

挤塑

EXTRUSION

ASIA EDITION

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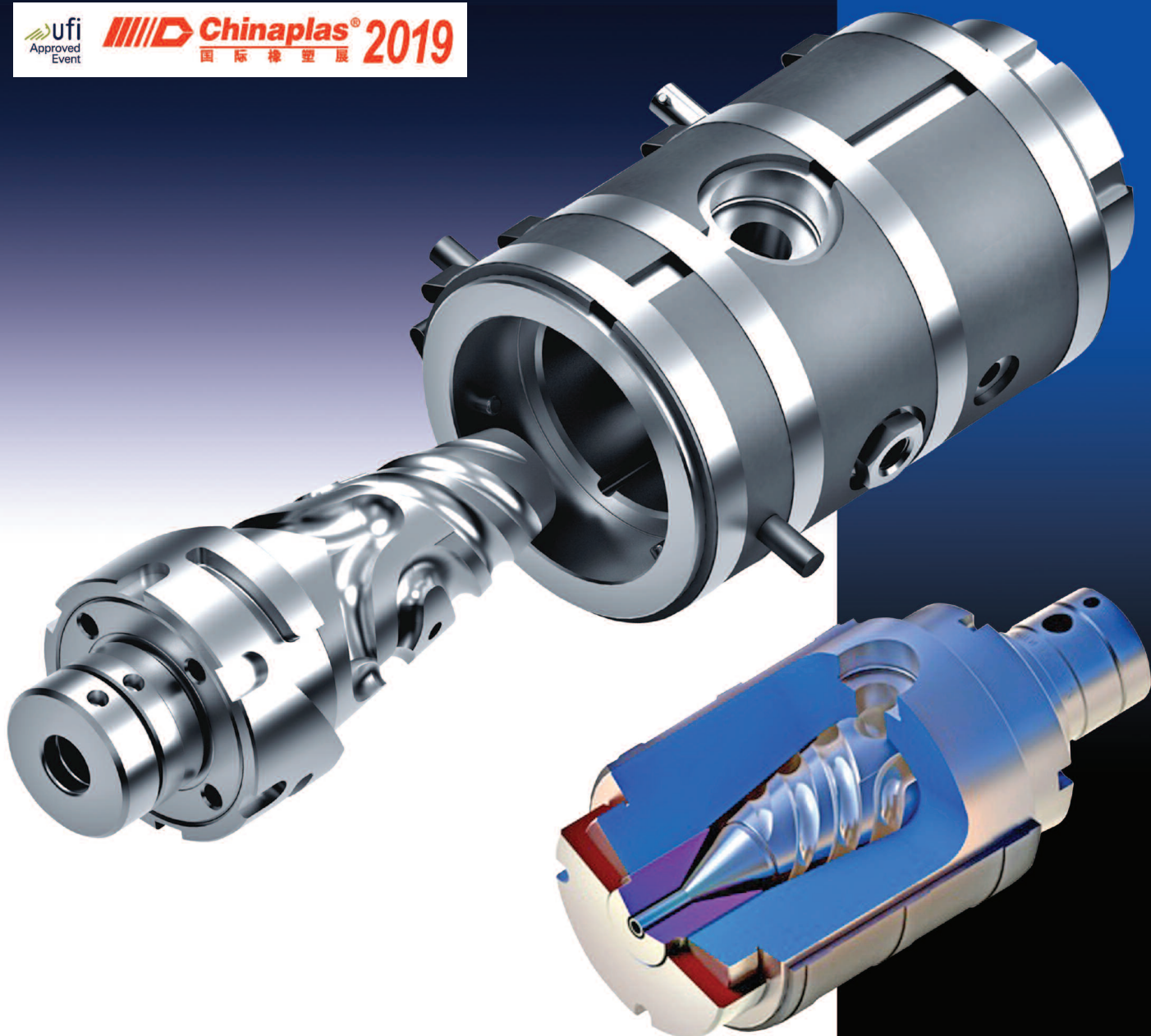
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Guill

EXTRUSION TOOLING

BULLET II

but **always** and everywhere. It is the only way to be prepared for anything and be

flexible. Our development department has designed an

extruder series which did not previously exist in this form.

FlexXtrusion – that is the name of the most

flexible extruder concept ever which adapts to your output. While the basis of the system remains the same, the processing unit **can** be selected freely according to your individual requirements. You can

simply upgrade if your output increases. This flexibility can really save you money.

You think this is **brilliant**? So do we!

► **How to get it right:** If you always **remain** movable in life, nothing can bring **you** down. Not only in sports and in your job,



DS 9.32 FleXXtrusion®

Classic or FleXXtrusion® – it's your choice

How much variability do you need?

You can always remain flexible with our FleXXtrusion® series.

When the output requirements increase, you can replace the processing unit of the extruder with a more powerful one at any time. Drive, gearbox and machine frame remain the same. That saves follow-up costs while also protecting the environment.

Or choose our Classic Line with a pre-defined configuration.

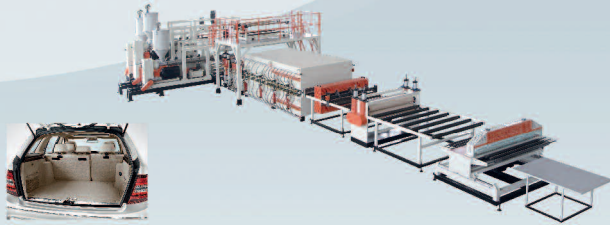
Whichever you decide on – you always make the right choice with WEBER.



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windowprofile](http://extrudertechnologie.de/en/windowprofile)

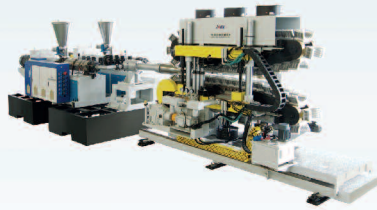
Advantages

- // Modular machine concept offers maximum **flexibility**
- // Interchangeable processing units
- // Can be optimised to suit the required output in each case
- // Processing of different recipes using an adjustable feed diameter
- // Choice of optimum and **efficient** processing units for individual requirements
- // Low **investment costs** for subsequent upgrades
- // Can be combined with the WEBER co-extrusion technology for co-extruders

PP蜂窝板生产线

PP Honeycomb Board Extrusion Line



大口径双壁波纹管生产线

Double Wall Corrugated Pipe Extrusion Line



PVC木塑快装墙板生产线

Fast Loading Wallboard Extrusion Line

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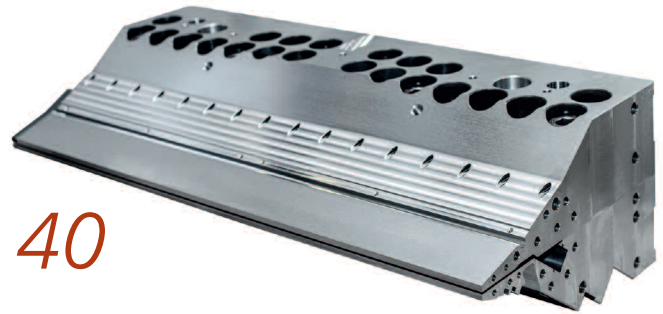
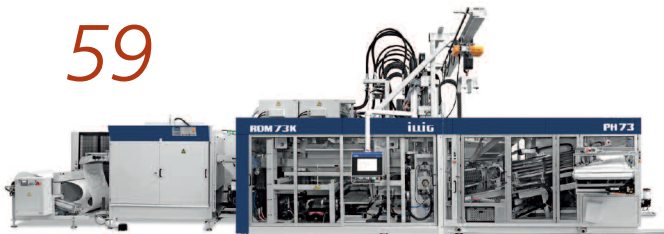
22 为了满足日益增长的数据采集和分析的需求，克劳斯玛菲·贝尔斯多夫开发出了两套全新系统，目前可以作为ZE蓝色动力挤出机的选配项。

In order to meet the ever increasing demand for data acquisition and analysis, KraussMaffei Berstorff has developed two new systems, which are now available as options for ZE Blue-Power extruders.

中国国际橡塑展上，ILLIG将展示新型IC-RDM 73K自动热成型制杯机，具有高输出和快速换模系统。现场将用A-PET和A-PLA演绎制成饮料杯。

At Chinaplas ILLIG will be showcasing the new IC-RDM 73K automatic roll-fed machine with high output and a quick-change system for molds integrated in a fully automated production line for drinking cups made of A-PET and A-PLA.

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40

Simplas是塑料薄膜、片材挤出、挤出涂布和热熔涂布应用的平模头，输料块及配件的全球主要供应商之一。

Simplas is a leading supplier of wide slot dies, feed blocks and accessories for plastic film and sheet extrusion as well as for coating and hot melt coating applications.

包米勒在首尔国际自动化展会上展出丰富多彩的产品组合，包括变频器与电机、控制技术和软件模块。

Baumüller presented a comprehensive product portfolio with converters and motors, control technology and software modules at Automation World.

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21. - 24. 05. 2019

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04. - 06. 06. 2019

Toronto / Canada 多伦多 / 加拿大

➡ <https://admtoronto.com/plastex>**COMPLAST Myanmar**

14. - 16. 06. 2019

Rangun / Myanmar 仰光 / 緬甸

➡ <https://complastexpo.in>**Manufacturing Expo**

19. - 22. 06. 2019

Bangkok / Thailand 曼谷 / 泰國

➡ www.manufacturing-expo.com**T-PLAS Thailand***International Trade Fair for the
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18. - 21. 09. 2019

Bangkok / Thailand 曼谷 / 泰國

➡ Messe Düsseldorf Asia

www.tplas.com

Vietnam Plas

03. - 06. 10. 2019

Ho Chi Minh City / Vietnam

胡志明市 / 越南

➡ www.vietnamplas.com**K' 2019**

16. - 23. 10. 2019

Dusseldorf / Germany

杜塞尔多夫 / 德國

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Plastics & Rubber Indonesia

20. - 23. 11. 2019

Jakarta / Indonesia

雅加达 / 印度尼西亚

➡ www.plasticsandrubberindonesia.com**Plastics & Rubber Vietnam**

27. - 29. 11. 2019

Hanoi / Vietnam 河内 / 越南

➡ www.plasticsvietnam.com**进入中国资本市场**

克劳斯玛菲CEO Frank Stieler博士

Dr. Frank Stieler, CEO of KraussMaffei

■ 2018年12月28/29日，通过股权转让，克劳斯玛菲集团完成了在上海证券交易所挂牌上市的任务。中国化工集团将所持有的克劳斯玛菲的权益转移到了青岛天华院化学工业有限公司（简称天华院），天华院已在上海证券交易所挂牌，是中国化工集团大比例持有股份的子公司。此外，天华院还获得了中国化工集团在三明的生产设施。克劳斯玛菲的CEO Frank Stieler 博士和CFO Harald Nippel博士将领导这家新的综合性机械工程公司。将使用克劳斯玛菲品牌经营联合的业务。在整个实体大约十五亿欧元的收入中，克劳斯玛菲所产出的占有超过80%的比例。克劳斯玛菲CEO Frank Stieler 博士说道：“我们非常高兴，一些重大举措已经开始实施了！我们现在有机会更快和更好地推动我们的增长。上市给了我们进入中国的资本市场的机会。迈出这一步将显著地增强我们在中国以及全球的地位。随着在三明的生产设施的并入，我们进一步增强了在中国的市场地位。与此同时，我们还将从德国推进我们的国际业务。”

从2016年4月起，“中国化工集团”这家中国领先的化工企业，成为了克劳斯玛菲集团的多数持有人。通过天华院，中国化工集团保持了克劳斯玛菲集团大股东的地位，并将在未来继续支持这家公司的发展。

中国化工集团在天华院的股份持有期为三年。

Access to the Chinese Capital Market

■ The KraussMaffei Group completed its listing on the Shanghai stock exchange on the 28./29. December 2018. The listing occurred through the transfer of ChemChina's stake in KraussMaffei to ChemChina's majority owned subsidiary THY (Qingdao Tianhua Institute of Chemistry Engineering), which is listed on the Shanghai stock exchange. In addition, THY has taken over ChemChina's production site in Sanming, China. Dr. Frank Stieler and Dr. Harald Nippel, CEO and CFO of KraussMaffei, will lead the new integrated mechanical engineering company. The combined business will operate under the brand KraussMaffei. KraussMaffei generates more than 80 percent of the approximately 1.5 bn Euro revenue of the total entity. "We are very happy – something big is being created! We now have the opportunity to drive our growth even faster and better. The listing provides us with access to the Chinese capital market. This step will significantly strengthen us in China as well as globally," said Dr. Frank Stieler, CEO of KraussMaffei. "With the additional production site in Sanming we can further expand our presence in China. At the same time, we will drive our internatio-

nal business from Germany," Stieler explains. Since April 2016, ChemChina, the leading Chinese chemicals company, is major-

ity owner of KraussMaffei. ChemChina remains majority shareholder of KraussMaffei via THY and will continue to support the future growth of the company.

ChemChina's shares in THY are subject to a holding period of three years.

► **Krauss Maffei Group**
www.kraussmaffei.com

在远东的发展

COLINES® 与乐嘉文建立了期待已久的合作关系

■ COLINES® 宣布，与国际工业解决方案提供商乐嘉文建立新的合作关系。这一合作体现在乐嘉文代表 COLINES® 为六个亚洲国家提供售后服务，这六个国家是中国、泰国、越南、韩国、日本和菲律宾。

从2019年一月一日开始生效的协议旨在增强 COLINES® 在远东地区的地

位。乐嘉文在亚洲市场上有着数十年经验，是帮助实现这一目标理想的伙伴。

COLINES® 首席执行官Eraldo Pecetti作出了说明：“乐嘉文是可靠而成功的合作伙伴。我们为与这样的伙伴开展新的合作感到骄傲。我们确信，我们公司和乐嘉文公司的合作能够帮助我们在

亚洲国家进一步成长，亚洲国家正在经历强劲的发展，并将在未来成为我们非常重要的市场。”

乐嘉文公司塑料及其加工行业主任 Kristian Rieck指出：“我们为与 COLINES® 建立了最新的合作关系而感到兴奋，这一创造性的观念、广泛的产品组合以及所提供的独具特色的解决方



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案将使我们的客户确切地从中获益。我们的使命是最大限度地充分利用工业成果和工艺技术。我们确信，COLINES®的垂直集成结构、加工工艺和应用方面的专有技术将支持我们的客户，并推动客户业务的发展。

Expansion in Far East – COLINES® enters a prestigious partnership with Rieckermann

■ COLINES® announced a new partnership with the international industrial solution provider Rieckermann. The alliance will see Rieckermann representing COLINES® and providing after-sales service in six Asian countries: China, Thailand, Vietnam, Korea, Japan and the Philippines.

The agreement, which commenced on January 1, 2019, aims to strengthen the presence of COLINES® in the Far East. With decades of experience in the Asian market, Rieckermann is an ideal partner to help achieve this objective.

“We are proud of this new cooperation with a sound and successful company as Rieckermann is,” explains the Chief Executive Officer of COLINES®, Eraldo Peccetti. “We are sure that the synergy between our companies will help us to further grow in the Asian countries,



位于意大利诺瓦拉的Colines公司 (2016)

Colines company site in Novara, Italy (2016)

which are experiencing a strong development and can be a very important market for us in the future”.

“We are excited to embark on our newly formed partnership with COLINES®, as our customers can certainly benefit from their innovative ideas, broad portfolio, and the unique solutions they offer,” says Rieckermann’s Director of Plastics & Converting Industry, Kristian Rieck.

“With our mission to make the most out of industrial production and processes, we are confident that COLINES® vertically integrated structure, process and application know-how will support our customers to drive their business forward.”

► COLINES®
www.colines.it

在亚太地区的存在得到加强



■ 2019年初，随着W&H在印度尼西亚雅加达、马来西亚吉隆坡和越南胡志明陆续开设了全资子公司，并建立当地服务团队，W&H在亚太地区的影响力又进一步增强。韩国和菲律宾的客户也将因此得到W&H旗下分公司的服务支持。软包装机械专家长期服务于亚太市场长达40多年。

1996年W&H于曼谷成立了威德霍尔亚太区域总部，1998年在香港成立了W&H亚洲分公司，2008年成立了W&H澳大利亚分公司，2014年成立了威德霍尔机械（太仓）有限公司。

几十年来，W&H在亚太地区建立了自己的销售和服务团队。如今，W&H亚太团队共130多人，其中65名技术服务人员，为客户提供技术解决方案、设备维护保养和备件服务等等。

亚太区首席执行官 Michael Fischer 先生总结道：“W&H 正在对新的区域进行重大投资，包括整个机器产品范围，使我们的客户得到更优良的服务与支持，并将亚太地区的业务范围全面提升。”

Presence in Asia-Pacific enhanced

■ Machinery manufacturer W&H is significantly enhancing its local presence in Asia-Pacific: With the beginning of 2019 W&H has opened fully owned subsidiaries with local service and support teams in Jakarta, Indonesia, Kuala Lumpur, Malaysia and soon in Ho Chi Minh, Vietnam. Customers in Korea and the Philippines will be supported by branch offices managed by W&H. The specialist for machines for flexible packaging has been present in the Asian-Pacific Market for more than 40 years.

The regional headquarter of Windmoeller & Hoelscher Asia-Pacific Co., Ltd. was established in Bangkok in 1996, followed by W&H Asia in Hongkong in 1998, W&H Australasia in 2008 and Wind-

moeller & Hoelscher Machinery (Taicang) Co., Ltd. in 2014.

For decades W&H has built up its own sales and service business in Asia Pacific. Today the WHAP team consists of more than 130 people, among them more than 65 service technicians who support with technical solutions, maintenance and spare part services.

Michael Fischer, CEO Asia-Pacific concludes: “W&H is investing significantly into the new regional structure to support our customers even better across the entire machine portfolio and life-cycle and we will grow our footprint in Asia-Pacific to the next level.”

► WINDMÖLLER & HÖLSCHER KG
www.wuh-group.com

上海新办公楼开业

■ 2月5日，值中国春节之际，奇石乐集团（Kistler Group）上海新办公楼举行了开业庆祝活动。新建筑物的投入使用增强这家瑞士公司在中国市场上的地位，将来，能够实现由一家供应商向本地客户提供相关产品和服务。

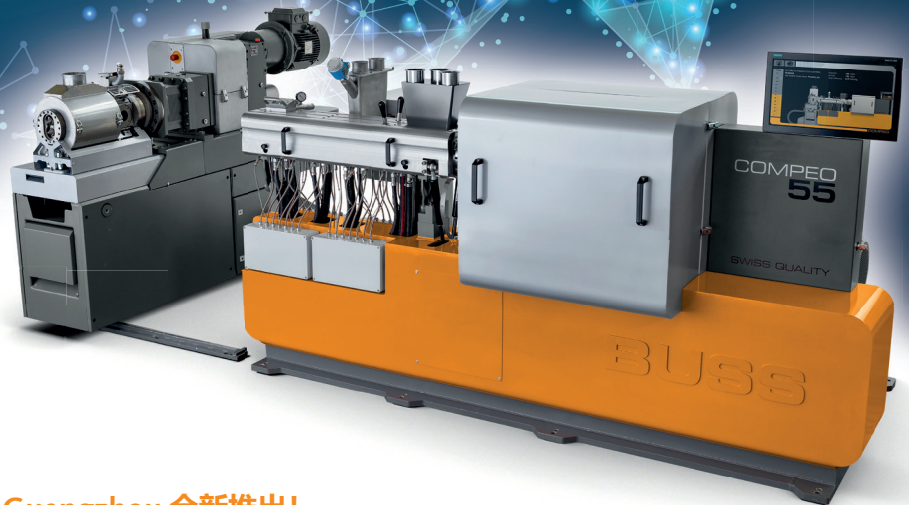
奇石乐的CEO Rolf Sonderegger 进行了说明：“在公司的全球战略中，我们将上海新的分支机构看成是顺理成章而合乎逻辑的步骤。新的办公室不仅仅将成为所有奇石乐中国项目的中心，同时还能实现在中国本土上加强与客户的交流。这一办公室有利于我们在更好的位置上向客户提供更好的服务、销售和技术支持。”

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Sonderegger在节日的庆典中开启了超现代的建筑物，全体员工和许多公司的来宾出席了庆典。

奇乐石集团总部位于瑞士的Winterthur，已经在中国的市场上经营了二十多年。2018年秋天，这家家族管理的公司收购了中国特种设备制造商力科机电（LIK），从而增强了在中国汽车市场上的地位。通过这一收购，奇乐石的业务范围中增加了制造自动化生产线的业务，扩大了在工业专门技术方面的专长。

New Office in Shanghai opened

■ The Kistler Group celebrated the opening of its new office in Shanghai on 5 February, on the occasion of the Chinese New Year festival. The new building strengthens the Swiss corporation's presence on the Chinese market, enabling it to offer products and services from one single source to local customers in the future.

"We see the opening of our new branch in Shanghai as the next logical step in our global corporate strategy," Kistler's CEO Rolf Sonderegger comments. "This office is not only the future hub for all Kistler's Chinese projects: it will also strengthen communication with our customers on the ground in China. It now puts us in a better position to assist them with comprehensive service, sales and technical support." Sonderegger opened



奇乐石集团新建的七层办公楼位于上海，面积约为4200平方米，这就是奇乐石具有最现代技术的工作场所，建筑物能够容纳超过100名员工，汽车研究和测试，传感器技术和工业过程控制部门都集中到了一个屋顶下协同工作

With an area of some 4 200 m², the new seven-story building in Shanghai accommodates state-of-the-art workplaces for over 100 employees, bringing Kistler's Automotive Research & Test, Sensor Technology and Industrial Process Control Divisions together under one roof

the ultramodern building at a festive ceremony attended by the entire workforce and many of the company's customers.

The Kistler Group, headquartered in Winterthur (Switzerland), has already been represented on the Chinese market for over 20 years. In fall 2018, the family-managed corporation acquired LIK, the Chinese special-purpose machinery ma-

nufacturer: as well as strengthening its presence in China's dynamic vehicle market, this step has expanded Kistler's industrial expertise by adding the manufacture of automated production lines to the portfolio.

