格上涨外，现在还必须使用其他回收材料。

关键部件的可能改造

以前只设计用于原始材料加工的生产工艺，因此在已知条件下始终达到高质量，现在受到污染的影响而产生严重干扰或中断，材料质量在更高的回收率下剧烈波动。现有生产线无法实现纤维的恒定机械性能和均匀的可染色性或特殊要求，如非常精细的纤维或直接身体接触的使用。

在江苏省苏州盛鸿纤维有限公司安装 MRS 挤出线时拍摄的照片

Shot taken during the installation of an MRS extrusion line at Suzhou Shenghong Fiber Co. Ltd, Jiangsu province, P.R.China

因此，工厂需要一方面可以处理回收材料-即使在较低的质量-另一方面可以产生高品质的最终产品没有杂质。这正是德国 Gneuss 公司及其用于 PET 加工的机器组件的用武之地。MRS 挤出机具有高脱气和净化性能、强大且自动运行的旋转过滤系统、在线粘度计以及缩聚单元JUMP反应釜，可确保 PET 熔体高达 0.3 dl/g 的针对性粘度。这些机器部件均单独或组合使用，可改装为现有生产线，以适应不断变化的要求。这样，以相对较低的投资成本就可以达到理想的效果。

核心部件MRS挤出机

挤出机在处理PET纤维残留物时具有特殊任务，因为塑料不仅必须熔化和均质化，而且如果可能的话，还必须除湿并释放挥发性成分（如果可能）。虽然消费后废物可能主要含有水分和各种固体污垢颗粒，但纤维制造的生产废物通常含有纺丝油，这对加工很重要，但使回收更加困难。无论需要哪种形式的废物热清洗，格诺斯塑胶技术有限公司的MRS多螺杆系统挤出机都能完成此任务。这是由于其基于单螺杆挤出机的特殊加工技术设计。

由于在挤出机的多螺杆部分创造了巨大的熔体表面，可以实现高脱气和去污性能。无需对残留物进行预处理。这正是位于白俄罗斯莫吉列夫(Mogilev)的纤维加工商Mogilevkhimvolokno公司，莫吉列夫(Mogilev)是东欧最大的短纤维生产商之一，通过采用MRS90挤出机加装到现有生产线进行改造。产能约为 350 kg/h，生产过程中产生的所有聚酯纤维残留物都进行加工、去杂去污染，然后在缩聚反应器中以确定的 IV 值重新聚合到 PET 中，无需进一步制备。中国纤维生产商盛虹的情况与此类似，该公司运行一台 MRS 130挤出机，产量高达800公斤/小时。在这里，纤维废物首先被切碎，在 MRS 中熔化，并在热清洗后，然后再送入到

全自动转盘过滤系统RSFgenius的过滤转盘和过滤网片

Filter disc and filter elements of the fully automatic Rotary Filtration System RSFgenius

JUMP缩聚反应器中得到所需的 IV 值，然后加工成 POY 和 FDY 纱线。这也是首次可以这样生产高回收含量的拉伸纤维。

MRS 挤出机在世界各地用于处理 PET 废料。南美公司Valerio的情况也如此，该公司运行一台MRS90，其产量为450公斤/小时，利用非常脏的瓶片去生产短纤维。

不可缺少的机械除杂

特别是使用严重污染的瓶片时，在南美 Gneuss 客户使用不可或缺的熔体机械清洁系统。瓦莱里奥(Valerio)决定采用RSFgenius 90转动圆盘式过滤系统，它像来自德国Bad Oeynhausen的所有熔体过滤系统一样，使用旋转过滤圆盘。

特别是在回收应用中，低材料损耗和不频繁的滤芯更换对于确保整个流程的高效率非常重要。因此，RSFgenius 不仅持续工作压力和过程，还通过集成的反冲系统完全自动化清洁滤芯网片。为此，通过一个狭窄缝隙的高压脉冲，抽取少量已经过滤干净的物料从网片的反面冲洗脏滤网。所需的冲洗物料的多少是可自由调节的，实际上相当于约0.01%至1%的比例（污染非常高的情况下）。这意味着，根据过滤器的细度，过滤器网片可重复使用多达 400 次，这意味着在某些应用中无需人员的参与, 即可实现数周的全自动过滤。