➔ **Kistler Gruppe**
www.kistler.com



在泰国的新生产线

■ 科思创公司（Covestro）已经开始在泰国的马塔府（Map Ta Phut）工业园区建造新的聚碳酸酯薄膜制造生产线。随着新增的生产能力，这家

科思创公司的员工支持泰国新薄膜生产线破土动工庆典，全球薄膜业务主管Thorsten Drier也在其中（右三）

Covestro employees support the ground-breaking ceremony for a new films production in Thailand, among them Dr. Thorsten Drier, Global Head of the Films Segment (third from right)

公司将为亚太地区快速增长的需求提供服务并巩固其市场领袖的地位。作为科思创提升全球薄膜生产能力的第一步，本项目总投资超过一亿欧元，包括扩充相关的基础设施和物流。

科思创特种薄膜业务全球主管 Thorsten Dreier 博士在破土动工仪式上指出：“我们在马塔府的现有薄膜工厂已经是高性能的贵重设施，我们扩产的主要目的是加强与亚太地区客户的合作，特别是提高效率和准时交货。以市场为导向的创新以及更加强化以客户为中心的宗旨，推动着科思创的发展。”

Thorsten Dreier 还补充道：“这是绝佳战略定位，使我们能够最快地进入市场，同时提升了我们在亚洲的市场地位。尤其是，我们在现有的工厂里有着高度熟练的员工，这同样将是新项目成功的保证。

2017年1月，现有的薄膜生产设施投入运行，生产 Makrofol® 聚碳酸酯和 Bayfol® 共混薄膜，用于工业领域，例如安全和证件用的卡片，汽车，医药以及电气电子等。而新设施预期用于扩大产品类型范围，生产经过挑选的种类，包括新型光学级产品，以满足市场的需求。

New Production Line in Thailand

■ Covestro has started to build up a new manufacturing line for polycarbonate films at Map Ta Phut Industrial Estate, Thailand. With this new capacity, the company will serve the fast growing demand in Asia Pacific and strengthen its own position as a market leader. The project is the first step of a global capacity increase for Covestro's film production. The total investment of more than EUR 100 million also includes an expansion of the associated infrastructure and logistics.

“Our existing films plant in Map Ta Phut has been a high-performing and valued facility,” said Dr. Thorsten Dreier, Global Head of Covestro's Specialty Films Business, at the ground-breaking ceremony. “Our main objective with this expansion is to intensify our collaboration with customers in Asia Pacific, in particular, to improve efficiency and punctual delivery. With market-focused innovations and a stronger customer orientation we want to drive growth for Covestro.”

Thorsten Dreier added, “This is an excellent strategic fit, enabling fastest time-

to-market, but also broadening our market access in Asia. Not least, we have highly-skilled employees at our existing plant, which will also ensure the success of the new project,” added Thorsten Dreier.

The existing films facility started operations in January 2007 and produces Makrofol® polycarbonate and Bayfol® polycarbonate blend films, which are

used in industry sectors such as security and ID cards, automotive, medical, as well as electrical and electronics. It produces a selection of grades, including new optical grades, and the new facility is designed to extend the range of products in response to market demand.

➔ **Covestro AG**
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考特斯吹塑交流会在中国取得圆满成功

■ 11月27日和29日，来自中国华东和华北等地100多名中空吹塑客户代表受邀出席了2018考特斯吹塑交流会。会议在苏州和天津举行，相关区域的客户无需长途跋涉就能与考特斯的德国和中国的吹塑专家面对面进行交流。“通过这次会议，我们希望能够拉近与客户的距离，与客户有更紧密的接触与联系。”顺德考特斯CEO陈俊添先生表示。交流会不仅展示了考特斯的创新产品，还向客户分享了提高生产效率、解决日常生产问题的独到见解。

会议精彩纷呈，主题演讲介绍了考特斯的数款新型机器——KCC MK3紧凑型液压机、KBB全电动机和KSB吸入式三维吹塑成型机，还对模具快换、模头换色、多层共挤技术、复合材料压力容器的生产应用等进行了重点讲解。此外还介绍了关于工业4.0的应用，如使用IntelliGate模块，能将下游设备集成到机器。

除了考特斯的专家们，还有来自视觉检测系统Intravis公司以及中海壳牌石油化工有限公司的精彩演讲。“我们非常高兴地看到，与会客户对考特斯的交流会有着浓厚的兴趣，并作出积极的反馈。”陈俊添先生说道。他对会议取得的热烈反响也非常满意，并补充道：“我们已经开始筹划并期待着下一次的交流会。”

Successful Blow Molding Roadshow in China

■ On November 27th and 29th, the Kautex Blow Molding Roadshow was attended by more than 100 visitors from eastern and northern China. In 2018 the roadshow took place in Suzhou and Tianjin. “Our objective is easy to understand,” explained Geoffrey Chan, CEO of Shunde Kautex. “We want to be closer to the customers”. The advantage is, that customers do not have to travel long distances and can have face-to-face communication with German and Chinese blow molding experts. Another benefit is that the roadshow not only shows the latest Kautex innovations, but also provides insights on how production performance can be increased or problems in daily production solved. The visitors, mainly customer representatives, were given the latest insights on



考特斯吹塑交流会天津会场合影

Roadshow 2018 in Tianjin China

the development of Kautex extrusion blow molding machines, color change solutions, multi-layer co-extrusion solutions, quick mold change systems or composite pressure vessel production. Additionally Industry 4.0 applications, such as IntelliGate modules for downstream integration into the machine, were introduced.

Besides presentations from Kautex experts, the event was accompanied by presentations from Intravis, a supplier for visual inspection solutions and CNOOC

and Shell Petrochemical, a supplier for raw materials. “We are very happy about the high interest and the very good feedback from our visitors,” said Geoffrey Chan. Who was very pleased about the good atmosphere and added: “We are now really looking forward to planning our next roadshows”.

► Kautex Maschinenbau GmbH
www.kautex-group.com

零配件制造时间创下纪录

■ 当遇到（或即将遇到）设备停顿时，经常需要设备的零配件备有库存并尽快交付。温德默勒与霍尔舍公司



（W&H）有90%的原装备件可以直接从库存中得到。但是，仍然有一些消耗品或是老机器的部件没有库存储备。W&H的特快生产弥补了这一空缺：可以在不到24小时内，按照客户的技术规范（零件图纸）制造完成简单的或中

W&H的特快制造服务，不常用的机械零部件可以在24小时之内生产出来并交付

In the Express Manufacturing Service at W&H rare machine spare parts can be produced and delivered in less than 24 hours

等复杂的设备零部件并发出货物。

“我们的零配件特快服务采用与医院急诊室相似的方式运作：最重要的事情就是稳定病人，也就是设备，让它保持生存。这就是我们防止设备停产的办法。”W&H 服务和物流部主任Jörg Dellbrügge说道：“对于这种快速而及时的服务，我们收到了来自客户的非常良好的反馈。”对于仓库中没有库存的消耗品，通常的交货时间为两周或更长。与此不同的是，W&H的特快零部件服务，当接到客户的紧急订单后，仅仅一天时间就已经在送往客户的路途上了。有时，我们提供的零备件只是一种临时的解决方案，等待直到最后的零部件完成。比如，如果经验表明该零件仍需要改进，那么制造就需要略长一点的时间。”

特快制造作为一种附加的服务，于去年四月份推出，从那时以来，特快制造已成功地完成了超过二百份紧急订单。

Spare Parts produced in Record Time

■ In the event of (imminent) machine downtime, machine spare parts are often required in record time. Windmüller & Hölscher has 90 percent of all required original spare parts directly available from stock. But there are also rare consumables or old machine parts that are not stored. The W&H express production closes this gap: Simple to medium complex machine components that have been manufactured to customer specifications (drawing parts), can be rebuilt and delivered in less than 24 hours. "Our express service for spare parts works in a similar way to an emergency room: the most important thing is to stabilize the patient, i.e. the machine, and keep it alive. This is how we prevent production shutdowns. We get very positive feedback

from our customers for the fast immediate help," says Jörg Dellbrügge, Head of W&H Service Logistics. The conventional delivery time for rare consumables that are not stored in stock is two weeks or longer. W&H's express spare parts, on the other hand, can be on their way to the customer just one day after receipt of the order. "It always depends on the urgency of the order. A spare part from us is sometimes just an interim solution until the final machine part is finished. If, for example, this still has to be refined, experience has shown that production always takes a little longer." Express manufacturing was set up as an additional service in April last year. Since then, express production has successfully completed more than 200 rush orders.

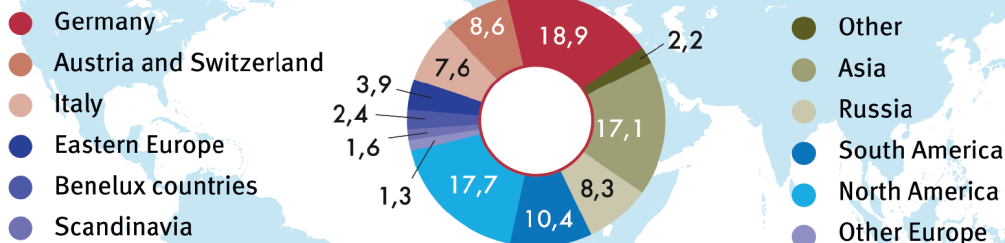
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在越南市场推出新的吹膜生产线

不久前，班德拉（Bandera）向越南客户提供了两台平模头挤出生产线：一台用于PET的热成型生产线和一台用于厚度不大、收缩有限的PP PS的挤出设备。这两台设备都用于生产食品包装材料。对于班德拉而言，首次提供的这两条生产线代表着里程碑，奠定了与客户坚实的伙伴关系，不久的将来，将有更多的项目得到开发。

2019年四月，班德拉向越南一家新客户交付了三层HDBFLEX®生产线。这台有高度创新的设备配置齐全，包括在线四色印刷系统，用于生产重载包装袋（FFS“成型-充填-封口”技术）产量很高。

在重载包装袋领域，班德拉被认为是领导者，一些重要的亚洲石油化学公司对此表示认同。

New Blown Film Line launched in the Vietnamese Market

■ A short time ago Bandera supplied two flat-die extrusion lines to a Vietnamese customer: a thermoforming plant for PET and an extrusion machinery for PP PS, with low thickness and limited



shrinkage. They were both designed for the production of food packaging. These first two lines represented a milestone for Bandera, laying the foundations for solid partnerships and more projects to be developed in the near future.

In April 2019 Bandera delivered to a new Vietnamese customer a 3-layer HDBFLEX® line. This highly innovative plant is fully accessorized and includes an in line 4-colours flexographic printing

system and it is designed to produce Heavy Duty Bags (FFS technology) with a high output.

Bandera is considered to be a leader in the Heavy Duty Bag sector, acknowledged by a few important, Asian petrochemical companies.

► **Costruzioni Meccaniche Luigi Bandera SpA**
www.luigibandera.com

凯柏胶宝®启动新生产线实现了新亚太里程碑

■ 凯柏胶宝将于本月在其马来西亚工厂开设运营了一条最新的热塑性弹性体（TPE）生产线。这项生产线能将亚太区的产量提高至现有的 35%，并将凯柏胶宝的总生产能力提升至全球 6 万吨。

目前，凯柏胶宝正在扩建其在马来西亚的总办事处和仓库，而新增的生产线也是马来西亚总办事处扩大计划蓝图之一。除此以外，凯柏胶宝还将继续扩张其在越南河内的销售网络，以增加其品牌影响力并提升当地的客户服务。

提高效率、优化质量、不断创新突破——这三个标语一直都是凯柏胶宝所坚持的信念。凯柏胶宝凭的企业宗旨是

按照客户的意愿提供高质量和具有竞争力的产品。通过在德国，马来西亚及美国的生产工厂，凯柏胶宝可以实现这一目标。

凯柏胶宝首席执行官 Franz Hintercker 表示：“我们在市场上的成功仰赖于强大的客户导向，分布全球的国际销售网络及不断突破的创新科技。我们的核心发展战略就是不断地投资扩展我们的生产工厂规模和销售办事处的国际网络。”

凯柏胶宝一直努力不懈地提升其企业的核心竞争力同时，也在持续扩展公司的业务规模。

New Asia Pacific Milestone with Additional Production Line achieved

■ KRAIBURG TPE's begun operations of a new production line at its Malaysia plant in December 2018 to boost production capacity by 35% and increase KRAIBURG TPE's total production capabilities to 60,000mt worldwide.

KRAIBURG TPE is expanding its offices and warehouse in Malaysia in tandem with the new production line to complement its production expansion. The com-

pany will also be extending its sales network in Hanoi, Vietnam, to increase its brand presence and enhance its customer service in the region.

KRAIBURG TPE has relied on its three production sites for many years, namely Waldkraiburg (Germany), Atlanta (Georgia, USA) and Kuala Lumpur (Malaysia) to guarantee delivery of its TPE compounds on a long-term basis.

Franz Hinterecker, CEO of KRAIBURG TPE says: "Our success in the market is based on strong customer orientation, global presence and influential innovations. Continuously investing in the international network of our production plants and sales offices is a mainstay of our strategy."

The consistent expansion of production capacities follows KRAIBURG TPE's strategic approach to focus on its core competences.



凯柏胶宝®启动新生产线 实现了新亚太里程碑 (图片: © 2018 KRAIBURG TPE)

KRAIBURG TPE achieves new Asia Pacific milestone with additional production line (Photo: © 2018 KRAIBURG TPE)

► **Kraiburg TPE GmbH & Co. KG**
www.kraiburg-tpe.com

智能化的驱动和自动化解决方案

■ 包米勒有限公司 (BMK Co., Ltd.) 的产品组合范围囊括了从独立的元件直到完整的系统, 并提供相关的服务。

这家德国自动化和驱动产品制造商在韩国的代理位于离首尔大约25公里的富川市, 在首尔国际自动化展上, 这家公司提出了工业领域前瞻性的解决方案。

不同规格的DSD2系列动态伺服电机可以为几乎每一种自动化应用场合提供合适的解决方案。那些对加速能力和最好的启动质量有着最高要求的应用场合, 例如包装机械、纺织机械、塑料机械、机械设备、特种机械和小型机器人等应用, 都对动态性能有着最高的要求, 而DDS2动态伺服电机是这些场合下合适的选择。

包米勒b maXX PCC-04控制器采用了新一代高性能箱式PC机, 提供了一个可扩展的通用平台, 平台备有大量

包米勒在首尔国际自动化展会上展出丰富多彩的产品组合, 包括变换器与电机、控制技术和软件模块

Baumüller presented a comprehensive product portfolio with converters and motors, control technology and software modules at Automation World



接口，由于可扩展，因此可以进行灵活的设计。

b maXX PCC-04控制器为综合的控制工程仿真工具提供了所有的先决条件，从而实现了的最大灵活性。

包米勒的b maXX 5000控制器树立了新一代变频器的标准。B maXX 系列向着模块化系统的方向不断提升，高性能功率单元的冷却采用风冷、水冷和冷却片方式，具有灵活扩展的功能，可以采用通讯的方式连接到整套系统。

b maXX 3300伺服控制器是一种高质量伺服控制器，自带位置控制功能，适合于执行小型任务。其特点是结构紧凑和节省空间。以磁场定向的规则确保了最佳质量的平稳运行。更高水平的速度和位置控制允许动态精密定位。

包米勒的变频器为客户带来了许多且重要的好处：节省成本，更好的动态特性，安全性得到了提高。b maXX 变频器系列产品可覆盖较大的应用范围，功率从1kw到315kw。b maXX 5000系列产品包括可堆叠的装置和强有力的单通道单元。备有可选择的安全组件，这一系列的所有装置可以方便地满足你独特的安全需求。b maXX 5000, b maXX 4000和 b maXX 3000 变频器在国际自动化展会上公开展出。

驱动技术的另一创新是极其紧凑的DST2高扭矩电机，电机的速度有了增加，动力得到增强，从而能满足机械工程最新的需求。由于采用了最佳化的设计，按照规格的不同，目前电机转速已可达到2000转/分。这一创新为更短的节拍时间和更高的生产效率提供了方便。作为市场上已经广泛使用的电机以及不同规格的高扭矩电机的供货商之一，包米勒同时还提供有效的和可扩展的伺服电机以及种类繁多、规格齐全的主驱动器。

BMK有限公司是包米勒公司在韩国的代理，为所有包米勒产品提供销售和服务，并在韩国富川市建有自己的备件仓库。除了位于富川市的总部以外，客户还可以从富川市、水原市和龟尾市的三个分支机构得到服务。

Intelligent Drive and Automation Solutions

■ The product portfolio of BMK Co., Ltd. ranges from individual components to complete systems and the associated service. The agency of the leading German automation and drive manufacturer, located in BuCheon City, approx. 25 kilometers from Seoul, presented future-

proof solutions for industry at Automation World in Seoul.

The various sizes of the DSD2 series offer a suitable solution for almost every automation application. The DSD2 is suitable for highly dynamic applications with the highest demands on acceleration capacity and best start qualities, such as in packaging machines, textile machines, plastics machines, handling machines, special machines and small robots.

With the new high-performance generation of box PCs, b maXX PCC-04, Baumüller provides a scalable, versatile platform that offers a large number of interfaces, is expandable and thus allows for a flexible design. The b maXX PCC-04 offers all the preconditions for integrating simulation tools for control engineering and thus maximum flexibility.

Baumüller sets standards with the converter generation b maXX 5000. The consistent enhancement of the successful b maXX series in the direction of module systems impresses with high-performance power units in the cooling methods of air, water and cold plate, flexible expansion capability and connection to an integrated communication concept.

The b maXX 3300 servo-controller is a high-quality servo controller with integrated position control for the small performance range. It is characterized by a compact and space-saving building type. The field-oriented regulation ensures an excellent smooth running quality. The higher-level speed and position control allows for a dynamic and precise positioning.

With its converters, Baumüller provides its customers with important advantages: from cost savings and higher dynamics to increased safety. The converter series of the b maXX family together cover a wide power range from 1 to 315 kW. The b maXX 5000 family comprises both stackable devices and powerful mono units. With optional safety packs, all devices in this series can be easily adapted to meet your individual safety needs. The b maXX 5000, b maXX 4000 and b maXX 3000 converters were on display at Automation World.

Another innovation of the drive technology is the speed increase and power enhancement of the extremely compact DST2 high-torque motor with which the

latest requirements of mechanical engineering have been implemented. Thanks to the optimization, the motors now reach speeds of up to 2000 rpm, depending on their size. This innovation paves the way for shorter cycle times and thus higher productivity. With one of the broadest offerings of motors on the market, in addition to different high-torque motors, Baumüller also offers efficient and scalable servomotors as well as main drives in numerous versions and sizes.

BMK Co. Ltd, the Korean representative of Baumüller, offers sales and service for all Baumüller products and has its own spare parts warehouse in Korea. In addition to the headquarters in BuCheon City, customers are served from three other branches in BuCheon, Suwon and Gumi.

► BMK Co., Ltd

Andy Lee, alee@bm-korea.kr
www.baumueller.com/en/

有效的自动化

■ 位于德国Freilassing的凯孚尔股份有限公司，致力于热成型机钢尺切割有效的自动化。凯孚尔现在提供一种适用于 KMD Speedformer系列设备的最佳化的产品包装模块SpeedPacker，显著地提高了生产效率。

这家热成型专家企业已经发布了SpeedPacker。这一强有力的模块不仅适合于凯孚尔的KMD Speedformer，也同样能与其它制造商的钢尺切割机相匹配。SpeedPacker是一种完全整合到钢尺切割机中的缓冲和卸载站。缓冲作用是减少人力需求、节省大量成本的关键。按照人体工程学进行了最佳化设计的SpeedPacker缓冲卸载站确保了安全运行。卸载带的水平高度可以方便地进行调整，直到对操作者最为合适。对于已在使用中的机器，也可以进行改装。

凯孚尔机器是模块化的，可以根据需要进行扩充。可提供各式各样的堆放方案，质量控制，以及包装单元。对于高效率生产和提高生产率来说，自动化是相当值得考虑的成功因素。

凯孚尔包装部门主管 Erwin Wabnig说道：“我们总是考虑让我们的

客户以最佳方式实现高效率生产。我们高速压力成型系统的成型和切割站已经是非常有效率了。接下来的下一步工序节省时间是有可能的。”他解释说：“可靠的堆码和缓冲以及快速卸载允许成型部件快速包装或填充，这就进一步提高了生产率。”

Efficient Automation

■ Kiefel GmbH, based in Freilassing/Germany, focuses on efficient automation of steel rule cutting for thermoforming machines. Kiefel now offers the SpeedPacker – an optimized product packing module for the KMD Speedformer Series. It significantly increases productivity. The thermoforming specialists have launched the SpeedPacker. This powerful module is not only suitable for the Kiefel KMD Speedformer, but is also compatible with other manufacturers' steel rule cutting machines. The SpeedPacker is a buffering and unloading station that is fully integrated into the steel rule cutting machine. Buffering is key to reducing personnel requirements and achieving tremendous cost savings. The ergonomically optimized SpeedPacker ensures safe operation. The level of the unloading belt can easily be adjusted to the suit the height of the operator. Retrofitting is also possible for machines already in use.



SpeedPacker -用于 KMD Speedformer系列的缓冲和卸载站

SpeedPacker - Buffer and Unloading Station for KMD Speedformer Series

Kiefel machines are modular and can be expanded as required. Various stacking solutions, quality control, and packing units are available. Automation is a considerable success factor for efficient manufacturing and enhanced productivity. "We are always thinking about enabling our customers to optimally achieve efficient production," says Erwin Wabnig, Head of the Kiefel Packaging Division. "The forming and cutting stations of our

high-speed pressure forming systems are already very efficient. Time savings are also possible in the next steps", he explains. "Reliable stacking with buffering and rapid unloading permit fast packing or filling of formed parts, further increasing productivity."

► KIEFEL GmbH
www.kiefel.com

位于上海的新抗氧化剂制造工厂

■ 巴斯夫新的世界级抗氧化剂制造工厂于一月份在中国上海的漕泾镇揭牌这家工厂的年生产能力为42,000吨，将生产用于塑料添加剂市场的抗氧化剂以及相关形态产品及混合物。工厂运营的第一阶段将生产粉状混合物、液态抗氧化剂以及相关形态的混合物。

巴斯夫股份公司董事会成员Markus Kamieth博士说道：“随着这一投资，我们增强了我们作为抗氧化剂全球领先供应商的地位。亚洲是全世界最大的抗氧化剂市场，而中国几乎占到了亚洲市场的65%，我们预料，从中长期

来看，市场的增长率表现将引人注目。”

巴斯夫的工厂位于上海漕泾镇的化学工业园，新工厂靠近巴斯夫上海地区的研究和发展中心并将由此受益，该中心向这一地区的聚合物生产商提供技术支持。

抗氧化剂的重要性:

当塑料被置于高温下加工时，抗氧化剂有利于防止热氧化作用。

氧化将导致冲击强度、延伸率的降低，并使物料表面产生裂纹和变色。

几乎所有高分子材料在制造、加工和最终使用的某一阶段或者所有阶段，都会经历氧化降解反应。

巴斯夫经营全球生产网络，是在亚洲、欧洲、北美和中东都拥有塑料添加剂生产工厂的唯一的供应商。

New Antioxidants Manufacturing Plant in Shanghai

■ BASF inaugurated a new, world-scale antioxidants manufacturing plant in Ja-

January at its Caojing site in Shanghai, China. With an annual capacity of 42,000 tons, the plant will produce antioxidants and associated forms and blends for the plastic additives market. The units for powder blending, liquid antioxidants and formgiving are now operational as part of the plant's first phase.

"With this investment, we strengthen our position as the leading global supplier of antioxidants," said Dr. Markus Kamieth, Member of the Board of Directors, BASF SE. "Asia is the world's largest antioxidants market and China accounts for almost 65% of the market in Asia.

We expect the market will show attractive growth rates in the medium to long term."

Located at BASF's Caojing site in the Shanghai Chemical Industry Park, the new plant will benefit from its proximity to BASF's regional research and development center in Shanghai; a hub that provides technical support to polymer producers across the region.

Importance of antioxidants: Antioxidants help prevent thermal oxidation reactions when plastics are processed at high temperatures. Oxidation can cause the loss of impact strength, elongation,

surface cracks and discoloration of the material. Almost all polymer materials undergo oxidative degradation reactions at one or all of the manufacturing, processing and end-use stages.

BASF runs a global production network and is the only supplier of plastic additives with production sites in Asia, Europe, North America and the Middle East.

► **BASF SE**
www.basf.com
► **BASF Plastic Additives**
www.plasticadditives.basf.com
www.performancechemicals.basf.com

挤出薄膜-合资企业

■ 亚洲西格玛 (Sigma) 拉伸薄膜已经宣布, 安装在泰国的新流延拉伸薄膜生产线中的第一条已经订购。这家由总部位于美国的西格玛塑料集团与泰国 King Pac Industrial 合资的企业, 将把西格玛集团在要求严格的美国市场上的经验和 King Pac 的本地制造和分销网络优势发挥出来。西格玛塑料集团是北美最大的私营塑料薄膜挤出集团, 树脂产量超过二十亿磅, 雇员超过 4,500 人, 在美国市场上占有领先地位, 现在寻求在增长的远东市场上扩大业务活动。

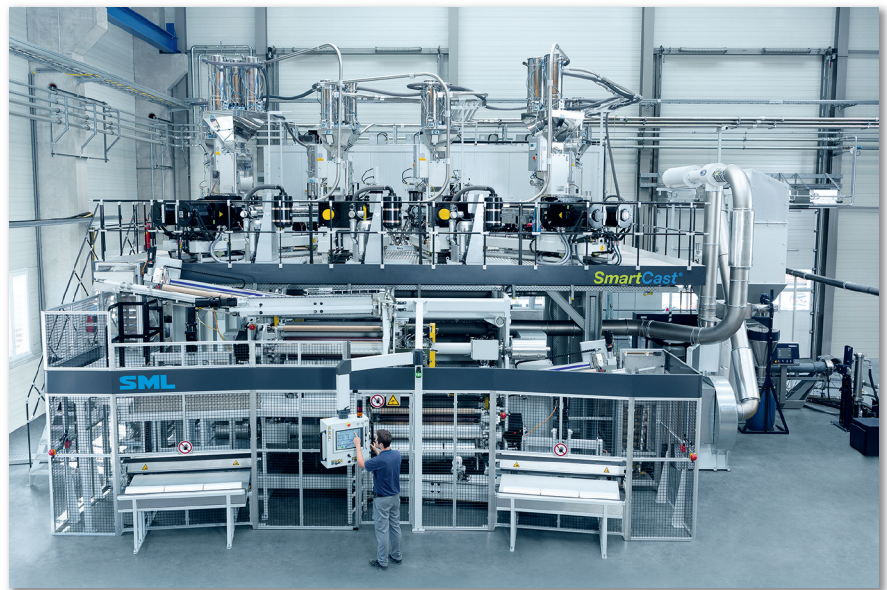
King Pac Industries 产量为 2.2 亿磅, 是亚洲最大的工业袋制造商, 同样在寻求发展, 进入流延拉伸薄膜市场。

生产线来自于奥地利制造商 SML, 将于 2019 年第四季度交货到泰国并在此后短期内投入生产。来自 SML 的当代最新技术将使得亚洲西格玛拉伸薄膜公司向东南亚以及澳大利亚市场提供一流品质的拉伸薄膜产品。

来自 SML 的第一条生产线将安装在新的定制厂房内, 面积超过 30 万平方英尺, 每年将生产大约四千五百万磅拉伸薄膜产品。

Film Extrusion – Joint Venture

■ Sigma Stretch Film of Asia, has announced the purchase of the first of their new cast stretch film production lines for installation in Thailand. This joint venture



between Sigma Plastics Group based in the US and King Pac Industrial in Thailand will leverage Sigma's experience in the demanding US market and King Pac's local manufacturing and distribution networks.

Sigma Plastics, the largest privately owned film extrusion group in North America with an output of over 2 billion pound of resin and employing over 4,500 people has a commanding position in the US markets and is now looking to expand its business activities in the growing Far East markets.

King Pac Industries with an output of 220 million pounds is the largest industrial bag manufacturer in Asia and is also

looking to expand into the cast stretch film market.

The line, from Austrian machinery manufacturer SML, will be delivered to Thailand 4th quarter 2019 and go on-stream shortly thereafter. State-of-the-art technology from SML will allow Sigma Stretch of Asia to supply premium-quality stretch films into the South East Asian and Australasian markets.

This first line from SML will be installed in a new, custom-built facility of over 300,000sq ft and will produce approx. 45 million pounds of stretch film per year.

► **SML Maschinengesellschaft mbH**
www.sml.at

合作生产包含 50% 可再生 PE 的可持续包装

■ SONGWON Industrial宣布，它是世界上首批使用含50%可再生PE的20kg PE袋作为产品包装的化学公司之一。

SONGWON 与德国的创新包装专业公司 RPC bpi nordfolien 合作，利用取自各种废弃物（包括工厂使用过的印刷袋）的可再生材料开发 20kg 产品包装 PE 袋。用来脱墨的所有溶液也是从闭环流程中不断回收而来。

SONGWON 高度重视可持续发展并勇担重任，以期打造更具可持续性并符合联合国 17 个可持续发展目标 (SDG) 的全新解决方案。在不断努力节约资源的同时，SONGWON 也在集中精力优化流程和探寻新的机遇，以通过与其他领先公司合作发挥双方的优势。

“与 RPC bpi nordfolien 合作之后，我们发现他们是富于创新精神的合作伙伴，可以帮助我们实现‘SONGWON 兼顾地球和人类利益，为利益相关者实现健康和可持续发展’的 SONGWON 愿景。”SONGWON 首席执行官 Maurizio Butti 说道。

在过去的 12 个月，很多客户成功试验了可再生 20kg 袋，以确保它们符合 SONGWON 的质量标准以及客户对于强度、色彩稳定性和处理的质量标准。在未来的几个月内，SONGWON 将继续平稳过渡到新型可再生包装。

Co-Production of Sustainable Packaging with 50% Recycled PE

■ SONGWON Industrial announces that it has become one of the first chemical companies in the world to package its products in 20 kg PE-bags made with 50% recycled PE.

SONGWON has collaborated with the German innovative packaging specialists, RPC bpi nordfolien, to develop PE-bags for packaging 20 kg of product using recycled materials originating from different waste streams, including industrial printed bags that have already been used. All of the solvents that are required for de-inking are also recycled continuously in a closed loop process.

Sustainability is taken seriously at SONGWON and the organization embraces its responsibility to create new, more sus-



(从左到右) Christian Knappik, RPC BPI Nordfolien主要客户经理/化工事业部、Hwasik Jung, 蔚山工厂经理、Cord Manegold, 主要主要抗氧化剂和预混剂全球业务经理(图片来源: 松原产业株式会社)

From the left: Christian Knappik, Key Account Manager / Business Unit Chemical Industry, RPC bpi nordfolien, Hwasik Jung, Ulsan Plant Manager & Cord Manegold, Global Business Manager Main AO's and Blends (Photo: SONGWON Industrial Co., Ltd.)

tainable solutions in line with the United Nations 17 Sustainability Goals (SDGs). While continually striving to conserve resources, SONGWON focuses its efforts on optimizing processes and developing new opportunities to leverage combined capabilities by cooperating with other leading companies.

“With RPC bpi nordfolien, we have found an innovative partner who can support us to live SONGWON's Vision: ‘Sound and sustainable growth for all our stakeholders in harmony with the interests of our planet and its people’,” says Maurizio Butti, Chief Executive Officer at SONGWON.

During the past 12 months, the recycled 20 kg bags were successfully trialed on various customers to make sure that they met SONGWON's quality standards and those of the customers for strength, color stability and handling. SONGWON will be continuing the smooth transition to the new recyclable packaging over the next few months.

➡ SONGWON Industrial Co., Ltd.
www.songwon.com
➡ RPC bpi nordfolien
www.nordfolien.com

更高的薄膜回收效率

■ 恰到好处的机器规格：这便是薄膜回收商从史太林格回收技术上所获得的。2018年初，史太林格介绍了一款新规格的回收设备- recoSTAR dynamic 145，这是为~1,000 kg/h 产能特别设计

的。目前已安装了3条线，另外公司已收到这款设备的额外订单。

去年，史太林格补充了 recoSTAR dynamic 这一款广受欢迎的机型的第七种机器规格。这一新规格的推出是由来

自消费后薄膜（如包装薄膜，农用薄膜）的无数询盘所驱动的，主要用于满足处理量约为1000 kg/h 的处理要求。迄今为止可用的生产线，recoSTAR dynamic 125 和 165（数字表示螺杆直径，以毫米为单位），对于这个处理量来说，稍微不足或过大。recoSTAR dynamic 145 的发布打破了这一局限：该生产线设计用于约 1 吨的再生颗粒，显示出最佳的成本效益比，从商业角度来看，它也非常有吸引力。

recoSTAR dynamic 的应用是多样化的。无论是工业废料还是消费后废料、潮湿的或大面积印刷的材料，该生产线都非常通用，并允许定制设置。主要部件是 SMART 压实机，在干燥和冷凝的基础上，保证了混合比的均匀性。消费后和/或高度印刷薄膜的回收商也会使用高效排气单元 C-VAC，该模块位于过滤器之后，可独立于主挤出机进行控制。在 C-VAC 中，熔融表面增加了 300%，这可以有效地去除气体，并防止空气被锁在再生颗粒中。这对薄膜回收商尤其重要，因为油墨、湿度和污染会导致挤出过程中产生更高的气体。另外一个好处是 recoSTAR dynamic 的 rECO 包：通过降低 10% 能耗节省成本，保护环境。

Greater Efficiency for Film Recyclers

■ Exactly the right machinery size: That's what film recyclers get from Starlinger recycling technology. In early 2018, the manufacturer introduced a new size – the recoSTAR dynamic 145 – that is specially designed for a capacity range of ~1,000 kg/h. The first three lines are currently being installed, and the company has already received orders for additional machines of this type.

Last year, Starlinger recycling technology supplemented its well-established recycling line recoSTAR dynamic with a seventh machinery size. The introduction of this new size was prompted by numerous inquiries from the area of post-consumer film (e.g., packaging film, agricultural film), which predominantly requested a throughput of approx. 1,000 kg/h. The lines that had hitherto been available, the recoSTAR dynamic 125 and 165 (the numbers indicate the screw diameter in millimeters), were slightly under- or oversized for this capacity. The launch of the recoSTAR dynamic 145 bridges this



recoSTAR dynamic 145 带 C-VAC 模块 (©Starlinger)

The recoSTAR dynamic 145 with C-VAC module (©Starlinger)

gap: The line is designed for approx. 1 ton of regranulate and shows an optimal cost-benefit ratio that renders it very attractive also from a commercial perspective.

The fields of application of the recoSTAR dynamic are manifold. Be it industrial or post-consumer waste, humid or heavily printed material – the line is extremely versatile and permits a customized setup. A central component is the SMART feeder, which on top of drying and condensing the material ensures a homogeneous mixing ratio. Recyclers of post-consumer and/or heavily printed film also operate the highly efficient degassing unit C-VAC; this module is positioned after the filter and can be controlled inde-

pendently of the main extruder. In the C-VAC, the melt surface is increased by 300 %, which allows the efficient removal of gases and prevents air from being trapped inside the regranulate. This is especially important for film recyclers because ink, humidity and contamination can lead to higher formation of gases during the extrusion process. Another benefit is the rECO package of the recoSTAR dynamic: It saves costs and protects the environment through a 10 % reduction in energy consumption.

► Starlinger & Co. Gesellschaft m.b.H.
www.starlinger.com

双温区 500oF 柜式电热炉

■ No. 840 是来自Grieve的 500OF 双温区垂直气流柜式电热炉，当前用来在客户工厂已完成的生产线上进行干式复合。上加热室的尺寸为36英寸宽，12英寸深，60英寸高，同时下加热室为尺寸为36英寸宽，12英寸深，60英寸高。安装了30KW耐热铬镍铁封装管状加热元件（上下室各15KW）提供热量，在每个加热区都采用两台风量每分钟1000立方英尺、功率1马力的循环风机，用来提供垂直气流。

Grieve 加热炉的内部和外部都采用镀铝钢板，全部采用4英寸厚的隔热壁板。八个 ¾” 直径的风口贯穿每一个加热区的顶盖和底板，工作负载能够通过风口进入加热区。

No.840配备的安全和控制设备包括：数字显示式温度控制器，带有单独接触器的手动复位超温控制器，再循环风机以及每一个加热区的气流安全开关。

Two-Zone 500oF Electric Cabinet Oven

■ No. 840 is a 500OF electrically-heated, two-zone vertical airflow cabinet oven from Grieve, currently used to dry coatings on fishing line at a customer's facility.

Workspace dimensions of the top heating chamber measure 36" wide x 12" deep x 36" high, while the lower chamber is 36" wide x 12" deep x 60" high. 30KW installed in Incoloy-sheathed tubular heating elements (15KW per chamber) provide the heat, while two 1000 CFM, 1-HP recirculating blowers provide vertical airflow in each heating zone.

This Grieve oven has aluminized steel interior and exterior, plus 4" insulated walls throughout. Eight ¾" diameter ports through the roof and floor of each heating zone allow the workload to pass through.

Safety and control equipment on No. 840 include digital indicating temperature controllers, manual reset excess temperature controllers with separate contactors and recirculating blower airflow safety switches for each heating zone.

► **THE GRIEVE CORPORATION**
www.grievcorp.com



新型高性能真空泵

■ 此款紧凑型罗茨泵额定抽速范围可达 520 - 2,100 m³/h。这是通过全新的驱动设计与变频器相结合来实现的。其独特的转速控制器功能能让这款泵满足不同客户的具体要求。得益于强大的驱动设计，HiLobe 比传统的罗茨泵节省了大约 20% 的抽真空时间。快速抽真空降低了成本并提高了生产设备的效率。

与传统的罗茨泵相比，HiLobe 的维护和能耗成本降低了 50% 以上。这要得益于能效等级为 IE4 的驱动器和泵的特殊转子形状。密封设计也做出了贡献。泵呈密封状态，最大积分泄漏率为 1 · 10⁻⁶ Pa m³/s。不再使用动态密封，仅需每四年维护一次。得益于近气口腔中的创新密封设计，在大多数应用中不再需要使用密封气体，这也降低了运行成本。由于 HiLobe 罗茨泵即使在高达 + 40°C 的环境温度下也可以使用灵活的空气冷却，因此无需进行水冷却。

控制和通信是提高设备可用性的关键因素。HiLobe 的智能接口技术可以非常好地适应和监控工艺。这可以提高工作的前瞻性和效率。通过集成这种“Condition Monitoring (状态监控)”，便可以始终获得有关真空系统状态的信息。此外，状态监控允许合理和前瞻性地规划维护和维修措施，并能避免出现产生高昂成本的生产失败，进而提高设备可靠性。这些优点意味着使用寿命长且操作安全性最高。根据现有系统的情

况，HiLobe 真空泵可以垂直或水平安装。这样可以最大限度地提高泵送速度，并且可以更加实际而有效地利用客户生产中可用的空间。

New High-Performance Vacuum Pumps

■ The compact Roots pumps from Pfeiffer Vacuum offer a wide nominal pumping speed range of 520 to 2.100 m³/h. This is made possible through the new drive concept in conjunction with frequency converters. Thanks to their individual speed control, the pumps can be precisely tailored to customer-specific requirements. Thanks to this powerful drive concept, the HiLobe achieves approximately 20 percent shorter pump-down times than conventional Roots pumps. Rapid evacuation reduces costs and increases the efficiency of the production system.

The maintenance and energy costs of the HiLobe are >50 percent lower compared to conventional Roots pumps. The reason for this is a drive with energy efficiency class IE4 and the special rotor geometries of the pumps. The sealing concept also contributes to this. The pumps are hermetically sealed to the atmosphere and have a maximum integral leakage rate of 1 to 10⁻⁶ Pa m³/s. Dynamic seals are eliminated and, as a result,

maintenance is only required every four years. Due to the innovative sealing concept in the suction chamber, the use of sealing gas is superfluous in most applications, which also has a positive effect on the operating costs. Since the operation of the HiLobe Roots pumps is possible even at ambient temperatures of up to +40°C with flexible air cooling, cost-intensive water cooling is unnecessary. Control and communication are the essential factors for increasing system availability. The intelligent interface technology of the HiLobe allows very good adaptation and monitoring of the processes. This facilitates anticipatory and efficient work. By integrating such condition monitoring, information about the condition of the vacuum system is always available. In addition, condition monitoring increases system availability allowing users to plan maintenance and repair measures in a useful and anticipatory way and prevent cost-intensive production downtimes. Depending on their suitability for the existing system, the HiLobe vacuum pumps can either be aligned vertically or horizontally. This allows maximum pumping speed and a more customized and efficient use of space at the customer's production site.

► **Pfeiffer Vacuum GmbH**
www.pfeiffer-vacuum.com

混合料挤出的工业4.0方案

Industry 4.0 Solutions for Compounding Extruders

当代最先进的数据采集、处理和分析技术，能够大幅度简化混合料公司的日常生产流程，为工艺的优化提供有价值的深度信息。有鉴于此，位于汉诺威的克劳斯玛菲·贝尔斯多夫股份有限公司

(KraussMaffei Berstorff GmbH) 提供了两种高度创新的解决方案，应用于所有新型ZE“蓝色动力”双螺杆挤出机。从而实现了先进的混合料设备与工业4.0技术的完美结合。

State-of-the-art data acquisition, processing and analysis can significantly simplify the daily production routines of compounding companies and provide valuable in-depth information for process optimization. This is why Hannover-based KraussMaffei Berstorff GmbH offers two highly innovative solutions for all twin-screw extruders of the new ZE Blue-Power generation. This enables perfect integration of advanced compounding equipment with industry 4.0 technologies.



克劳斯玛菲·贝尔斯多夫双螺杆挤出机工艺数据采集系统有利于充分发掘出最佳化加工的潜力

Process data acquisition system for KraussMaffei Berstorff twin-screw extruders helps to fully utilize the optimization potential

工艺数据的采集提供了每时每刻的完全控制

为了满足日益增长的数据采集和分析的需求，克劳斯玛菲·贝尔斯多夫开发出了两套全新系统，目前可以作为ZE蓝色动力挤出机的选配项。开发的第一套系统目的是用于同步收集混合料生产线的所有生产数据。系统由完美协调的硬件和软件组成，用于采集、记录、评估和进一步处理所有工艺数据和测量数据。数据分析为工艺优化提供了良好的基础，尤其是在修改工艺或打算提高质量时。由于采用了模块化设计和方便的配置，该系统对不同的应用范围有着非常广泛的适应性，规格齐全，独立操作，所有接口都汇集到总体系统，总体系统收集和显示预定的工艺数据。所有上游和下游部件，包括计量系统、熔体过滤、熔体泵以及造粒系统的压力、温度、速度和容积流量值以及挤出机的参数都被集中到一个系统中。

颜色测量带来恒定的熔体质量

在线工艺监视开发的第二套系统，其目的是探测出任何计量错误，以减少生产废料和提高生产线的效率。这种在线测量系统是基于颜色测量的：光线投射到熔体中，反射后由高分辨率的光纤传感器检测。将其与事先设定的值进行对比，任何亮度或色彩上的偏差都将被立即识别和显示出来。毫无疑问，颜色测量系统可以整合到总体的生产线控制系统中来。

高效益的混合料挤出机

ZE系列蓝色动力双螺杆挤出机具有高效能的特性，可不折不扣地安全运行，简单易用并且易于维护。在灵活性和经济效益方面完美地满足了混合料加工不断增长的需求。由于1.65内外直径比和高达16Nm的比转矩之间的独特的相互作用

用，受到容积和产量限制的配方可以在一台机器上混合加工。ZE蓝色动力挤出机的特别亮点是椭圆形衬套、改进后的侧喂料装置和排气单元，以及作为选项的能源管理工具。对于任何应用，4D和6D机筒区可以和多种多样的模块化螺杆元件相组合，从而得到定制的机械配置，这在市场上是独一无二的。

Process-data acquisition provides full control at all times

In order to meet the ever increasing demand for data acquisition and analysis, KraussMaffei Berstorff has developed two new systems, which are now available as options for ZE BluePower extruders. The first of these developments is designed to synchronously collect all production data of a compounding line. It is composed of perfectly tuned hardware and software components for acquisition, recording, evaluation and further processing of all process and measured values. Data analysis provides a sound basis for process optimization, in particular when it comes to process modifications or planned quality improvements.

Thanks to its modular design and easy configuration, the system can be adapted to a wide range of different applications, scaled in size and is suited for interface-independent operation. All interfaces can be integrated into an overall system that collects and visualizes the desired process data. Pressure, temperature, speed and volume flow values of all upstream and downstream components – e.g. metering systems, melt filters, melt pumps and pelletizing systems – as well as the extruder parameters are combined in a single system.

Color measurement gives constant melt quality

The second development for in-line process monitoring is designed to detect instantly any metering errors in order to reduce

production scrap and enhance line efficiency. This in-line measuring system is based on color measurement: light is projected into the melt, reflected and then detected by a high-resolution glass fiber sensor. Upon comparison with the previously defined setpoint, any deviation in terms of brightness or color is instantly recognized and indicated. It goes without saying that the color measuring system can be integrated into the overall line control.

Highly profitable compounding extruder

The ZE BluePower twin-screw extruder series is characterized by high energy efficiency, uncompromising safety at work, simple use and low maintenance efforts. It perfectly meets the ever increasing requirements of compound processors in terms of flexibility and cost effectiveness. Thanks to the unique interaction between the 1.65 OD/ID diameter ratio and the specific torque of up to 16 Nm, volume- and throughput-limited formulations can be compounded on a single machine. The special highlights of the ZE BluePower extruders are oval liners, improved side feeders and degassing units as well as the optional energy management tool. The 4D and 6D barrel sections that can be combined with the extensive range of modular screw elements to create bespoke machinery configurations for any application are simply unique in the market.