即使是白俄罗斯和中国两大纤维生产商，也都信任格诺斯的"过滤系统"，该系统也可以作为一个单独的单元，可以集成到任何现有生产线中。他们使用RSFgenius 90 resp. RSF-genius 175，根据其产量大小情况，从而确保清洁熔体。这对纤维生产尤其重要，因为异物颗粒会堵塞纺纱圈并导致纤维断裂，进而大大降低生产效率。

更多的关键部件

Gneuss 凭借在 PET 加工方面的巨大技术，不仅为客户提供了建议，这对于改装解决方案尤为重要，而且始终致力于进一步开发其机器部件。除了在线粘度计，它记录和控制生产过程中熔体粘度，并通过闭环控制系统，重新调整整个过程，去实时调控加工过程中熔体的动态粘度。在粘度波动的情况下，JUMP缩聚反应釜是最新的新发展之一。它直接连接到挤出机单元，并凭借其复杂的加工技术概念，确保了PET熔体的目标粘度积累。因此，Jump 代表了传统 SSP 系统的紧凑、经济、快速的替代方案，使停留的回收材料能够直接返回生产过程。它也可以随时改装到现有生产线上。

In the past 20 years, total textile production has doubled, and from 2000 to 2016, the use of polyester for clothing alone rose from 8.3 to 21.3 million tonnes worldwide. At the same time, the public's call for the avoidance of plastic waste is becoming louder and legal directives of the European Union are intended to put a stop to plastic waste. For example, in addition to the collection of plastic, glass, paper and metal, a separate collection system for textiles is to be implemented in all EU countries by 2025 to enable high-quality recycling. In addition, product manufacturers are being made more responsible through the environmental protection strategy of Extended Producer Responsibility (EPR). They are to ensure the entire life cycle of their product from manufacture to disposal so that goals such as ecological design and resource efficiency can be achieved more quickly. In addition to the recyclability of products, the use of recycled materials is one way to achieve these goals. However, this is precisely where problems often arise:
The demand for the increased use of recycled materials in textiles requires a sufficient and regular availability of these materials. Well available on the market is the recycled PET from beverage bottles, which is available in very good quality due to the clean collection systems. However, the increased use of r-PET, especially for packaging applications and textile fiber production, has led to a strong increase in demand in recent years, so that in addition to the increased market price, other recycled materials must now be used.

Possible retrofit of key components

Production processes that were previously designed only for the processing of virgin material and thus achieved consistently high qualities under known conditions, are now severely disturbed or interrupted by contamination and strongly fluctuating material qualities at a higher recycling rate. Constant mechanical properties and uniform dyeability of the fibers or special requirements such as very fine fibers or use in direct body contact can no longer be achieved with the existing production lines. Therefore, plants are required which on the one hand can process recycled material – even in lower quality – and on the other hand can generate a high-quality end product without impurities. This is exactly where the German company Gneuss comes in with its machine components for PET processing. The MRS Extruder with its high degassing and decontamination performance, powerful and automatically operating Rotary Filtration Systems, an Online Viscometer as well as the polycondensation unit Jump, which can ensure a targeted viscosity build-up of the PET melt of up to 0.3 dl/g, are available. Each of these machine components is available individually or in combination and can be retrofitted into an existing production line to adapt it to the changed requirements. In this way an ideal result can be achieved with comparatively low investment costs.