KraussMaffei Berstorff GmbH

An der Breiten Wiese 3-5, 30625 Hannover, Germany
www.kraussmaffeiberstorff.com

克劳斯玛菲·贝尔斯多夫ZE蓝色动力系列挤出机为数据采集和分析作好了准备

The ZE BluePower series of KraussMaffei Berstorff is prepared for data acquisition and analysis



食品更安全，同时减少浪费

Packaging Films – From the Research: Safer Food – Less Waste

在2019年欧洲ICE（国际纸品胶片薄膜加工印刷技术设备及材料博览会）期间，德国夫琅和费研究院应用高分子研究所（IAP）、界面工程和生物技术研究所（IGB）以及有机电子学、电子束和等离子技术研究所（FEP）推出了用于食品包装的可持续的创新技术。这些研究所中的每一个都在加工、工艺开发和控制、特种高分子薄膜的开发以及包装工业超薄层沉积等方面有着丰富的经验。

At ICE europe 2019, the German Fraunhofer Institutes for Applied Polymer Research IAP, for Interfacial Engineering and Biotechnology IGB and for Organic Electronics, Electron Beam and Plasma Technology FEP presented innovative technologies for sustainable food packaging. They each have extensive expertise in processing, process development and control, the development of special

产品和食品包装的课题比以往任何时候都更为受到关切和更为现实。当购买和挑选塑料包装的肉类和蔬菜时，几乎每个人的脑海中都会浮现出海洋中巨大无比的塑料漩涡。最后，当食品存放到家中时，外包装的数量就变得清晰了。总的来看，来自联邦环境局的数据表明，每年每个德国人会产生大约220千克包装废弃物。

然而，全部停止使用包装薄膜是不现实的。这是因为细菌、病毒和霉菌无处不在，很容易使食物变质，导致严重的疾病。从卫生标准、运输方式以及让最终消费者能够用可承受的价格购买到新鲜食品等方面来考虑，都要求采用卫生、实用和安全的包装。

含有抗菌精油的纳米管

开始于2017年的欧盟联合计划项目“纳米包装”，重点正是应对这些挑战，目标是采用天然纳米材料，开发出当代最先



1.25米宽的薄膜基材放置在atmoFlex 1250辊到辊涂覆生产线上
(© Fraunhofer FEP)

1.25 meter wide film substrate on the roll-to-roll coating line atmoFlex 1250
(© Fraunhofer FEP)

polymer films and the deposition of ultra-thin layers for the packaging industry.

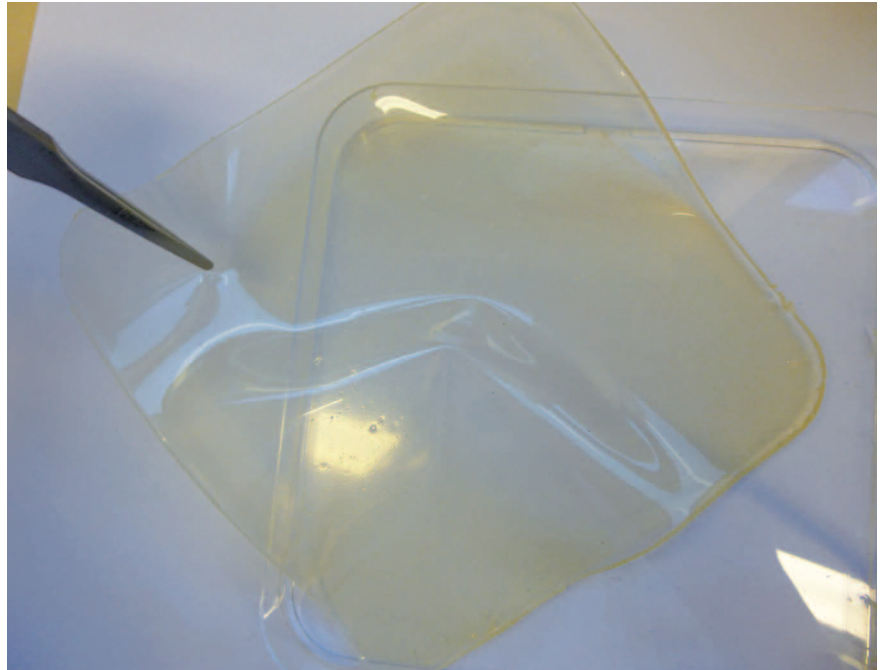
The topic of product and food packaging is more relevant and more present than ever. Almost everyone already has the image of the immeasurably large plastic vortex in the oceans in mind when shopping and selecting plastic-packed meat or vegetables. At the latest when food is stowed at home, the amount of outer packaging becomes clear. The figures from the Federal Environment Agency speak for themselves – in total, every German produces around 220 kilograms of packaging waste annually.

A complete avoidance of packaging film, however, is hardly feasible. Hygiene standards, transport routes and ultimately the purchasing behavior of customers with regard to fresh food at affordable prices require hygienic, functional and safe packaging, because bacteria, viruses and moulds can easily spoil food everywhere and can also cause serious illnesses.

进的食品抗菌包装解决方案，用于易变质的食品，从而预防食源性疾病的爆发，并减少食品因过早变质所造成的浪费。为了生产出可推向市场的成本效益良好的食品包装，还须考虑到经济地生产出产品、规模化生产以及通过验证（包括监督管理的要求）。

在“纳米包装”项目中，目前正在研究食品包装中使用的多水高岭土（HNTs）纳米管为基础的新型包装解决方案。通过对这种纳米材料的表面进行改性，挥发油例如麝香草油可以有效地释放并渗入到包装薄膜内。挥发油如同蒸汽释放，能减少产品表面和包装空间内微生物的生长。

夫琅和费IAP研究所的科学家，在开发多水高岭土纳米管的加工工艺和表面功能化方面，以及合成方面也就是粒子的整合-纳米管负荷-进入高分子薄膜方面，发挥了主导作用。



用于可持续包装的生物基薄膜 (© Fraunhofer IGB)

采用荧光油墨测量膜层的厚度

工艺控制方法同样与这一课题有关，夫琅和费IAP研究所也同样参与了研究。生产薄的透明层，例如包装薄膜，在线工艺控制有利于保证和提高质量，并使昂贵的材料成分得到有效的使用。通过完全的监控，制造工艺得以实现最佳化，只需要使用合适用量的组分材料来实现功能，（比如氧气阻隔层或复合粘合剂）就可以显著地降低物料消耗，从而节省成本。在功能层采用荧光染料作为添加剂，并通过对荧光的测量获取层厚分布情况。添加到涂覆层的染料量非常少，肉眼看不见，且不会对材料的特性产生影响。科学家们的目标是通过将新型包装材料与有效的工艺控制结合起来，未来生产出更为安全且更为便宜的食品包装材料。

Biobased film for sustainable packaging (© Fraunhofer IGB)

多层阻隔氧气和水蒸气

夫琅和费IGB研究所的科学家们同样在为加工功能化的包装薄膜而工作。为了能够生产出尽可能多种多样的表面特性，IGB正在寻求使用等离子体/CVD和湿化学工艺-或这些技术的结合。形成阻隔层，阻挡氧气和水蒸汽对外层包装的渗透，并防止高分子添加剂从外层包装释放到食品或药物产品中。

这里面临的挑战是：膜层必须具备某种程度的弹性，这样就不会在聚合物中断开或裂开。夫琅和费的研究人员为此开发出了若干种机械解耦层形态的涂层，这些涂层在等离子体中一层一层地沉积。IGB研究所“等离子技术与薄膜”团队领袖Jakob Barz博士解释说：“通过优化各不相同的等离子工艺参数，比如所使用的反应气体的型号和数量、激发频率，气体流量、压力和处理时间等，我们可以成功地生产出具备预定阻隔功能的玻璃一样的膜层，以及硅胶一样有弹性的中间层。采用这种方法，与未经处理的材料相比，研究人员已经能够使塑料薄膜对水蒸汽和氧气的阻隔效果提高1000倍。沉积的阻隔层还可以与另外的膜层结合，在倒空塑料包装袋时，能够改善食品的流动状态。

生物基阻隔层

当前，夫琅和费IGB研究所还对具有阻隔氧和水蒸汽功能的生物基膜层进行了研究。在欧洲ICE博览会期间，研究所推出了了第一种由100%天然物料组成的具备抗氧化或抗菌特

Nanotubes with antimicrobial essential oils

The EU joint project "NanoPack", launched in 2017, focuses precisely on these challenges and aims to develop state-of-the-art antimicrobial packaging solutions for perishable foods based on natural nanomaterials in order to prevent outbreaks of food-borne diseases and reduce food waste due to early spoilage. The economic aspect of production, upscaling and validation (including regulatory requirements) was also considered in order to produce marketable and cost-effective food packaging.

Halloysite nanotubes (HNTs) for use in food packaging are being investigated as the basis for developing the new packaging solutions in the NanoPack project. By modifying the surface of this nanomaterial, essential oils such as thyme oil can be efficiently released integrated into a packaging film. The essential oils released as steam reduce the growth of microbes both on the product surface and in the packaging room. The scientists at Fraunhofer IAP play a leading role in the development of treatment processes and the surface functionalization of HNTs as well as in compounding, i.e. the integration of particles – loaded HNTs – in polymer films.

Measuring layer thickness with fluorescent inks

Process control methods are also relevant in this context, which Fraunhofer IAP will also present. In the production of thin, transparent layers, such as in packaging films, in-line process control can contribute to quality assurance and improvement and expensive material components can be used efficiently. Through complete monitoring, the manufacturing process can be optimized in such a way that only as much of a functional component (e.g. an oxygen barrier layer or a laminating adhe-

性的阻隔涂覆及薄膜。IGB研究所高分子界面和生物材料研发团队主管Michaela Müller博士解释说：“我们采用最新开发的含有天然蜡和蛋白质的水基分散剂生产这些薄膜和涂层。采用传统的涂覆技术可以加工这些分散剂。巨大的优点是膜层可以百分之百降解，从而可以帮助减少塑料废料。这项开发工作是IGF研究所“生物活性材料”项目的一部分。夫琅和费IVV研究所也参与了这一项目。

复合和粘合的功能化

德国斯图加特的研究人员用特定的化学功能团对聚合物薄膜进行改性，以改变粘结等后续工艺步骤所需的表面性能。氨基的功能化也可以将采用气相和湿化学加工步骤生产的包装薄膜限制在边缘地区，并应用于复合薄膜。

通过物理杀菌得到安全食品

为了食品有更长的保存期限，包装材料必须免于被细菌所污染。根据材料的不同，通常采用加热、气体、电离或紫外线的方法对微生物进行灭活。IGB研究所采用低温等离子体替代高温灭菌，这是一种对材料友好的方法。它们不仅适用于创建膜层，而且由于等离子化过程中的反应分子和紫外线辐射，也可使微生物失活。Barz补充道：“采用等离子杀菌，即使是高度耐药的不同芽孢杆菌的内生孢子，在经过相对较短的处理时间后也无法繁殖。”

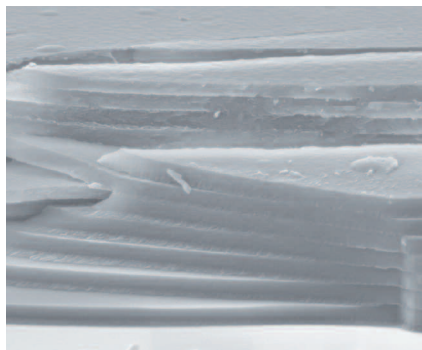
此外，夫琅和费IGB研究所的科学家已经进一步开发出了紫外线处理，以实现将外表面上可再生的微生物降到最低的目标。采用全新设计的准分子灯或最新的紫外线发光二极管技术，可对包装薄膜进行快速有效的消毒。这些工艺可以在包装机器上按比例放大，以满足不同的需求。

用于高速精加工的辊涂

包装薄膜的市场对价格是极为敏感的。夫琅和费FEP研究所致力于这方面的工作，开发出高效的精加工工艺。这种工艺的特点是有着极高的速度。举例来说，利用等离子体活化的高速沉积技术，以每秒几米的膜带速度生产透明的氧化铝屏蔽层，以抵抗外部影响，如湿气或氧气对塑料薄膜的影响。夫琅和费FEP研究所采用被称为涂布器的装置，这种涂布器宽度可达700mm，膜材长度可达好几公里。研究人员目前正致力于将这种已经成功的合格技术应用到生物材料上去。另一个例子是对那些已经存在于薄膜中的高分子材料的改性。为此目的，夫琅和费FEP研究所采用“辊到辊”的系统，

用于阻隔氧气和水蒸汽的多层涂覆 (© Fraunhofer IGB)

Multilayer coating as barrier against oxygen and water vapor (© Fraunhofer IGB)



ive) is used as is necessary for its function, which can lead to considerable material and cost savings. Fluorescent dyes are used as additives in the functional layer in order to measure the distribution of the layer thicknesses by measuring the fluorescent light. The dye is added to the coating material in such small quantities that it is not visible and the material properties are not affected. By combining novel packaging materials with effective process control, scientists aim to make future food packaging safer and at the same time cheaper.

Multilayer barrier layers against oxygen and water vapor

The scientists at Fraunhofer IGB are also working on processes for functionalizing packaging films. In order to be able to produce the widest possible range of surface properties, IGB is pursuing the approach of functionalizing polymer films using plasma/CVD and wet-chemical processes – or combinations of these technologies. This creates barrier layers against the permeation of oxygen and water vapor for outer packaging as well as barrier layers that prevent the release of polymer additives from the outer packaging into a food or pharmaceutical product.

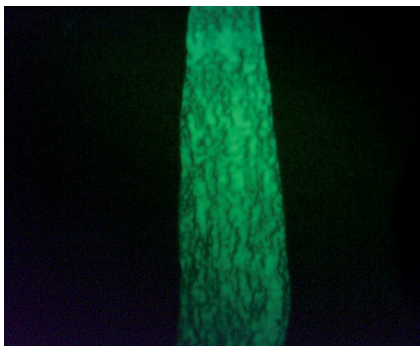
The challenge here is that the layers must be elastic to a certain extent so that they do not break or crack on the polymers. The Fraunhofer researchers therefore realize the coatings in the form of several mechanically decoupled layers, which are successively deposited “layer by layer” in the plasma. “By optimizing various plasma process parameters such as the type and quantity of precursor gas used, the excitation frequency, the gas flow, the pressure and the treatment time, we can successively produce glass-like layers with the desired barrier function and silicone-like elastic intermediate layers”, explains Dr. Jakob Barz, group leader for “Plasma Technology and Thin Films” at IGB. In this way, the researchers were able to increase the barrier effect of plastic films against water vapor and oxygen by a factor of up to 1000 compared to untreated material. The deposited barrier layers can also be combined with another layer to improve food run-off when emptying a film package.

Biobased barrier layers

Currently, Fraunhofer IGB is also conducting research on bio-based layers with a barrier function against oxygen and water vapor. At ICE Europe, the institute presented the first barrier coatings and films that consist of 100 percent natural starting materials and also have antioxidant or antimicrobial properties. “We produce these films and coatings from a newly developed water-based dispersion that contains natural waxes and proteins. The dispersion can be processed using conventional coating techniques,” explains Dr. Michaela Müller, head of the IGB research group “Polymeric Interfaces and Biomaterials”. The big advantage is that the layers are also 100 percent degradable and can thus help to reduce plastic waste. The development is part of the IGF project BioActiveMaterials, in which the Fraunhofer IVV is also involved.

Functionalization for lamination and adhesion

The Stuttgart/Germany researchers are modifying polymer films with specific chemically functional groups in order to change surface properties that are required for subsequent process



漆带的荧光 (© Fraunhofer IAP)

Fluorescence of a lacquer strip

即采用电子辐射改变聚合物的分子结构。可以实现弹性模量的自适应或热阻隔等效应。过去已提供了化石基聚合物薄膜的证据。目前正在研究生物基材料也能在多大程度上确定这种影响。Steffen Günther博士解释道：“这种处理在大气压力下发生，而不是在真空状态。在夫琅和费FEP研究所的实验生产线atmoFlex 1250用于此目的。由于其宽度1250mm，在带材速度高达150 m/min时能实现高产量处理薄膜。这两个方面都使得薄膜的处理非常经济高效。

与他们的研究一起，三个夫琅和费研究所希望为避免浪费作出显著的贡献，与此同时增加食品的保质期。所开展的开发生物基包装薄膜的方法旨在为客户、环境和生产商都带来积极的效益。

用于染色方案的绿色荧光蓝光激发 (© Fraunhofer IAP)

Green fluorescence of a dye solution excited with blue light (© Fraunhofer IAP)



steps such as adhesion. Amino functionalization can also be limited to the edge area of packaging films using gas-phase and wet-chemical process steps and used for laminating the films.

Safe food through physical disinfection

For a longer shelf life of food, the packaging must be free of contaminating germs. Depending on the material, microorganisms on packaging are usually inactivated by heat, gas, ionizing or UV radiation. Low-temperature plasmas used at IGB are a material-friendly alternative to sterilization at high temperatures. They are not only suitable for creating layers, but can also inactivate microorganisms due to reactive molecules and UV radiation in the plasma process. “With plasma sterilization, even highly resistant endospores of different *Bacillus* species become unable to reproduce after relatively short treatment times”, says Barz.

In addition, scientists at Fraunhofer IGB have further developed UV treatment in order to minimize the number of reproductive microorganisms on surfaces. With new, specially designed excimer lamps or the latest UV LED technology, packaging films can be sterilized quickly and effectively. These processes can be scaled up on packaging machines and adapted to individual requirements.

Rollcoater for high-speed finishing

The market for packaging films is extremely price-sensitive. Fraunhofer FEP devotes itself to this aspect by developing highly productive finishing processes, which are characterized in particular by very high speeds. One example is the production of transparent barrier layers of aluminum oxide against external influences such as moisture or oxygen on plastic films using plasma-activated high-rate deposition at web speeds of several meters per second. Therefore, Fraunhofer FEP operates so-called roll coaters, which can efficiently coat film material with a width of up to 700 mm and web lengths of several kilometers. The researchers are currently working on qualifying this established technology for use on biobased materials.

A further example is the modification of polymer materials when they already exist as films. For this purpose, Fraunhofer FEP operates a roll-to-roll system that uses electron beam irradiation to modify the structure of the polymer molecules. Effects such as the adaptation of the modulus of elasticity or the thermal resistance can be achieved. The proof for fossil-based polymer films has already been provided in the past. The extent to which the effects can also be determined with biobased materials is currently being investigated. Dr. Steffen Günther explains: “This treatment takes place at atmospheric pressure and not under vacuum. The pilot plant at Fraunhofer FEP atmoFlex 1250 is used for this purpose. Due to its web width of 1250 mm, a high throughput in the treatment of films at web speeds of up to 150 m/min can be achieved. Both aspects allow a very cost-efficient processing of the films.”

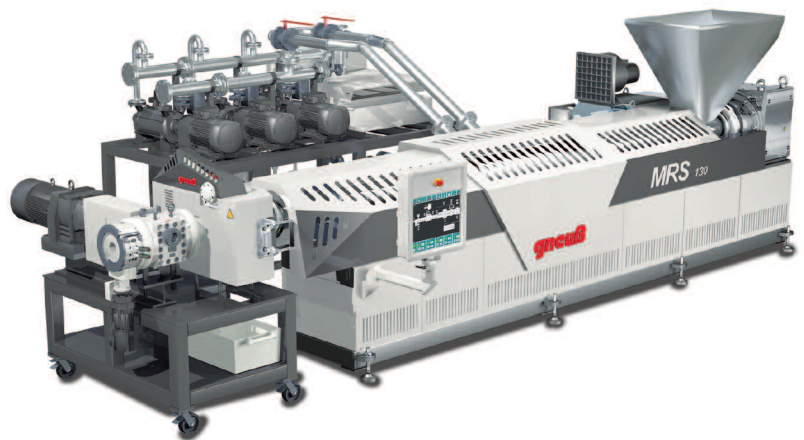
With their research, the three Fraunhofer Institutes want to make a significant contribution to waste avoidance. While at the same time increasing the shelf life of food, the approaches presented for the development of biobased packaging films are intended to generate positive benefits for customers, the environment and producers.

回收加工：格诺斯MRS 回收加工技术已在食品包装领域得到论证

Recycling: MRS Recycling Process allows Recycled Packaging for Food Worldwide

自从2009年得到美国FDA的“无异议证书”，格诺斯围绕MRS挤出机的回收加工技术得到了大量的市场认可，尤其在100%瓶片和工业聚合物废料到食品级产品的转化过程中。

Since the first “Letter of Non Objection” from the American FDA in 2009, the Gneuss recycling process based around the MRS extruder has received a large number of approvals for processing up to 100 % post-consumer and industrial polymer waste to food contact products.



今年，格诺斯得到巴西Anvisa的食品级认可。这个认可主要是针对格诺斯PET回收物料和工业废料到热塑性食品级容器的加工过程中。对于日益增长的高聚合物回收加工过程是个意义非凡的贡献。

在拉丁美洲，格诺斯从PET100%废料到食品级最终制品的回收已经达到了哥伦比亚食品安全机构Invima和它的阿根廷合作伙伴Senasa设定的标准。

在欧洲，格诺斯加工工艺已通过了EFSA加工100%PET回收料的加工中的挑战性测试。

英国推进回收业务的慈善机构研究表明：“废料和资源行动项目”(WRAP)”已经表明在格诺斯MRS回收加工工艺的帮助下，将PET瓶坯，试管和托盘等家用废弃物重新回收料转化为同级别食品级最终制品的加工过程是可以实现的。不同于PET瓶片到热塑性片材的回收加工，该过程是个循环加工过程。研究报告已刊登在名为“Development and optimisation of a recycling process for PET pots, tubs and trays”的文章中。

由于MRS挤出机具备无以伦比的排气功能，比如油或者其他有害的挥发物等污染或者其他异味被高效的从PET碎片中清除出去，而无需预干燥或其它在加料之前的热处理过程。避免热处理不但可以节省投资和能源费用，而且可以带来非常简洁的加工流程并减少了对物料的伤害。

高聚合物在MRS挤出机中受到的剪切非常温柔，最终制品具有非常完美的色泽和透明度。

除了得到PET的食品级认可，今年格诺斯更是获得了美国FDA颁发的PS回收料-食品包装加工许可。PS回收废料可以通过MRS挤出机加工成硬质泡沫片材食品包装容器。研究报告已刊登在名为“Development and optimisation of a recycling process for PET pots, tubs and trays”的文章中在2009和2011年，WRAP已经表明在格诺斯MRS回收加工工艺的帮助下，将PE和PP的回收料转化为食品级最终制品的加工过程是可以实现的。该测试的结果已经刊登在WRAP的文献中，文章标题是“Commercial Scale Mixed Plastic Recycling – a report on the technical viability of recycling mixed plastic packaging waste from domestic sources on a commercial scale in the U.K.”和“Development of a Food-Grade Recycling Process for Post-Consumer Polypropylene”研究报告已刊登在名为“Development and optimisation of a recycling process for PET pots, tubs and trays”的文章中。

This year, Gneuss obtained food contact approval from Anvisa, the first-ever in Brazil. This approval is for the Gneuss PET process for recycling PET post-consumer and post-industrial waste to sheet for thermoforming to food contact containers. It is a significant contribution toward increasing polymer recycling.

In Latin America, the Gneuss recycling process has also achieved the standards set by the Colombian food safety agency, Invima and its Argentinian counterpart, Senasa for processing 100 % post-consumer PET waste to food contact products.

In Europe, the Gneuss recycling process has passed the EFSA challenge test for the processing of 100 % post-consumer PET. A study by the British charity for promoting recycling, "Waste and Resources Action Programme" (WRAP) in 2016 showed that with the help of the Gneuss Recycling Process, it was possible to take post-consumer thermoformed PET pots, tubs and trays from household waste and recycle them back into the same products, for food contact. Unlike the re-processing of PET bottle flake to sheet for thermoforming, this process is a truly circular one.