Main component MRS Extruder

The extruder has a special task when processing PET fiber residues, since the plastic must not only be melted and homogenized, but if possible, also dehumidified and freed of volatile components if possible. While post-consumer waste can contain mainly moisture and a wide variety of solid dirt particles, production waste from fiber manufacture usually contains spinning oils, which are important for processing but make recycling more difficult. Regardless of which form of thermal cleaning of the waste material is required, the Multi Rotation System Extruder from Gneuss Kunststofftechnik takes over this task.
This is due to its special processing-technical design based on a single-screw extruder. Thanks to the enormously large melt surface created in the multi-screw section of the extruder, a high degassing and decontamination performance can be achieved and spinning oils can be effectively removed. No thermal pretreatment of the residues is necessary. Among others, this was a good reason for the Belarusian processor Mogilevkhimvolokno located in Mogilev, one of the largest Eastern European producers of staple fibers, to retrofit an MRS 90 to its existing line. With a capacity of around 350 kg/h, all agglomerated fiber residues arising in production are processed, decontaminated and then re-polymerised to PET with a defined IV value in a polycondensation reactor without any further preparation. The situation is similar at the Chinese fiber producer Suzhou Shenghong Fiber Co. Ltd which operates an MRS 130 with a capacity of up to 800 kg/h. Here, too, the fiber waste is first shredded, melted in the MRS and thermally cleaned before it is brought back to the desired IV value in the polycondensation reactor and then processed into POY and FDY yarns. For the first time, stretched fibers with a high recycled content can be produced in this way.
MRS extruders are in use worldwide for processing PET waste materials. This is also the case with the South American company Valerio, which operates an MRS 90 with a capacity of 450 kg/h to produce staple fibers from very dirty bottle flakes.

用于灵活调整IV数值的聚合反应釜JUMP

Polyreactor JUMP for flexible IV increase and adjustment

Mechanical cleaning indispensable

Especially when using heavily contaminated bottle flakes, as is the case with the South American Gneuss customer, mechanical melt cleaning is indispensable. Valerio decided in favour of an RSFgenius 90 which, like all melt filtration systems from Gneuss Kunststofftechnik, operates with a rotating filter disc.

Especially in recycling applications, low material losses and infrequent filter element changes are important in order to ensure a high efficiency of the overall process. Therefore, the RSFgenius not only operates pressure- and process-constantly, but also carries out the cleaning of the filter elements fully automatically by means of an integrated back-flushing system. For this purpose, a small amount of filtered melt is regularly shot through the dirty screen by a high-pressure impulse over a narrow gap. The quantity required for this is freely adjustable and in practice corresponds to about 0.01 to 1 % (with very high contamination) of the throughput. This means that the filter elements can be reused up to 400 times, depending on the filter fineness, which means fully automatic filtration without the need for personnel for several weeks in some applications.
Even the two major fiber producers in Belarus and China are convinced by the machine component "filtration system", which is also available as a separate unit and can be integrated into any existing line. They use an RSFgenius 90 resp. an RSFgenius 175 according to their throughput capacity and thus ensure a clean melt. This is especially essential for fiber production, as foreign particles could clog the spinneret and cause fiber breakage, which in turn would greatly reduce production efficiency.

Further key components available

With its enormous know-how in PET processing, Gneuss not only advises its customers – which is very important especially for retrofit solutions – the machine manufacturer is always working on the further development of its machine components. In addition to the online viscometer, which records and controls the melt viscosity during production and, via a control system, readjusts the entire process in case of fluctuating viscosity, the polycondensation reactor Jump is one of the latest new developments. It is flanged directly to the extrusion unit and, with its sophisticated processing-technical concept, ensures a targeted viscosity build-up of the PET melt. The Jump thus represents a compact, economical and fast alternative to conventional SSP systems and enables the direct return of the residual materials into the production process. It can also be retrofitted to an existing line at any time.

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挤塑 EXTRUSION ASIA EDITION

VM 出版社有限公司 / VM Verlag GmbH:
Antoniterstraße 17, D-50667 Cologne, Germany

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第24出版年 – 出版次数：每年2期
24. Volume – Frequency: 2 issues a year

masterbatch VERBAND 色母粒工會器官

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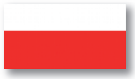

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