The study was published under the title: "Development and optimisation of a recycling process for PET pots, tubs and trays".

Thanks to the unparalleled devolatilisation performance of the Gneuss MRS extruder, contaminants such as oils, other harmful volatiles and also odours are efficiently removed from washed PET scrap without the need for pre-drying or any other heat treatment of the material prior to extrusion. Avoiding the need for heat treatment of the material prior to extrusion saves not only investment and energy costs, a whole inflexible process is eliminated, together with the risk of damage to the material.

The polymer is processed extremely gently in the low shear MRS extruder. The final product has excellent colour (low yellowing) and transparency.

In addition to the food contact approvals for PET, this year Gneuss obtained approval from the American FDA for the processing of post-consumer polystyrene to food contact products. Polystyrene post-consumer waste can be reprocessed on the Gneuss MRS extruder to sheet for foamed and rigid food contact containers.

In 2009 and 2011, trials by the WRAP organisation already showed that with the help of the Gneuss MRS Recycling Process, it is feasible to achieve the conditions of the FDA challenge test for processing post-consumer polypropylene and polyethylene for food contact applications. The results of this test were published by WRAP under the titles "Commercial Scale Mixed Plastic Recycling – a report on the technical viability of recycling mixed plastic packaging waste from do-

mestic sources on a commercial scale in the U.K" and "Development of a Food-Grade Recycling Process for Post-Consumer Polypropylene".

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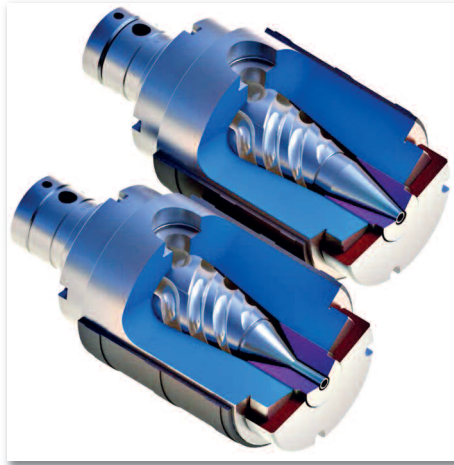
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“BULLET II”挤压头

“THE BULLET II” Extrusion Head

GuillTool在2015年推出了Bullet®。根据公司提供的消息，这是一种带有固定中心设计、多端口螺旋流动设计和齿隙调整的新型挤压头，而且没有紧固件，因此比目前上市的任何常规挤压头都更容易、更快捷地清洁和重新启动。今天，公司宣布推出新一代的独特专利工具Bullet II。



Bullet II可快速更换（从设备后面拆除端头，从前面拆除模具）。如同Guill开创的锥体和偏转器设计，无紧固件的设计可以避免泄漏。此外，正在申请专利的CAM LOCK®偏转器固定系统为挤出机和机器制造商提供了以下其他优势：

- 只需旋转CAM LOCK®半圈即可拆除和安装偏转器和端头
- 不需要紧固件
- 可快速更换，具备带螺纹的模具固定环和带螺纹的端头固定器
- 从前面拆除模具，从后面拆除端头
- 工具固定器还提供齿隙调整功能
- 无障碍空气/真空连接
- 简化清洁过程
- 减少宕机时间并降低运营成本

该挤压头适合高加工量和低加工量应用，而且只需简单地更换一个部件即可。可提供一系列十字头设计，用户可以指定“口径”，即最大模具内径。

该设备配有一个真空室和用于装配和拆卸的套件。可选的键控工具功能为机器设计人和终端用户提供快速定位，因此，整体设备设计可实现更快的拆卸、适当的清洁和重新启动，从而提高生产线的盈利性和效率。

如需观看这种新设计的展示视频，请访问：
<https://www.youtube.com/watch?v=MpEdmCRtaqg>

Guill Tool introduced The Bullet® in 2015, a new extrusion head with fixed center design, multi-port spiral flow design and gum space adjustment, plus the added feature of no fastening hardware, so cleaning and restart are easier and faster than any conventional head on the market currently, according to company sources. The company announces the next generation of this unique and patented tool, The Bullet II.



Bullet II的照片，显示无紧固件，即没有螺母和螺栓，因此更容易拆卸、清洁和重新启动

Photos of The Bullet II, showing the absence of hardware, i.e. nuts and bolts, so disassembly, cleaning and restart are made easier



The Bullet II allows quick tooling changes, as the tips remove from the back and the die removes from the front of the unit. The absence of fastening hardware eliminates leaking, as does the taper body and deflector design pioneered by Guill. Additionally, the new patent pending CAM LOCK® deflector retaining system offers these additional benefits to extruders and machine builders:

- It only takes ½ turn of the Cam Lock® to remove and install the Deflector and Tip
- No fastening hardware required
- Fast tool changes, threaded retaining ring for the die and threaded tip retainer
- Dies are removed from the front and tips from the rear
- Tooling retainers also provide gum space adjustment
- Hassle free air / vacuum connections
- Simplified cleaning
- Reduces downtime and lowers operating costs

High- and low-volume applications are suitable for this head and are accommodated with the simple, easy changing of just one component. A family of crosshead designs is available and users can specify the "caliber", that is, the max. die ID. A vacuum chamber and kit for assembly and disassembly are included with the unit. Optional keyed tooling capability offers machine designers and end users quick orientation, so the overall unit design enables faster disassembly, proper cleaning and restart, allowing the line to become more profitable, more quickly.

For a video demonstrating this new design, please visit:

<https://www.youtube.com/watch?v=MpEdmCRtaqg>

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新型阻隔层 (EVOH) 在线厚度测量装置介绍

Measurement Technology: New Barrier Layer (EVOH) Inline Thickness Measuring Device introduced

SBI是一家在线测厚装置领域受欢迎的生产商，生产用于挤出薄膜和片材的厚度测量装置。新开发的测量仪表(KAPA-IR)是用于确定EVOH(乙烯-乙烯醇共聚物)膜层厚度的传感器系统，一种是电容式测量方法，另一种与此不同的是特种红外线(IR)测量方法。

SBI is a popular producer of inline thickness measuring devices for film and sheet extrusion. The new developed gauge (KAPA-IR) contains the capacitive measurement process and in addition to it also a special infrared (IR) which is a sensor system that determines the EVOH (Ethylene vinyl alcohol) layer thickness.



KAPA-IR厚度测量装置，用于探测EVOH阻隔层

KAPA-IR thickness measuring device for detecting the EVOH barrier layer

这种附加的测量系统能够实现探测透明的和不透明的多层塑料薄膜中的EVOH层。为了确定EVOH层的厚度，塑料的广谱红外线被记录下来，对EVOH聚合物分子产生的吸收被记录下来并采用现代化的分析方法进行评估。

SBI主要致力于这种测量系统，测量PP/EVOH/PP片材，但在扩展的分析算法帮助下，同样能够计量其它EVOH-聚合物的化合物。

最新的计量仪表以微米单位测量多层片材总的厚度（见图1）。整个测量宽度上的模头螺栓（见图2）以及此外的EVOH层的分布示于图3。红外线测量系统是比例相对测量方式，通过标定得到EVOH层的厚度。

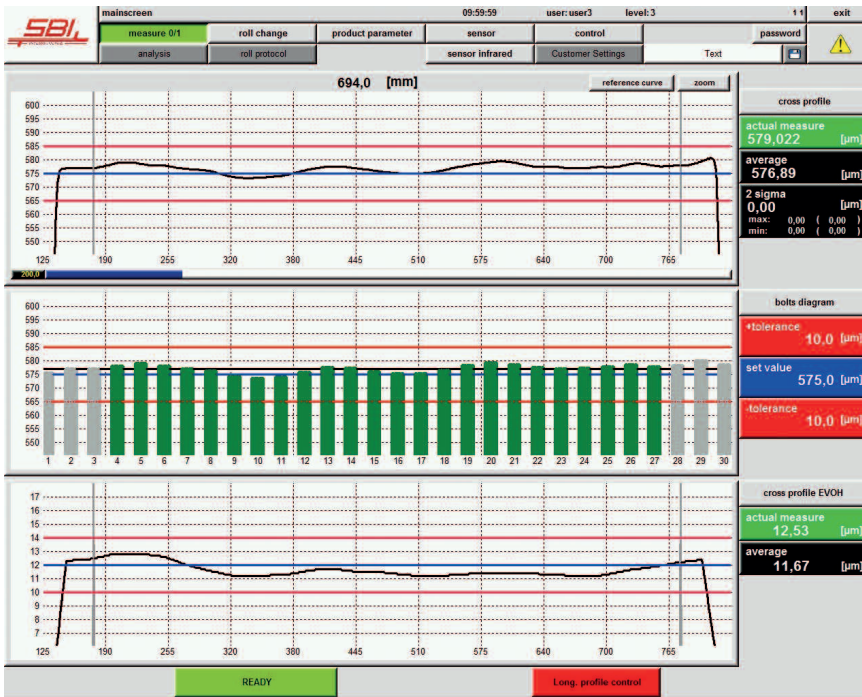
目前，为了得到恒定一致的质量，确定EVOH层分布是非常重要的。在大多数情况下，EVOH层的厚度是通过显微镜在实验室中测定的。

SBI提供了在线无接触的方便易用的厚度测量装置，在生产过程中可以控制EVOH阻隔层的厚度。

This additional measurement system makes it possible to detect the EVOH layer of transparent and opaque multi-layer plastics. To determine the EVOH layer thickness, a wide infrared spectrum of the plastic is recorded and the resulting absorption of the EVOH polymer molecules is evaluated by using our modern analytical methods.

SBI mainly focuses with this measuring system on measuring PP/EVOH/PP sheets, but it is also possible to gauge other EVOH-polymer compounds with the help of extended analysis-algorithms.

The new gauge measures the total thickness of multi-layer sheets in microns (see diagram 1), the die bolts over the measuring width (see diagram 2), and in addition to it the EVOH layer distribution which is shown in diagram 3. The infrared measuring system is a relative measurement and yields the absolute EVOH layer thickness by the means of calibration.



显示总厚度，螺栓和EVOH层的厚度

Display for total thickness, bolt and EVOH thickness

Nowadays it is essential to determine the EVOH layer distribution to deliver a consistent quality. In most case of applications, the EVOH thickness is determined in laboratories by microscopes.

SBI delivers an in-line, non-contact and user-friendly thickness measurement to control the EVOH barrier layer during the production process.

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Special print issues of the digital **MAGAZINE ABOUT EXTRUSION** at the largest trade fairs!

The advertisement features three digital magazine covers for 'EXTRUSION INTERNATIONAL' with dates 05/2017, 02/2018, and 05/2017. The covers include headlines like 'Medical Series', 'SILICONES', and 'SPECIAL ISSUE'. A tablet in the background displays the website's interface with various articles and images. A large red arrow points from the tablet towards the magazine covers.

“生产出高质量的管道，不仅仅我们的顾客会满意，我们也会”

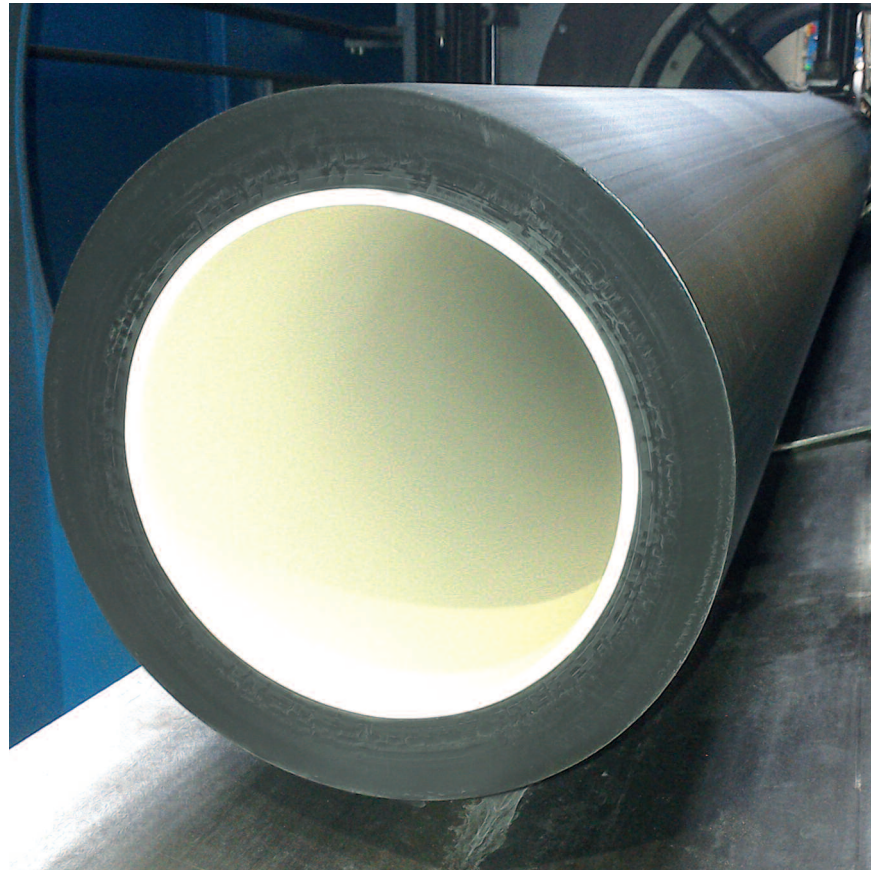
*Measurement Technology – Case Study:
“When producing a perfect pipe not only our customers will be satisfied, but we will be too”*

Grodur 公司使用 SIKORA 毫米波技术，在线测量塑料管道

Gerodur MPM Kunststoffverarbeitung GmbH & Co KG 公司是瑞士戈绍 HakaGerodur 股份有限公司的子公司，专业生产管道系统、供暖系统及卫浴系统的塑料制品。从2017年起，位于德国萨克森诺伊施塔特的Gerodur公司（德国多卡）已经在挤出生产线上使用 SIKORA的毫米波技术测量塑料管道的壁厚、外径及熔垂度。两家公司的合作基于未来，同时以自动在线质量控制解决方案的实践为导向，以确保管道的最高品质与最优工艺。

Gerodur counts on inline millimeter wave technology from SIKORA for the measurement of plastic pipes

Gerodur MPM Kunststoffverarbeitung GmbH & Co KG, a subsidiary of HakaGerodur AG (Gossau/Switzerland), is a specialist in producing plastic products for piping systems and heating and sanitary. Since 2017, the company located in Neustadt/Saxony, Germany has been using millimeter wave technology from SIKORA AG for the measurement of the wall thickness, diameter and sagging of plastic pipes during the extrusion process. The cooperation between the two companies is based on a future and also practice oriented solution for an automatic inline quality control in order to ensure the highest pipe quality and optimal processes.



Gerodur 公司生产最高精度的管道

Gerodur produces, amongst others, piping systems with the highest precision

无论对可靠度、耐磨性和抗腐蚀有怎样的要求，塑料管道都是最佳选择。不管是用于输送净水、污水或气体，还是用于饮用水系统、加热系统和卫浴系统，对塑料管道的品质要求相当之高且必须符合使用标准。自成立26年以来，Gerodur公司始终坚持以最优的产品质量、生产工艺和收益率为核心，生产一流的塑料管道。对于国际化经营的制造商而言，在挤出生产线上运用创新测量控制技术是理所当然的事情。几年前，该公司与不来梅的测量控制设备制造商- SIKORA 首

次接触。当时，Gerodur 公司正在寻找适合生产较小产品尺寸的测量控制技术，如用于加热系统和卫浴系统。运用 X 射线技术，他们找到了解决方案。两年来，除了 X 射线技术，Gerodur 公司还具有前瞻性地使用了 SIKORA 的新型毫米波技术用于挤出生产线上大规格塑料管道的测量与控制。“市场上有多种控制质量的方法。新开发的毫米波技术以其智能科学的测量原理使我们信服。”Gerodur 公司管道系统部门组长 Andre Richter 说。“尤其是测量尺寸为 250-630mm、壁厚达 60mm 的大规格管道，我们可以看到显著的效益。”

毫米波系统 CENTERWAVE 6000 可直接安装在生产线上第一段真空箱之后。该系统可实时 360° 测量管道的外径、椭圆度、壁厚以及熔垂度，因此确保挤出生产快速调中。市场上另一种测量方法是超声波。这项技术也能测量管道的外径，然而由于超声波技术受温度的影响较大，它只适用放置在生产线末端进行测量。“我们的目标是在生产中尽早地获取关于管道尺寸的可靠、精准的信息，以便在需要时及时采取行动。因此，考虑到外径和壁厚较大的管道正在生产线上以每分钟 0.5m 的速度生产时，生产早期就开始对壁厚进行测控是非常重要的。”Richter 补充道。


优化的生产启动过程意味着节省时间和以标准尺寸开始生产，同时避免浪费。提高生产的可靠性与效率，这往往是竞争中至关重要的。Gerodur 公司的经营理念是长期发展且在发展过程中持续提高。“我们不断回顾工艺流程，为进一步提高客户满意度不断创新。”Gerodur 公司技术总监 Axel Mantey 解释道。“除了产品质量，满足顾客的交期要求和突发情况也是非常重要的。”因此，Gerodur 公司推出了两款新产品，开辟了新的应用领域。

Gerodur 公司也对其供应商提出了高要求。生产工艺技术包含了测量控制技术，是价值链的重要组成部分。由测量控制技术提供的数据是工艺改进的基础，产品质量的好坏与公司业务息息相关。“我们与 SIKORA 公司保持着密切交流，共同发展。就象现在，即使已购买了 SIKORA 设备，我们仍在讨论和调整方案，让该系统更加适合我们的生产需求。例如：定制软件的修改或测量数据的单独可视化，这些调整可为生产线操作者提供更多支持。”Mantey 解释。其成果就是实现了工艺最优化和高生产率。

生产高质量产品、优化生产工艺将持续成为 Gerodur 公司今后的首要目标。“除了技术创新，工业 4.0 与数字化也是长期挑战。”Mantey 说。在挤出生产线上，各种机器、设备以及系统集成在一起，提供不同的数据。评估、处理这些数据以智能减少并整合至可供人类使用的数据，是一项特别的挑战。“因此，与机械制造商和像 SIKORA 这样的测量控制设备制造商合作将发挥关键作用。”Mantey 说。SIKORA 的毫米波测量系统具有工业 4.0 的良好性能，提供如 OPC UA、工业现场总线等接口与生产平台联网。Axel Mantey 相信，具有前瞻性的先进技术与可靠的服务相结合，充分展示了与 SIKORA 公司合作的价值。“如果我们用测量控制技术来提高工艺的可靠性，并生产出完美的管道，不仅仅我们的顾客会满意，我们也会。”

and determined by standards. Since the foundation 26 years ago, Gerodur has been producing first-class plastic pipes with the focus on the highest product quality, optimal processes and profitability. For the internationally operating manufacturer, the application of innovative measuring and control technology in extrusion lines is a matter of course. The first contact with SIKORA, manufacturer of measuring and control devices from Bremen, was made several years ago. At that time, Gerodur was looking for measuring technology for smaller product dimensions in the area of heating and sanitary facilities and found the solution in X-ray technology. For two years now, the company has also been using a new technology from SIKORA that is based on millimeter waves and which is applied during the extrusion of large plastic pipes and thus follows a future-oriented approach. “There are several methods for quality control on the market. The newly developed millimeter wave technology convinced us with its smart measurement principal,” says Andre Richter, Team Leader of the division piping systems at Gerodur. “Especially for the measurement of large pipes in the dimension range of 250 to 630 mm and wall thicknesses of up to 60 mm, we see significant benefits,” he continues.

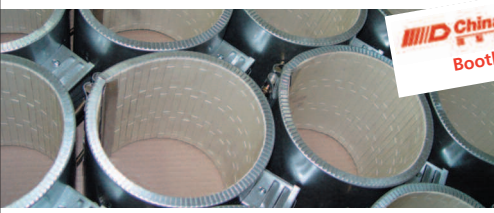
Wherever reliability, wear resistance and corrosion resistance are required, plastic pipes are the best choice. Whether as piping systems for transporting water, sewage and gas, or for transferring drinking water or for heating and sanitary facilities, quality requirements of the pipes are very high



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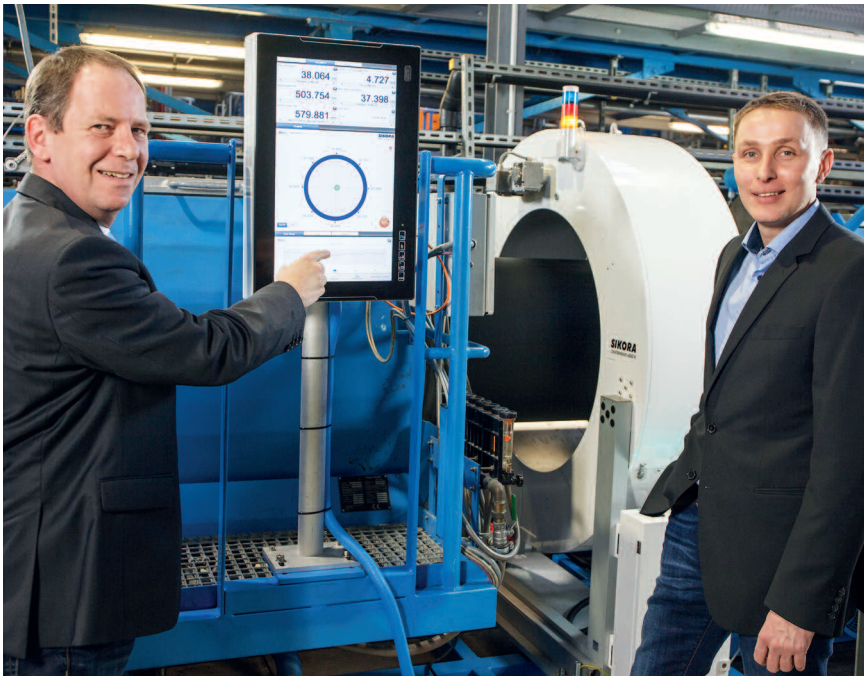
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JiaXing ERGE Electric Heat Technology Co. Ltd.
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Gerodur 公司使用 SIKORA 的毫米波技术在线测量塑料管道的外径、椭圆度、壁厚及熔垂度。从左往右：SIKORA 区域销售经理 Peter Hügen 和 Gerodur MPM Kunststoffverarbeitung 管道系统部门组长 Andre Richter

SIKORA's millimeter wave technology measures inline at Gerodur the diameter, ovality, wall thickness and sagging of plastic pipes; from left: Peter Hügen, Area Sales Manager at SIKORA, and Andre Richter, Team Leader of the division piping systems at Gerodur MPM Kunststoffverarbeitung

In the line, the millimeter wave system CENTERWAVE 6000 is installed directly after the first vacuum tank. The system measures over 360 degrees of the pipe circumference the diameter, ovality, wall thickness and the sagging in real-time and, thus, enables a fast centering of the extrusion tools. An alternative measuring method on the market is ultra sound. This technology also measures the pipe diameters, however, due to its temperature dependency, it can only be applied later in the production process. "It is our goal to receive reliable and accurate information about the pipe dimensions as early in the process as possible in order to take actions if necessary. Thereby, an early measurement of the wall thickness is of significant importance considering that pipes with large diameters and large wall thicknesses are being produced at a line speed of 0.5 meters per minute," adds Richter.

An optimized start-up process – meaning time saving and manufacturing at nominal dimensions while, simultaneously, avoiding waste – leads to process reliability and an efficient production, which is often crucial with regard to competition. Gerodur understands its business as a continuous improvement process. "We constantly review our processes and also break new grounds if this enables us to further increase customer satisfaction," explains Axel Mantey, Managing Director of Technology at Gerodur. "In addition to quality, the highest delivery reliability and flexibility concerning customer requirements are important aspects." Thus, the company has launched two innovative products, which opened up new application areas.

Gerodur also places high demands on its suppliers. Process technology, which includes measuring and control technology, is a crucial component within the value-added chain. The data supplied by the measuring technology is the basis for process improvements and has an impact on business correlations within the company. "We are in close exchange with SIKORA and develop further together. For example, we are discussing ideas to adapt the system to our line requirements even after

purchasing the device. This applies, for instance, to customized software modifications or individual visualizations of measurement data to support the operator," explains Mantey. The results are optimal processes and high productivity.

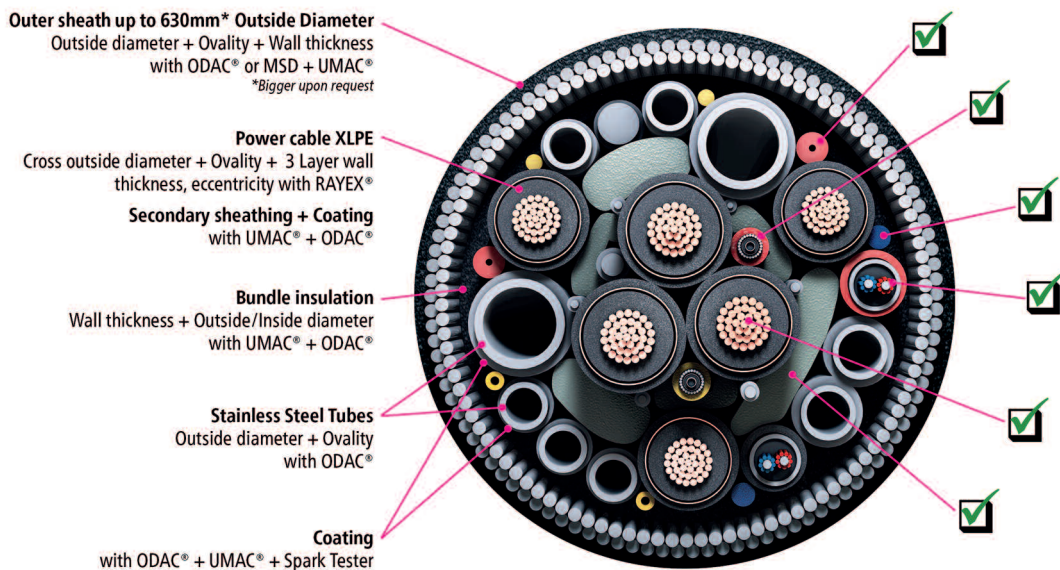
At Gerodur, the production of high-quality products and process optimization will continue to be at the top of the agenda in the future. „Besides technical innovation, industry 4.0 and digitalization will be long-term challenges," says Mantey. In extrusion lines, various machines, devices and systems are integrated that supply different data. A particular challenge is to evaluate and process these amounts of data that have to be intelligently reduced to be perceivable for human. "Thus, the cooperation with machine manufacturers and manufacturers of measuring devices, like SIKORA, will play a key role," says Mantey. SIKORA's millimeter wave measuring system is well equipped with regard to industry 4.0 and already provides interfaces such as OPC UA and industrial fieldbus connections to be networked with the production plant. Axel Mantey is convinced that the combination of future-oriented technology with proven functionality and reliable service makes the cooperation with SIKORA so valuable. "If we achieve more process reliability by using measuring technology and produce a perfect pipe at the end of the production line, not only our customers will be satisfied, but we will be too."

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www.gerodur.de

任何海底线缆的所有部件均可得到 监视和测量

Measurement Technology: *All Components in View – Measure Any Offshore Flexible*



对于几乎所有电线，电缆，管道及剖面，仲巴赫都有测量方案。采用仲巴赫的测量装置，可以测量任何海底线管

Zumbach has measurement solutions for nearly all wires, cables, tubes and profiles. Any Offshore flexible can be measured with gauges from ZUMBACH

生产海底线缆，复杂的工艺对于质量控制提出了各不相同的要求。在不同的应用场合中，对产品标准的任何偏离都会有风险，在发生故障时，将会承担严重后果。为了在制造过程中，例如电线拉丝、型材轧制/挤出、拉条、护套包覆等过程中消除产品在使用中发生故障的风险，仲巴赫提供了可靠的方案，对所有关键参数进行测量。

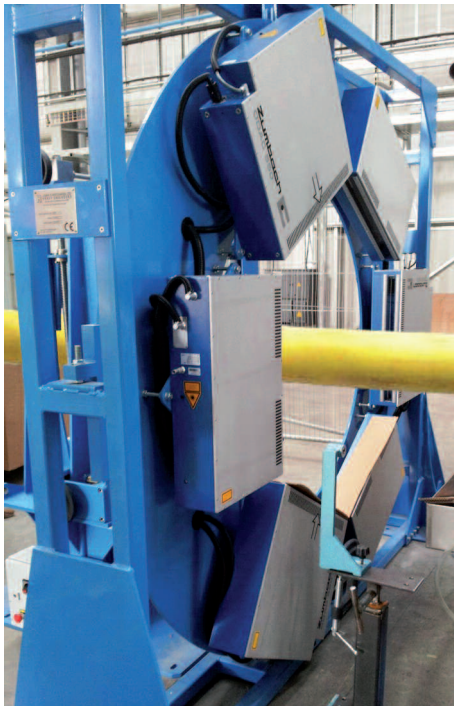
一步一步，所有参数值都在控制之中

从挤出的第一秒钟开始，带有高达八个实时测量点的超声波测量系统(UMAC®)，能够测量偏心率，并且不受被测量的物料温度的影响。

The production of offshore Flexibles involves complex process's requiring varying individual performances for quality control. Any deviations from the required standards can risk horrific consequences if failure occurs depending the application scenarios. In order that the risks for future product failure are eliminated during the manufacturing processes, such as wire drawing, profile rolling / extruding, stranding and sheathing, ZUMBACH provides reliable solutions for the measurement of all critical parameters.

Step by step all values under control

From the first seconds of extrusion, ultrasonic measurement systems (UMAC®) with up to eight real measurement points,



三坐标 ODAC550 系统，测量外径为500mm的海底线缆

3-axis ODAC 550 system, measuring an Offshore cable of 500 mm OD

首先是电缆的偏心率得到优化，接下来的步骤更为关键，即维持所需要的平均壁厚，并进一步生产出符合最小壁厚极限的产品。这些测量通常是通过采用ODAC® 和 UMAC®系统在挤出机前和挤出机后来完成。此外，在生产线末端对外径再次进行测量，并将测量到的冷态直径值结合进来。这样，收缩量得以确定，并反馈到加工中来，从而对参数实现最优配置。类似的处理方法改善了挤出管材的质量。刚开始生产时，管材的偏心率必须得到控制，然后尽可能快地控制壁厚和最终产品的外径。壁厚的最佳化和外径的监测都是组合采用了仲巴赫性价比高的超声波技术和激光测量技术。

在电缆和管材挤出过程中精确的监视和质量控在挤出电缆或管材护套时，UMAC® 超声波测量系统确保了在产品偏心时和达到预定的壁厚时进行早期提醒。UMAC® 系统可以

allow the eccentricity, independently of the material temperature to be measured. Once the eccentricity of the cable is optimized, it comes down to the next stage of maintaining the required average wall thickness and then further to derive the minimum wall thickness limitation. These measurements are typically performed before and after the extruder by ODAC® and UMAC®. An additional measurement of the outside diameter at the end of the line allows the integration of the measured cold diameter value. This allows the determination of the shrinkage, which can thus be fed back within the process to realize optimum configuration.

Similar approaches generate quality improvements in pipe extrusion. At the beginning of the process, the eccentricity of the pipe must be brought under control, then the wall thickness and finally outer diameter as quickly as possible. The optimization of the wall thickness and the monitoring of the outside diameter is also ensured by the combined and cost-effective ultrasonic and laser measurement technology from Zumbach.

Accurate process monitoring and quality control during cable and pipe extrusion

In the extrusion of cables or pipe jackets, UMAC® ultrasonic measurement ensures early notification of product centralization and achieved Wall thickness. UMAC® measures and controls parameters such as eccentricity and wall thickness for up to 5 layers of materials at a maximum of 8 individual measuring points around the circumference. Additional installed ODAC® or MSD® diameter measuring heads benefit by checking the diameter and ovality. Using these technologies, allows the manufacturer to closely monitor the extrusion processes and thus continuously maintain the quality requirements.

Dual Loop Strategy maximizes quality on extrusion lines

Control solutions such as Zumbach's dual-loop method, as example, takes into account the product properties in both the hot and cold conditions. The resultant reported data is determined from a combination of the diameter measurement using ODAC laser measuring heads and UMAC ultrasonic eccentricity and wall thickness scanners.

Wherever several ZUMBACH systems are used in combination, remarkable successes can be achieved in DLP measurement and control.

Considerable thought should always be given to investing in several high precision and reliable control technologies within the extrusion line. After all, global material costs are rising just as fast as quality requirements. Whether it is quality improve-

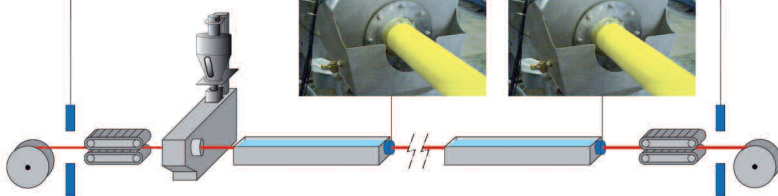
3-axis ODAC® 550 measuring system for Ø up to 500 mm



3-axis ODAC® 550 measuring system for Ø up to 500 mm



UMAC® scanners with 8 measuring points for Ø up to 690 mm (bigger on request)



按照客户要求定制的ODAC®和UMAC®测量仪器，应用到产品外径达500mm的挤出生产线上

Customer specific solution with ODAC® and UMAC® gauges in an extrusion line for products up to 500mm OD

在围绕圆周上的最多8个不同的测量点测量和控制多达五层的物料的参数，例如偏心率和壁厚等。此外，安装了ODAC®或MSD®直径测量头，就能检查直径和椭圆度。采用这些技术，制造商就能够近距离观察挤出过程，并连续地保持所需要的质量。

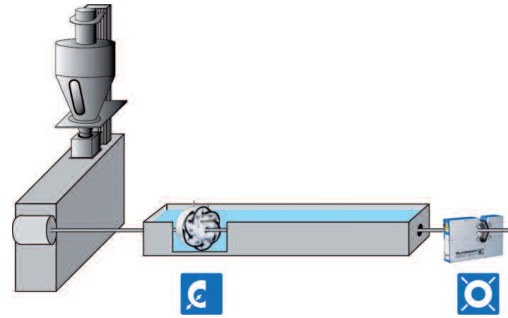
双回路策略最大限度地提升了挤出生产线的产品质量

仲巴赫的双回路方式控制方案，考虑到了产品在热态和冷态下的特性。由ODAC激光测量头和UMAC超声波偏心率和壁厚扫描器组成的直径测量组合来决定生成的报告数据。无论在何种场合，仲巴赫系统都是进行组合使用，在DLP测量和控制上实现了非同寻常的成功。

当对挤出生产线进行若干高精度和可靠的控制技术投资时，总是会进行充分的考虑。毕竟，在对于产品质量的要求快速上升的同时，全球的物料成本也在以相同的速度上升。一方面对于非常精密的电缆的质量提高，另一方面能进一步节省生产管材系统产品所用的原料，采用仲巴赫的热端双回路控制策略，挤出过程可以得到更为精密和快捷的监视和控制。

成本效益高的加工过程体现了超声波测量的效益，与激光扫描器技术结合起来更为完美。仲巴赫提供的这一智能装置控制策略将产品特性在生产线的热端和冷端实现控制成为了可能。控制过程利用了来自超声波偏心率和壁厚扫描器UMAC®直径测量的数据。根据来自位于生产线末端的ODAC®激光直径扫描器的数据并进行评估，对这些测量数据进行自动调节。这样，由于来自变化点到测量点的距离很短，非常快速的控制反馈环就建立起来了。根据最终直径测量值，控制系统将进行相应的调节。

采用这一双回路系统，瞬态偏差可以做到最小，从而获得显著降低标准偏差的效果，最终使加工能力指数（CPK）得到了提升。



UMAC®位于热端，ODAC®位于冷端的双回路配置

Dual Loop configuration with UMAC® at the hot end, and ODAC® at the cold

ment for very precise cables or further material savings for commodity tubing – with the ZUMBACH hot end dual loop control strategy, the extrusion can be monitored and controlled even more precisely and quickly.

The cost-effective process exploits the benefits of ultrasonic measurement and perfects it in combination with laser scanner technologies. The intelligent solution offered by the ZUMBACH control strategy makes allowance for the product's properties at the hot and cold ends of the line. It utilises data from the diameter measurement, determined from the ultrasonic eccentricity and wall thickness scanner UMAC®. These data measurements are automatically adjusted based on the data from the ODAC® laser diameter scanner at the end of the line and evaluated. This creates a very fast control feedback loop (due to the short distance from the point of change to the point of measurement) while still basing the control decisions on the final diameter measurements.

Using this dual loop, transient deviations can be minimised, in turn leading to a significant reduction in standard deviation and ultimately an increase in the process capability index (CPK).

ZUMBACH Electronic AG

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www.zumbach.com

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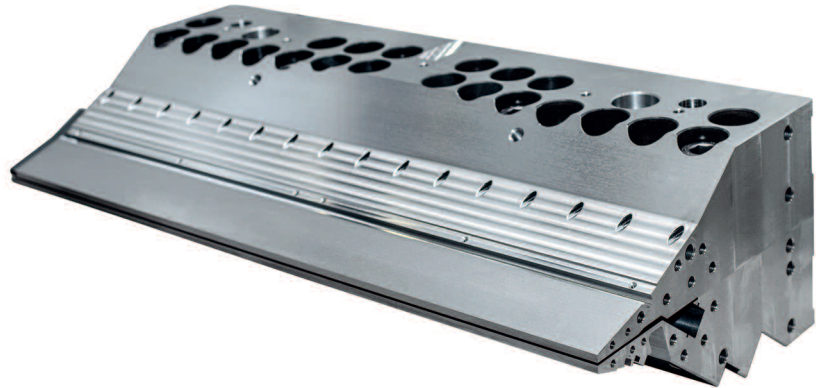
挤出技术：在欧洲和亚洲能力更加强大

Extrusion Technology: Larger Capacities in Europe and Asia

意大利SIMPLAS在薄膜和片材挤出模具的生产和服务方面会更有能力。奥地利合作伙伴Greiner Extrusion在奥地利、捷克共和国以及中国的模具制造基地则提供了更大的平台。

The Italian SIMPLAS offers larger capacities in the production and service of dies for film and sheet extrusion. The tool manufacturing facilities of the Austrian partner Greiner Extrusion in Austria, the Czech Republic and China are used as platforms.

自2018年中期以来，Simplas 和 Greiner Extrusion一直在薄膜和片材挤出领域进行合作。Simplas 总部位于意



Simplas是塑料薄膜、片材挤出、挤出涂布和热熔涂布应用的平模头，输料块及配件的全球主要供应商之一（图片：© Greiner Extrusion）

Simplas is a leading supplier of wide slot dies, feed blocks and accessories for plastic film and sheet extrusion as well as for coating and hot melt coating applications (Pictures: © Greiner Extrusion)

大利北部，是塑料薄膜、片材挤出、挤出涂布和热熔胶涂布应用的平模头，输料块及配件的全球主要供应商之一。其核心竞争力是开发、设计以及工艺技术。Greiner Extrusion是一家奥地利公司，也是Simplas的投资股东，在全球8个驻地塑料机械制造挤出模具和配件。

通过两家公司的优势结合，意大利、奥地利、捷克共和国和中国相互间的

网络协作，以及对现代加工机器的广泛投资，可以生产宽度高达8米的模头。最重要的是拥有吸引力的交付期以及专业、快速的现场支持。能给所有制造商的模头提供服务、维修和翻新。



Simplas and Greiner Extrusion have been cooperating since mid-2018 in the field of dies for film and sheet extrusion. Based in Northern Italy, Simplas is one of the leading suppliers of wide slot dies, feed blocks and accessories for plastic film and sheet extrusion as well as for coating and hot melt coating applications. The core competencies lie in development, design and process engineering. Greiner Extrusion, an Austrian company, is co-owner of Simplas and manufactures extrusion tooling and components for plastics machinery at eight locations worldwide.

By bundling the strengths of both companies, networking the locations in Italy, Austria, the Czech Republic and China as well as extensive investments in modern processing machines, dies with a width of up to 8 m can be manufactured. The

top priorities are attractive delivery times as well as professional and rapid on-site support. Service, repairs and refurbishment for dies of all manufacturers are offered.

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201108 Shanghai, P. R. CHINA
Sales.GES@greinerextrusion.com

单点调节同心的挤出模具

Single-Point Concentricity Extrusion Tooling

Guill模具和工程公司推出了新型单点同心调节挤出十字模头，使用了微型精细调节螺钉进行精密同心调节。每旋转一圈，同心度精度可达0.008英寸或更细。单点同心调节是Guill对挤出薄壁夹套和精密内外径管材模具的独特创新。一只调节螺栓控制调节360°

Guill Tool & Engineering introduced a new single-point concentricity extrusion cross-head that uses micro-fine adjustment screws for precise concentricity adjustment. The precision of concentricity reaches 0.008" or finer per revolution. This single point concentricity adjustment is a unique Guill innovation for the extrusion of thin-walled jacketing and precision ID/OD tubing. One adjustment bolt controls 360° of adjustment.

单点十字头模具的特性包括：拥有专利的用于快速更换的凸轮锁导向装置，在物料流量为每小时5磅时，滞留时间为一分钟。挤出机测量最佳的使用



为 1/2 英寸和 3/4 英寸，模头最大外径为 0.250 英寸。

此外，Guill 单点十字头模具为其客户提供巨大的灵活性。它不仅接受真空和微量空气配件，同时也可理想地用于压力和套管应用。在需要时还可提供氟高分子材料设计。

Features of the single-point crosshead include a patented cam-lock deflector for quick changeovers, with a residence time of one minute at .5 lb/hr material flow, optimized usage with extruders measuring 1/2" and 3/4", and a max die ID

of .250." Additionally, the Guill single-point crosshead offers great flexibility to its users. It not only accepts both vacuum and micro-air accessories, but is also ideal for pressure and sleeving applications. Fluoropolymer designs are available upon request.

Guill Tool & Engineering
10 Pike Street, West Warwick,
RI 02893, USA
www.guill.com

制造软包装材料方面的创新

Innovations in the Manufacturing Flexible Packaging

在第33届中国国际橡塑展期间，德国机械制造商温德默勒与霍尔舍公司（W&H）将展示其创新，这些创新被应用于制造软包装材料的丰富多彩的系列产品。W&H在挤出、印刷和转换方面的专家将在130平方米的展台前接待来访的客人，并向来宾提供范围广泛的综合建议。W&H的展台位于5号馆5.1 C61。

At the 33rd Chinaplas, the German machine manufacturer Windmüller & Hölscher will be presenting innovations from its extensive portfolio for manufacturing flexible packaging. W&H experts in the areas of extrusion, printing and conversion will be at the 130 m² booth in Hall 5, Booth 5.1 C61, ready and waiting to provide comprehensive advice to trade visitors.

VAREX II 具备能够以最快速度变换原料的功能

VAREX II with TURBOCLEAN for the fastest material changeover



在薄膜制造行业，W&H能够针对不同的应用，向客户提供成套完整的设备以及创新的解决方案。W&H 亚洲太平洋地区CEO Michael Fischer说道：“质量的创新形成了特殊的应用领域，产生出了新的需求，这种需求正在增长中，对于这一变化，W&H给予了足够的关注。”

在复合薄膜应用中，出现了用PE/PE薄膜替代PET薄膜的市场趋势，这种PE/PE薄膜可以完全回收利用。由于W&H具有MDO（单向拉伸）技术和生产工艺方面的专有技术，这种PE/PE薄膜不仅能有出色的平整度，同时有着高模量和高透明度，完美地适合于印刷，同时，外层有着非常高的硬度和耐温性，有着出色的自立袋特性。

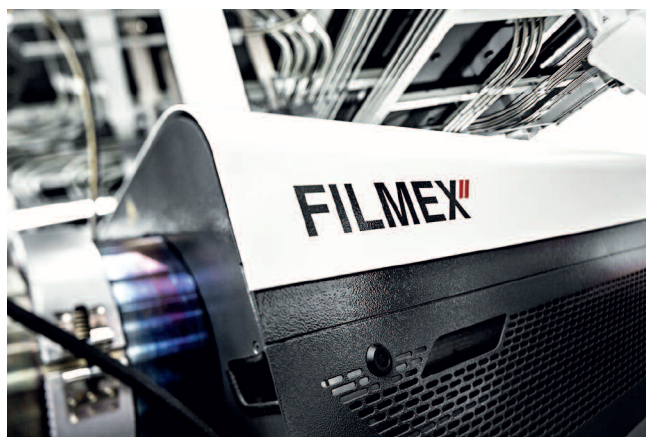
同样，对于生产透气尿布膜，W&H可提供带有在线单向拉伸单元的“VAREX”设备，这种设备特别适合于生产薄型

下测量透气尿布背面薄膜，这种产品主要采用流延挤出方式生产，有着较高的定量克重。不仅如此，在制造保护膜、FFS（成型-充填-封口）薄膜以及多达11层的阻隔膜等吹膜应用方面，以及流延薄膜生产线FILMEX，应用范围从多达55层的纳米层拉伸薄膜直到阻隔膜、CPE和CPP的应用，W&H的设备也将成为热点。用于生产输液袋的AQUAREX倒置式生产线同样会引起相当大的关注。

W&H同时还将展示在柔性印刷和凹版印刷领域的实力，特别关注于减少VOC（挥发性有机化合物）的水性油墨以及特别设计及工程性能。

由纸、塑料和塑料编织材料制造工业包装袋也同样是W&H的强项。主要的例子是新型AD pro薄膜和MP薄膜阀口袋。这种阀口袋的特点是有着特别高水平的防潮性能。

在W&H子公司GARANT纸袋机设备的旁边，将展出德国企业B&B包装公司系列制袋机。B&B是全球制造能够重新封紧的插边袋以及在线插入喷口及可选择的漏气探测自立袋的市场的领袖。W&H作为B&B在亚洲的销售和服务机构开展经营，这样有利于补充W&H生产软包装机械设备的产品组合。



FILMEX II 流延薄膜挤出生产线，适合于生产拉伸膜、CPP和阻隔应用

FILMEX II – cast film extrusion line for stretch, CPP and barrier applications

In the area of film manufacturing the complete machine range with innovative solutions for the most varied applications will be presented. "The need for new innovative quality forms for special fields of application is increasing and with their developments, Windmüller & Hölscher take these into account", said Michael Fischer, CEO W&H Asia Pacific.

This applies to market trends such as PET replacement film in lamination applications with PE/PE which are fully recyclable. Due to W&H's MDO technology and process know-how, these PE/PE films achieve not only outstanding flatness, high modulus and transparency for perfect printing but also a very high stiffness and temperature resistant outer layer for excellent stand-up pouch properties.

Also for the production of breathable diaper film W&H offers VAREX with Inline-MDO stretching unit for a particularly thin and down gauged breathable diaper back sheet film – a product that is predominantly produced in cast film extrusion and with a higher basis weight. However, the focus will also be on the manufacture of surface protection films, FFS films and barrier films with up to 11 layers for blown film applications. W&H's cast film line FILMEX application ranges from nanolayer stretch films with up to 55 layers to barrier, CPE and CPP applications. The SQUAREX upside-down line for the production of films for infusion bags also attracts considerable interest. W&H also demonstrates competence in the field of flexographic and gravure printing presses with a special focus on VOC

reduction (reduction of volatile organic compounds) and specific design and engineering properties for water-based inks.

Industrial sacks made from paper, plastic and woven plastic materials are also a strong domain of W&H. A prime example here is the new AD proFilm MP film valve sack, which is characterized by a particularly high level of moisture protection.

Alongside the paper bag machine range of the W&H subsidiary GARANT, W&H will present the bag machine range of the German company B&B Verpackungstechnik. B&B is a global market leader for the manufacture of reclosable side-gusseted bags as well as stand-up pouches with inline spout insertion and optional leak detection. W&H operates as a sales and service organization for B&B Verpackungstechnik in Asia, thus advantageously supplementing the W&H portfolio of machines for the manufacture of flexible packaging.

*Windmüller & Hölscher at Chinaplas 2019:
Hall 5, Booth 5.1 C61*

温德默勒与霍尔舍公司 (W&H) 在中国国际橡塑展上的展台: 5号馆, 5.1 C61展台

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格诺斯旋转过滤系统

Rotary Filtration Systems

所有模型在去年都得到了完全的更新。过滤器内腔得到了改进提供了更大的过滤面积可以承受更高的压力。不同过滤器的零配件也进行了统一化处理以保证更短的交货期和更低的成本。

专利的SFXmagnus 过滤系统的特点是过滤面积特别大。可以客户的实际加工需求决定是否配置反冲自清洗系统。过滤网片的切换不会对产品质量有任何的影响。

专利的RSFgenius 过滤系统全自动化操作，加工和压力始终恒定，通过反冲自清洗功能实现无以伦比的高效。针对高质量的过滤应用来说是最优的选择。

KF 连续性过滤器是针对特殊应用开发的，主要针对需要频繁切换材料，品种，等级，颜色或者像吹膜这样需要高压的应用。KF 过滤器特别小巧和提供最佳的性价比。

格诺斯加工装置 (GPU)

格诺斯加工单元 (GPU) 已上市好几年并且已被证明具备再加工PET废料和消费后瓶片以及工业废丝和废膜片的能力。这种加工装置包含有格诺斯具有无可匹敌脱挥能力和除污能力的MRS挤出机以及高效的格诺斯旋转过滤系统和可提供实时粘度数据控制，监控并调节的在线粘度测试仪。

自从2009年得到美国FDA的“无异议证书”，格诺斯围绕MRS挤出机的回收加工技术得到了大量的市场认可，尤其在100%瓶片和工业聚合物废料到食品级产品的转化过程中虽然设计初衷是专门为PET瓶片加工，但目前格诺斯多螺杆挤出机也可以在聚烯烃和尼龙领域应用。在其它材料领域的测试应用预示着在未来它将拥有更加广泛的前景。

挤出机的超强的排气和去污性能已经得到客户的高度肯定。MRS出机它可以做到无预干燥，简单的水封泵抽真空，从PET瓶片直接加工成高质量的产品。该项技术通过独一无二的专利加工部份来实现。在传统的单螺杆技术的基础上，多螺杆部分内含8根卫星单螺杆，通过齿环和齿轮传动来驱动，料筒部分大约有30%的部分暴露在外并提供熔体最佳的熔体排气效果

由于这种设计，排气效果会是传统单螺杆挤出机的50倍，真空系统仅仅是25-40mbar。通过避免高真空度系统和预干燥，MRS 是传统技术的最佳取代者。更深层次的是简单和坚固的设计和灵活性。容易操作和低的维护率，加工的灵活性和优越的筒体质量和均一性。

在PET包装片材生产领域格诺斯的这个技术已经得到了成功的证明，除了高品质硬质片材以外，格诺斯现在提供可快速灵活切换到PET发泡片的生产线模式。发泡片材可以减少50%的重量，同时具有稳定的发泡孔结构而且可以使用100%消费后回收料制作。发泡PET片材是一种理想的材料去制造经济型热塑性食品工业方面使用的包装容器比如肉类托盘，蛋盒，杯子或盘子之类。



格诺斯旋转过滤系统 RSFgenius
Rotary Filtration System RSFgenius

格诺斯测量技术

作为设备供应商，格诺斯有生产能力满足客户非标准的需求，同时具备最短发货时间的能力。格诺斯传感器可以满足各种应用的特殊要求，比如Atex，Hart通讯或者EAC。

特定用于压力过载保护。无论是标准应用中的单个传感器系统还是防爆特定环境下的完整传感器系统，格诺斯都有相应完备的压力监控系统。

同时，格诺斯提供在食品应用行业方面的特殊压力传感器，比如需要经常进行设备清洗的场合，所以传感器必须能经受蒸汽或者水压冲洗的过程。格诺斯开发了针对这种应用的特殊传感器，即使在拆除传感器后同样可以具备防水功能。

中国国际橡塑展：展馆5.1 展台号J36

The patented Rotary Filtration Systems are characterized by the filter disk on which the screen cavities are located in a ring pattern and which is completely encapsulated by the two filter blocks. Screens can be inserted into the cavities by opening a small hatch door giving access to the cavities while the

production process continues to run without any interruptions or disturbances.

All models have been completely revised in the last years. Modifications to the screen changer housings permit operation on a wider range of applications at higher pressures, whilst offering enlarged active filtration areas. Components and modules have been commensured in order to offer shorter delivery lead times and lower costs.

The SFXmagnus series operates automatically as well as process and pressure constant. It is suitable for a very wide range of applications. This series is characterized by an extra large active screen surface area, its compact design, as well as extremely easy operation. Screen changes do not have any influence on the product quality.

Gneuss' top model, the RSFgenius, operates with an integrated self cleaning system for very demanding applications and highest quality requirements. Screens can be automatically reused up to 400 times and filtration finenesses below 10 microns/1200 mesh are available.

The KF range of continuous filtration systems is designed specifically for applications with frequent material type, grade or color changes as well as for high pressure applications like blown film. The KF screen changers are especially compact and offer excellent value for money while permitting simple and quick screen changes on the fly.

Gneuss Processing Unit GPU

The Gneuss Processing Unit (GPU) has been available for several years now and has proven itself for the reprocessing of bulky PET waste such as post-consumer bottle flake and industrial waste from fiber and film manufacture without pre-drying. A Gneuss Processing Unit consists of a Gneuss MRS extruder with its unmatched devolatilization and decontamination performance in combination with a highly-efficient Gneuss Rotary Filtration System and an online viscometer VIS for intelligent dynamic viscosity control.

Since the first "Letter of Non Objection" from the American FDA in 2009, the Gneuss recycling process based around the MRS extruder has received a large number of approvals for processing up to 100 % post-consumer and industrial polymer waste to food contact products.

Although originally developed specifically for PET, the MRS is now also running in polyolefin and nylon applications, and



being tested on a range of other materials and applications. Thanks to the patented combination of single screw extruder with a multiple screw section, the extruder is very sturdy and particularly well suited for recycling applications.

The MRS extruder permits the processing of PET without pre-drying by using a simple water ring vacuum system to process the material directly to high quality end products. This is achieved by means of its unique and patented processing section. Based on a conventional single screw extruder, the Multi Rotation Section is a drum containing eight satellite single screws, driven by a ring gear and pinion transmission. The "barrels" cut into the drum are approximately 30 % open and provide optimum exposure of the melt.

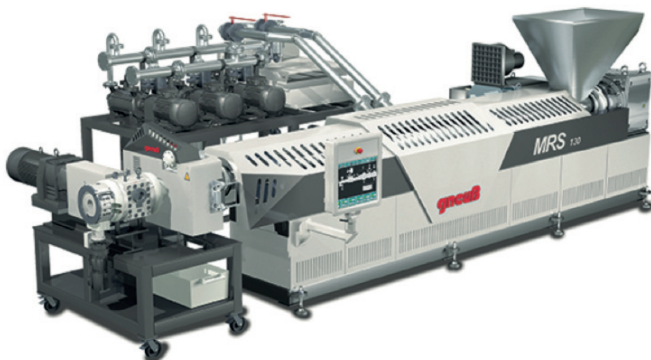
Thanks to this design, the devolatilizing performance is approximately fifty (50!) times greater than that of a conventional single screw extruder – and this at a vacuum of only 25 to 40 mbar. By avoiding the need for a deep vacuum system and pre-drying, the MRS is an economically efficient alternative to conventional technologies. Further arguments in its favor besides energy savings are the simple and rugged design, small footprint, its ease of operation and low maintenance, processing flexibility and last but not least its excellent melt quality and homogeneity.

One area this technology has been especially successful in is PET sheet extrusion. Besides producing high quality rigid sheet, Gneuss now also offers the option for its PET sheet extrusion lines to quickly and flexibly switch to producing physically foamed PET sheet with the addition of Gneuss' new PET foam module. Foam sheet with a weight reduction of 50 % can be extruded (depending on the process) with a consistent foam structure and mechanical properties. And this from up to 100 % post-consumer material. Foamed PET sheet is an ideal material for economically manufacturing thermoformed containers for the food industry such as meat trays, egg cartons, cups or plates.

Gneuss Measurement Technology Products

As a machinery manufacturer, Gneuss has the manufacturing capabilities to realize even unusual sensor requirements. The lean manufacturing structure at Gneuss makes this possible with shortest delivery times. Gneuss sensors are available to match regional or application – specific requirements such as ATEX, Hart Communication or EAC.

In especially difficult process conditions with short pressure



overloads, frequent pressure spikes as well as unmelts in the material, sensors are highly stressed. Gneuss builds a special heavy-duty design with a special membrane technology for these applications.

Also, Gneuss offers a special transducer for food applications, where regular cleaning of the machinery is necessary, so that sensors are often subject to steam or water jets. Gneuss has developed a special type of sensor for these applications, which remains waterproof even if its plug is removed.

Gneuss at the CHINAPLAS:
Hall 5.1, Booth J36

Gneuss Kunststofftechnik GmbH
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www.gneuss.com

新技术 New Technologies

已举办了33届的中国国际橡塑展是世界最有影响力的展览之一。在展会上AMUT集团的每个部门都将推出最新开发的技术。AMUT集团地区销售经理 Andrea Peretto 评价道：“中国国际橡塑展是著名的活动中心，在这里可以与东南亚塑料行业内主要的专业人士见面。对于AMUT集团来说，这里代表着有价值的业务平台，并且我们已经从这里获得了非常有价值的项目。”



拉伸薄膜收卷机
Stretch Film Winder

包装薄膜部：

重点是生产拉伸薄膜的流延生产线。在深入研究后，研发部门已经完成了名为Q-Catcher的创新系统。当生产线运行时，该系统能够通过调出合适的设定值以提高薄膜的质量。Pro-Wind 4.0超高速卷绕机是AMUT技术应用于软包装的另一个典型标志。

挤出部：

在全球范围内已出现了绿色解决方案的需求，与这一增长相适应，AMUT已经与Erema公司合作，共同开发出了具有特殊理念的用于包装行业的r-PET瓶。挤出生产线将采用100%消费过后的瓶片加工成为单层薄片。这种薄片已获得FDA（美国食品及药品管理局）和EFSA（欧洲食品安全局）的核准。许多欧洲公司已经开始转向这种解决方案。

同样，展台上的防水膜材生产技术将成为主角。作为事实，由于AMUT集团在中国的一流的样板生产线，以及在亚洲市场上的出色表现，在经过多次项目合作后，已经成为了中国国家建筑防水协会杰出的重点合作伙伴。

回收再生部门-专利技术：

采用干式方法完成去除标签的预洗工作，既能去除标

签，又完成了头等级别的清洗任务。涡轮清洗和摩擦清洗产生了强大的清洗效果，能去除所有细小的污染物和胶合物。这种机器的组合在最终产品的质量方面取得了极为理想的效果，甚至对高污染的瓶子而言也不例外。

采用AMUT的技术可实现生产成本最优化：耗水量降低到最小值，由于水连续被过滤，在整个工艺过程中可以减少用量，能源和清洗剂的消耗也真正受到了限制。

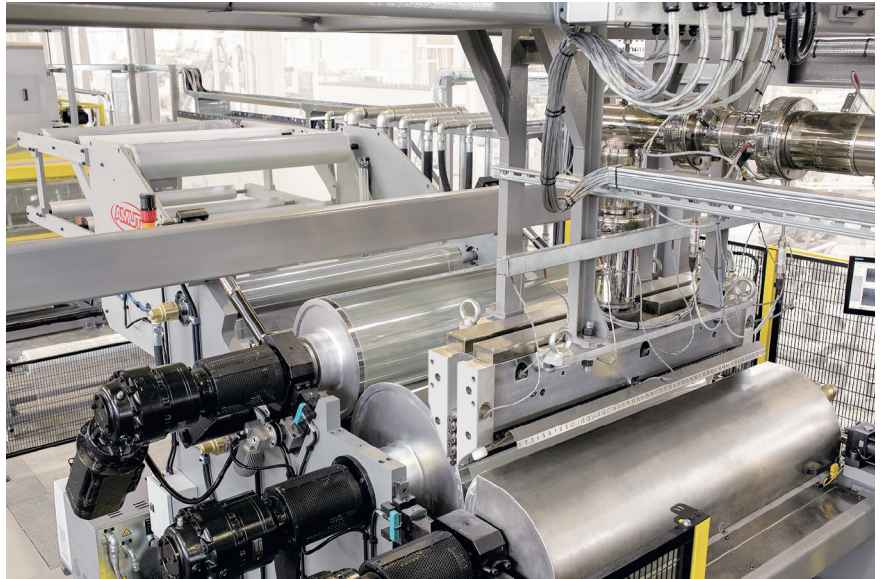
热成型部门：

“生产和使用绿色产品”是AMUT应对当前循环经济的发展趋势所采用的座右铭，以支持使用对环境影响较低的挤出和热成型物料。ACF 820-PLUS热成型机将与AMUT-EREMA挤出生产线共同运转，生产r-PET膜材，也可以生产Ingeo™膜材。Ingeo™是NatureWorks公司提供的聚乳酸（PLA）材料。

NatureWorks和AMUT现在已开始合作，采用聚乳酸（PLA）原料开发接触食品用包装材料。

2019中国国际橡塑展：4.1号馆，展台号 C55

FDA 挤出机
FDA Extrusion



At Chinaplas, the occasion of the 33rd edition of one of the most influential exhibitions in the world, AMUT GROUP will be introducing the technologies lately developed by each Division. "Chinaplas is a distinguished hub where to meet the main players of South-Eastern Asia involved in plastics field. For AMUT GROUP it has always represented a worthwhile business platform that has generated very valuable projects," commented Andrea Peretto, Sales Manager in charge of the area.

Packaging Film Division:

The focus is on cast lines for the production of stretch film. After deep studies the R&D department has realised an innovative system named Q-Catcher. This system is capable of improving the quality of the film by recalling the proper setting when the line is in operation. ProWind 4.0 super-fast winder is another representative mark of AMUT technology for flexible packaging films.

Extrusion Division:

To comply with the worldwide growing demand for green solutions, AMUT has developed together with Erema company a specific concept for r-PET Bottle to Packaging application. The extrusion line processes 100% post-consumer bottle flakes into food grade single layer foil. The foil is FDA and EFSA approved. Many European companies have already moved towards this solution.

Also the technology for waterproofing membranes production will play a leading role at the booth. Actually, AMUT GROUP is reputed a prominent key partner also in the Asian market thanks to its first class references in China and the visibility reached after regularly collaborating in China National Building Waterproof Association events.

Recycling Division – patented technology:

Delabeller-PreWasher works in dry process for both labels removal and first cleaning action. Turbo Washer and Friction Washer carry out an intensive cleaning action to remove all fine pollutants and glue. The combination of these machines consents to achieve excellent results in terms of final product quality even in case of highly polluted bottles.

AMUT technology optimizes the operational costs: fresh water usage is reduced to minimum because the water, that is continuously filtrated, can be re-used during the whole process and the consumption of energy and cleaning agents is really restrained.

Thermoforming Division:

"Go Green" is the motto adopted by AMUT to enforce the recent circular economy trend to support the use of materials in extrusion and thermoforming process with low environmental impact. The ACF 820-PLUS thermoforming machine will be in operation at the booth using r-PET foil made with AMUT-

EREMA extrusion line and Ingeo™ foil. Ingeo™ is the PLA provided by NatureWorks company. NatureWorks and AMUT have recently started a collaboration to propose PLA for food contact packaging.

Chinaplas 2019: Hall 4.1, Booth No. C55

AMUT GROUP
Via Cameri,16-28100 Novara, Italy
www.amutgroup.com



兼具高生产效率与高产品质量的造粒机、齿轮泵和熔体过滤器

Pelletizers, Gear Pumps and Melt Filters for High Productivity and Product Quality

在即将于5月21至24日于广州举办的2019年中国国际橡塑展上，马格 (Maag) 作为全球领先、满足诸多苛刻应用要求的齿轮泵、造粒系统和过滤系统以及粉碎机制造商，将于5.1号展厅S51号展位展出其高性能造粒机、齿轮泵和熔体过滤器广泛产品组合之冰山一角。它们可帮助复合材料生产商和回收商同时实现高生产效率与高产品质量。

Maag will present insights into its broad portfolio of high-performance pelletizers, gear pumps and melt filters that help compounders and recyclers combine high productivity with high product quality. Maag will be showing at Chinaplas in Guangzhou from May 21 to 24 on stand S51 in hall 5.1.

在造粒领域内，马格将着重推介适用于加工各种硬质和软质材料的BAOLI®-3第三代干切式拉条造粒机。这些造粒机的关键部件在德国制造，所有规格均符合德国适用的安全标准。马格在造粒机方面拥有60多年的经验，并已在中国安装了约800台BAOLI造粒机。与之前的两代BAOLI机型一样，其自动切割室锁定系统可以在增进操作员安全性的同时实现快速处理。

马格还将在同一设备分类下展示PEARLO®水下造粒系统，它可极为高效灵活地生产球形颗粒，实现最高36000公斤/小时的产量。紧凑和模块化的结构使其在生产中仅需占用很小的空间。电子控制的EAC技术确保了造粒刀片在运行过程中的精确输送，并从而确保长时间不间断的运行时间和颗粒始终如一的高质量。

马格从其广泛的齿轮泵产品范围中选取了采用x6级设计的extrex®齿轮泵，送往中国国际橡塑展展示。正如所有采用x6设计的产品一样，马格对其所有齿轮和轴组件，包括轴承和密封件做出了全面改进，并优化了组件配合。专门研发的齿面及低压缩位置可以在低剪切速率下实现非常高的压力。由此可进一步提升产品质量、容积效率以及均匀而可靠的生产。

Ettlinger出品的ERF350型高性能熔体过滤器为马格在2019中国国际橡塑展上的展品范围提供了补充。在过滤污染



马格BAOLI拉条造粒机

BAOLI pelletizer from Maag

的塑料熔体时，该产品可以可靠地去除杂质，如纸张、铝、木材、弹性体或污染程度高达18%的高熔点塑料，熔体损失极低。该产品的设计用于实现非常高的效率，根据熔体类型和溶解度以及选定的过滤细度，可实现最高3800公斤/小时的产量。它适用于所有常见的聚烯烃和聚苯乙烯以及众多的工程塑料，如苯乙烯共聚物、TPE和TPU。

In the field of pelletizing, Maag focuses on BAOLI®-3 third-generation dry-cut pelletizers for processing hard and soft materials. The key components of these pelletizers are manufactured in Germany, and all versions meet the requirements of applicable safety standards in Germany. Maag has more than 60 years' experience in pelletizers, and has already installed around 800 BAOLI pelletizers in China. As with previous BAOLI generations, the automated cutting chamber locking system enables fast handling while supporting operator safety.

In the same equipment segment, Maag presents the PEARLO® underwater pelletizing system for the highly efficient and flexible production of spherical pellets with throughputs of up to 36,000 kg/h. Compact and modularly structured, it requires only a very small footprint in production. Electronically controlled EAC technology guarantees precise feed of the pelletizing knives during operation, thereby enabling long runtimes free of interruptions with consistently high pellet quality.

From its extensive range of gear pumps, Maag will be presenting the extrex® gear pump in x6 class design at Chinaplas. As with all x6 versions, Maag has completely re-engineered and re-designed all the components, from the shafts through to the bearings and seals, and optimized the interaction of the components. Specially developed gear teeth with low compression allow very high pressures to be achieved with low shear rates. The result is a further increase in achievable product quality, volumetric efficiency, as well as production consistency and safety. An ERF350 high-performance melt filter from Ettlenger complements the range of Maag exhibits at Chinaplas 2019. It reliably

filters plastic melts with impurities and separates foreign materials such as paper, aluminum, wood, elastomers or plastics which fuse at a higher temperature with impurity levels up to 18 % – all with extremely low melt losses. Designed for especially high efficiency, it achieves a maximum throughput of 3,800 kg/h, depending on the type of melt and degree of impurities as well as the selected filtration rating. It is suitable for all commonly used polyolefins and polystyrenes as well as a large number of technical plastics such as styrene copolymers, TPE and TPU.

Maag at Chinaplas 2019: Hall 5.1, Booth S51

2019中国国际橡塑展：展馆5.1 展台号S51

Maag Pump Systems AG

Aspstr. 12, 8154 Oberglatt, Switzerland
www.maag.com

测量：2019 国际橡塑展 SIKORA 展位号

Measurement Technology: SIKORA at Chinaplas 2019

Chinaplas 2019 将于 5 月 21 - 24 日在广州举办。届时 SIKORA 会向大家展示创新型测量、控制、检测、分析及分拣设备。来访者可在 SIKORA 的展位上看到用于管材与塑料产业中对于品质控制、流程优化以及节约成本的全套测控系统。

The focus of SIKORA's appearance at this year's Chinaplas from May 21 to 24, in Guangzhou are innovative measuring, control, inspection, analysis and sorting devices. At the SIKORA booth, visitors can expect a comprehensive portfolio of systems for quality control, process optimization and cost savings in the pipe, hose and tube as well as plastics industries.



挤出生产线上用于在线测量管材尺寸的 CENTERWAVE 6000 将在 CHINAPLAS 展出

The CENTERWAVE 6000 for online pipe dimension measurement in extrusion lines will be presented at the Chinaplas

SIKORA 推出了 PURITY SCANNER ADVANCED 用于在线检测、分拣塑料材料。该系统结合了 X 射线与光学技术，能够 100% 检测出颗粒内部或表面的杂质。PURITY SCANNER ADVANCED 配有自适应成像系统，根据杂质的类型与应用领域，最多可使用 3 个光学成像系统。例如，X 射线成像系统可检测颗粒内的金属杂质，光学成像系统可检测透明与不透明颗粒内部的发黄斑块以及黑点，而彩色成像系统则可检测颜色变化。该系统可以自动筛除杂质。

对于样品检验与塑料材料的进货检测与分析，SIKORA 在 Chinaplas 展会上推出了 PURITY CONCEPT V。我们通常将材料置于托盘上，选择合适的成像系统执行操作，该过程只需要几秒钟，彩色成像系统可自动检测材料，在监视器上会将杂质的位置进行标记。通过对记录的影像数据的分析，可自动检测透明、不反光、有色材料表面的杂质。系统可为操作员提供杂质的确切位置，无需后续检查。相较于人工、肉眼与手动样品台，该系统得到的杂质尺寸更加精准、所得数据可重视、更为可靠。因此，该系统可为品质控制及流程优化提供重要作用。此外，SIKORA 公司还提供基于 X 射线技术的离线检测与分析系统，可检测、分析塑料材料内部的杂质。

SIKORA 展出的 CENTERWAVE 6000 可用于管材的挤出生产线上的品质控制。毫米波技术精确地测量了产品的外径、椭圆度、壁厚及熔垂度。该测量方法无需任何耦合介质，即便在缺少被测物体的材料类型及温度的信息的情况下也能够进行准确测量。无需预设产品参数。操作简便及测量结果的精确性为生产过程的高品质、低成本及高效率提供保障。

X-RAY 6000 PRO 用于测量管材的壁厚、偏心、内/外径及椭圆度。可检测多达三层管材的壁厚。此外，SIKORA 还将为来访者展示外径测量系统 LASER 2000 系列和 LASER 6000 系列，LASER 6000 系列还可检测鼓包。此次广州展会上 SIKORA 展出的鼓包检测系统能够充分检测出产品表面的不平整。

For online inspection and sorting of plastic material, SIKORA showcases the the PURITY SCANNER ADVANCED. The system combines X-ray with optical technology and detects contamination inside plastic pellets as well as on their surface. Perfection in detection provides the adaptive camera concept, where up to three optical cameras are used, depending on the expected contamination and application. For example, an X-ray camera detects metallic contamination inside pellets, optical cameras identify yellow discolorations as well as "black specks" inside transparent and opaque pellets, whereas color deviations are detected by color cameras. Contaminated pellets are sorted out automatically.

For sample testing or incoming goods inspection and analysis of plastic material, SIKORA presents the PURITY CONCEPT V at Chinaplas. Material samples, placed on a tray, are moved through the inspection area. Within seconds, the material is inspected automatically by a color camera and a projector marks the contaminated material directly on the sample tray. By analyzing the recorded images, contamination on the surface of transparent, diffuse and colored material are automatically detected, visualized and evaluated. A clear allocation of the contamination and follow-up in-



PURITY CONCEPT V 是用于塑料材料的离线检测与分析的自动样品台

The PURITY CONCEPT V is an automated light table for offline inspection and analysis of plastic material

pection are possible at any time. The system is more accurate, more reproducible and more reliable than human, eye and manual light table, determines the size of contamination, and thus, contributes significantly to quality control and process optimization. Furthermore, SIKORA offers systems for offline inspection and analysis based on X-ray technology that detect and analyze contamination inside of plastic materials.

For 100 % quality control during the extrusion of pipes, SIKORA exhibits the CENTERWAVE 6000. Millimeter waves technology precisely measures the diameter, ovality, wall thickness and the inner profile (sagging) of the product. The measuring principle does not require any coupling media, is not influenced by temperature or the plastic material and measures precisely without the need of any calibration. A presetting of the product parameters is not required. Easy operation and precision lead to the highest quality of the final product as well as cost savings and optimal efficiency. The X-RAY 6000 PRO is a further highlight for measuring the wall thickness, eccentricity, the inner and outer diameter and the ovality of hoses and tubes. Hereby, the thickness of up to three different material layers is measured. Furthermore, SIKORA presents diameter measuring systems of the LASER Series 2000 as well as LASER Series 6000, which also offer lump detection in addition to diameter measurement. SIKORA's presentation in Guangzhou is completed by reliable lump detectors that detect irregularities on the product surface.

SIKORA at Chinaplas: Booth 5.1C39

2019 国际橡塑展 SIKORA 展位号 5.1C39

SIKORA AG
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新款在线工具可自动计算安装齿轮泵后节省的树脂成本和投资回报

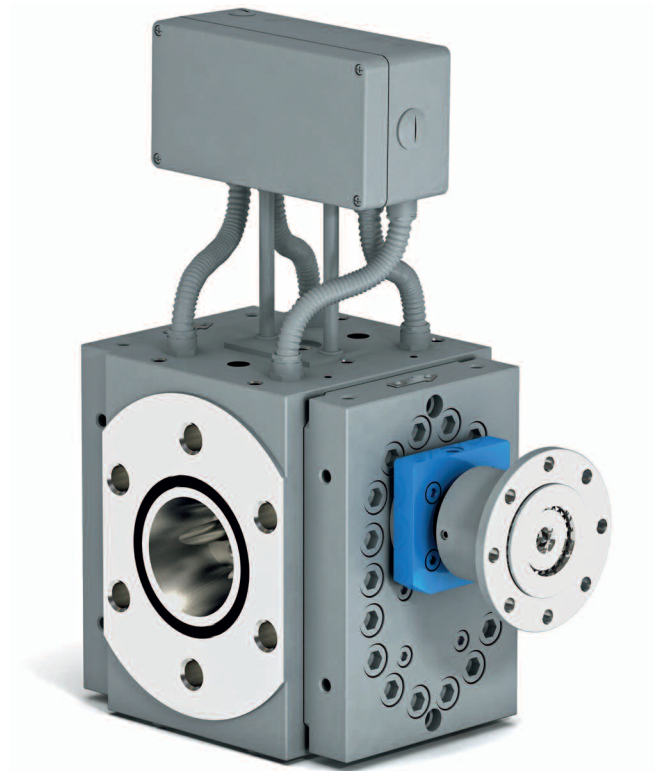
New Online Tool Automatically Calculates Resin Savings and Investment Payback after Installation of a Gear Pump

诺信公司开发出一款在线工具，可以快速计算在安装 BKG® BlueFlow™ 齿轮泵后能够实现的树脂成本节省额，以及收回对齿轮泵的所有投资需要的月数。该公司将在 2019 年中国国际橡塑展上正式推出这款工具（展位号 2.1F41）。

Nordson Corporation has developed an online tool that quickly calculates the resin cost savings achievable with installation of a BKG® Blue-Flow™ gear pump, plus the number of months in which the investment in the pump is paid back in full. The company will introduce the tool at Chinaplas 2019 (Booth 2.1F41).

BKG® BlueFlow™ 齿轮泵

BKG® BlueFlow™ Gear Pump



齿轮泵安装在挤出机和挤出模头之间，可将熔体压力从挤出机转移到齿轮泵。除了可以降低挤出机上承受的应力外，还能提升吞吐量，显著减少工艺变化对熔体压力的影响。这使得挤出加工商可以按更严格的容差运行，而不必牺牲产品均匀性。

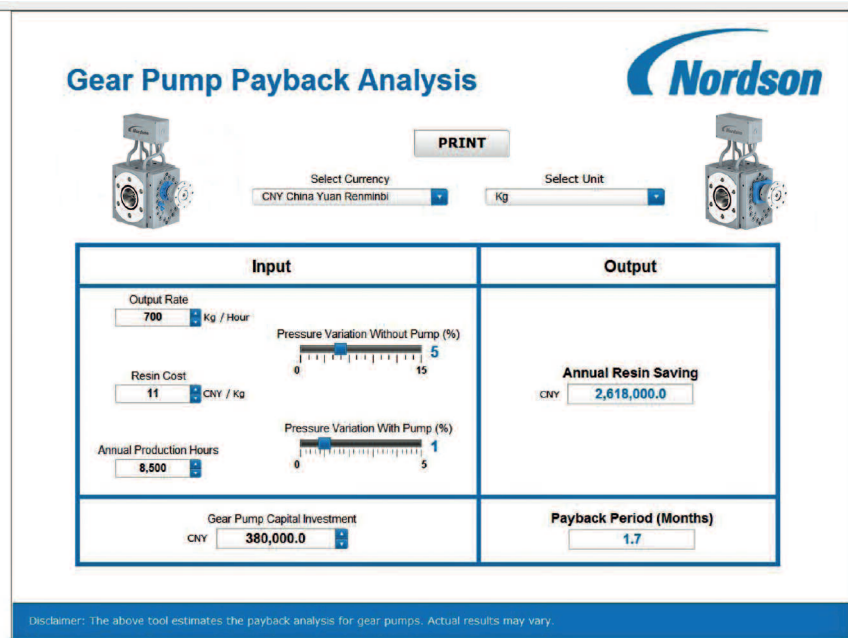
这款新的在线工具名叫 Gear Pump Payback Analysis，通过以下网址发布：

<https://www.nordson.com/en/divisions/polymer-processing-systems/support/calculators>。该工具可以根据树脂价格、生产率、在采用和未采用齿轮泵时的压力变化和资本投资来计算节省的树脂成本和收回投资所需的时间。这些输入的信息可以表示为英制或公制以及世界上的多种货币。

负责熔体输送产品的全球产品经理 Christian Schroeder 表示：“在未使用齿轮泵的情况下，即使只是换了一根新螺杆，压力的变化幅度也将达到 +/- 5%，使得加工商必须使用更多树脂才能确保成品符合规格。通过将压力变化幅度降低到 +/- 1%，BlueFlow 齿轮泵有可能做到节省树脂成本，从而可以在几个月内收回所有投资。”

Installed between the extruder and the die, a gear pump shifts the job of building melt pressure from the extruder to the gear pump. Besides reducing stress on the extruder and potentially increasing throughput, the gear pump significantly reduces the effect of process variations on melt pressure. This enables extrusion processors to run with narrower tolerances without compromising product uniformity.

The new online tool, called the Gear Pump Payback Analysis, is posted at <https://www.nordson.com/en/divisions/polymer-processing-systems/support/calculators>. The tool calculates resin cost savings and investment payback time on the basis of resin price, output rate, pressure variation with and without the gear pump, and capital investment. These inputs can be made in either pounds or kilograms and in many of the world's currencies. “Even with a new screw, pressure variation without the use of a gear pump typically is in the +/- 5% range, making it necessary for the processor to use more resin in order to ensure that the finished product meets specification”, said Christian



齿轮泵计算器 / Gear Pump Calculator

Schroeder, global product manager for melt delivery products. "By reducing pressure variation to as little as +/- 1%, the BlueFlow gear pump makes possible resin cost savings that can generate a full return on investment in a matter of months."

Nordson at Chinaplas 2019:
Hall 2.1, Booth F41

2019中国国际橡塑展：
展馆2.1 展台号F41

Nordson Polymer Processing Systems
www.nordsonpolymerprocessing.com

示配置新型 6 层共挤模头的中空成型机 *Blow Molding Machine with a New 6-Layer Extrusion Head*

2019 年Chinaplas国际橡塑展将于 5 月 21 日至 24 日在中国广州举行，Kautex 考特斯机械制造有限公司在展会上将展示一款应用于包装领域的新型 6 层共挤模头。

At Chinaplas 2019 (May 21 to 24, Guangzhou) Kautex Maschinenbau will be unveiling a newly developed 6-layer extrusion head for packaging applications.



KCC10S MK3 CoEx6

这个新型的 6 层共挤模头由考特斯德国和中国工程师共同研发，可用于生产 500 至 1500 ml 的多层中空制品，适用于食品包装领域。现场与之配套展示的是一台 KCC10S MK3 中空成型机，以充分展现新型模头的卓越性能。这款机型属于第三代 KCC 液压中空成型机，在中国生产，并已作为实验室机器应用于全球的考特斯国际技术研发中心。

新型模头实现多层共挤制品生产

KCC10S MK3 单工位机器采用 CP50 挤出模头，现场演示生产 1 升 6 层牛奶瓶。CP50 模头是由考特斯中国工厂制造的第一个适用于消费品包装的六层模头。新系列模头最小中心距 140mm，可实现 1 至 6 腔型坯挤出，还能与考特斯 KCC 液压中空成型机和 KBB 全自动中空成型机系列兼容，也可改装应用于其他机型。新模头由考特斯位于中国顺德的工厂生产，具有更高性价比，交货时间还能大大缩短。

在虚拟机上掌握生产流程

除了 KCC10S MK3 机型外，考特斯还将展示虚拟培训机。虚拟机工作站设计紧凑，配置一台高性能模拟计算机、两个显示器和一台投影仪。虚拟机于 2013 年推出，现分别在德国波恩、中国上海和顺德以及美国新泽西的分公司内用于展示及客户培训。虚拟机的应用类似于飞行模拟器，能够在模拟的真实环境下进行考特斯机器的操作，无需担心操作失误带来的机器损坏，也不会产生任何的材料消耗。此外，移动式的设计使得设备可插入任何国内标准插座进行使用，非常便捷。目前虚拟机能为客户提供针对 KBS 油箱吹塑成型机、KBB 全自动中空成型机和 KCC 液压中空成型机系列的培训。

新的考特斯技术中心在顺德启用

目前，考特斯在全球范围内拥有三个国际技术研发中心。除了在德国波恩和美国新泽西外，新的技术研发中心也于 2018 年底在中国顺德的生产基地正式启用。实验室的多驻点分布，能够就近为客户提供产品开发、快速制样、试模打样、材料测试等服务。

The new 6-layer head can be used to produce multi-layer hollow plastic containers with a volume of between 500 and 1500 ml. These are mainly used for packaging applications in the food sector. The new extrusion head has been jointly developed by German and Chinese engineers at Kautex. It will be in operation at the trade fair on a 3rd-generation KCC10S blow molding machine, so that visitors can see its functionality and performance for themselves. This machine range, which is made in China, is used as a laboratory machine at all Kautex technical facilities around the world.

New extrusion head enables production of multi-layer bottles

At the show, the KCC10S MK3 will be producing a 1000 ml 6-layer milk bottle. The single station machine has a CP50 extrusion head, the first 6-layer head for consumer packaging made in the Chinese factory. The heads of this new series have a minimum center distance of 140 mm and will be available with up to six parisons. CP50 heads are compatible with Kautex machines of the KCC and KBB series, and in some cases can also be retrofitted on other machines. The extrusion heads are made at the Chinese Kautex plant in Shunde. That not only means better value for money but also reduces delivery times.

Mastering production processes in real-life conditions on a simulator

As well as exhibiting its KCC10S MK3 machine, Kautex will also be demonstrating its virtual training simulator at Chinaplas. These virtual machines are used in the same way as flight simulators to train employees in the various production processes on Kautex machines. First introduced in 2013, virtual machines are now available for the, KBS, KBB and KCC series. The compact work stations are equipped with a powerful computer simulator, two monitors, and a projector. They are used for training and demonstration purposes at the Kautex locations in Bonn (Germany), Shanghai, Shunde (China) and New Jersey (USA). The virtual machines enable employees to be trained on Kautex machines in realistic conditions but without the risk of causing any damage due to incorrect operation, and without consuming any materials. The devices are mobile, plug into any standard domestic electrical socket and can be rented to customers for training purposes.

New Kautex Technikum opened in Shunde

Kautex now operates three technical research centers called Technikum around the world. In addition to the main technical facility in Bonn (Germany) and another in New Jersey (USA), at the end of 2018 the company opened a third technical center at its production site in the city of Shunde. At the decentralized lab sites, new applications are developed, prototypes and pilot molds are produced and materials and production processes are tested.

Kautex at Chinaplas 2019: Hall 5.1, booth number C41

考特斯机械制造有限公司 Chinaplas 2019 展位：
5.1 展馆，展台号 C41

Kautex Maschinenbau GmbH
Kautexstr. 54, 53229 Bonn, Germany
www.kautex-group.com

专注于特殊薄膜生产和循环经济

Focus on Specialty Films and Circular Economy

在2019年广州举行的中国国际橡塑展期间，**展台号 5.1 A65**，来自德国的市场领导者布鲁克纳机械有限公司将展示他们最新用于生产技术型薄膜和特殊薄膜的拉伸生产线，以及更好的可再循环包装薄膜的解决方案。

At Chinaplas 2019 in Guangzhou, Booth 5.1A65, German market leader Brückner Maschinenbau will present their latest stretching lines for technical and specialty films as well as solutions for better recyclable packaging films.



Battery Separator Film Production Line
电池隔膜生产线

用于特殊薄膜应用的新型高温烘箱

制造用于高价值技术型和光学应用的拉伸特殊薄膜，需要一个精密的高温烘箱。典型的应用是用于柔性显示器中的基膜和覆盖玻璃片的双向拉伸聚酰亚胺（BOPI）薄膜，或用于服装的聚四氟乙烯（PTFE）薄膜。

布鲁克纳最新开发的高温烘箱提供了独特的温度均匀性和非常严格的气流速度公差 - 这两者都是以低产量生产高品质薄膜的必要条件。此外，特殊的链条轨道系统可确保顺利地引导薄膜，以达到专用的机械性能。结合布鲁克纳方便用户操作的自动化系统和低能耗，可将高特殊薄膜的生产成本降至最低。

电池隔膜生产：在展台上展示各种解决方案和工艺

- 用于湿法工艺和任何其他工艺的生产线和组件，以及布鲁克纳专利的蒸发成孔EVAPORE工艺
- 独特的LISIM同步工艺 - 应用于湿法电池隔膜生产
- 强大和高效的逐次和同步拉伸生产线，工作宽度可达5.5米，适用于湿法工艺
- 专利的纵向（MD）回缩链带电机在线调整，适用于生产低纵向（MD）收缩膜
- 同步拉伸生产线的标准厚度范围为5至16微米，逐次拉伸生产线的标准厚度范围为5至20微米。

用于生产电池隔膜的布鲁克纳工业化生产线是通过广泛的内部研发活动基础上发展起来的，并且已经在全球领先的电池隔膜生产商的工厂，尤其是在中国，已经投入生产。

大力发展再利用和循环经济

各种塑料材料的再利用以及建立和加强循环经济是当今重要的议程。在中国国际橡塑展上布鲁克纳将展示一种新的双向拉伸聚乙烯（BOPE）生产线概念，它对软包装市场和即将到来的循环经济具有巨大的潜力：

- 具有优异机械和光学性能的薄膜
- 易于分类和回收
- 新的单材料解决方案，替代不可回收的多层结构和复合材料

此外还有一个亮点：新的布鲁克纳在线涂布系统：

- 与德国涂布专业公司Kroenert合作
- 单材料高阻隔薄膜的制造：更好的可分类和可回收
- 减少进一步的转换/复合步骤
- 布鲁克纳技术服务公司为全部现有生产线提供翻新服务

新型薄膜温度传感器“简易操作”

在中国国际橡塑展上，布鲁克纳首次展示了一种新的辅助系统，其操作理念为“简易操作”：用于BOPP和BOPET包装薄膜生产线上的薄膜温度传感器。这些传感器在整个生产过程中提供薄膜温度曲线。能准确的知道薄膜温度，可以使薄膜具有更好的稳定性、一致性和更少的浪费。

在布鲁克纳集团的综合展台上，除了布鲁克纳机械有限公司外，参观者也可以与布鲁克纳技术服务公司的人员会面，了解他们为薄膜拉伸线的可盈利运行所提供的解决方案，凯孚尔公司将展示在包装、汽车、医药和家电工业的最新发展，而PackSys Global公司将展示其先进的包装设备。

New high temperature oven for special film applications

Manufacturing oriented specialty films for high-value technical and optical applications needs an elaborate high temperature oven. Typical applications are BOPI films for base film and cover glass in flexible displays, or PTFE membranes, used in clothing. Brückner's newly developed high temperature ovens provide unique temperature uniformity as well as very tight tolerances in air velocity – both necessary to produce high quality film with a low yield. Additionally, the special chain track systems ensure a smooth film guiding in order to reach the dedicated mechanical properties. Combined with Brückner's user-friendly automation system and a low energy consumption, the production costs for highly special films can be reduced to a minimum.

Battery separator film production: Various solutions and processes shown at the booth

- Lines and components for the wet process and any other process as well as for Brückner's patented for EVAPORE process
- The unique LISIM simultaneous process, applied to wet battery separator film production
- Powerful and efficient sequential & simultaneous lines up to 5.5m working width for the wet process
- Patented MD relax chain with motorized inline adjustment for low MD shrinkage films
- Standard thickness range from 5 to 16 µm for simultaneous lines and from 5 to 20 µm for sequential lines

Brückner's industrial lines for battery separator film production are based on extensive in house R&D activities and are already in production at leading battery separator film manufacturers worldwide and especially in China.

Strong approach to recyclability and circular economy

Recyclability of plastic materials of all kinds as well as the establishment and strengthening of a circular economy are on today's agenda. At Chinaplas Brückner presents a new BOPE line concept with a huge potential for the flexible packaging markets and the upcoming circular economy:

- Films with excellent mechanical and optical properties
- Easy sorting and recycling
- New mono-material solutions as substitution of not recyclable multilayer structures and material composites

Also a show highlight: The new Brückner inline coating system:

- Cooperation with the German coating specialist Kroenert
- Manufacturing of mono-material high barrier films: better sortable and recyclable
- Reduction of further converting/laminating steps
- Available as retrofit for all existing production lines through Brückner Servtec

New film temperature sensors for "Easy Operation"

At Chinaplas Brückner shows for the first time a new assistant system within the operating concept "Easy Operation": Film temperature sensors for BOPP and BOPET packaging film lines. These sensors provide film temperature profiles over the complete production process. Knowing the exact film temperature leads to a better line stability, a consistent film quality and less waste.

At the joint Brückner Group booth, besides Brückner Maschinenbau, visitors will also meet Brückner Servtec with their solutions for the profitable operation of film stretching lines, Kiefel, showing the latest developments for the packaging, automotive, medical & appliance industry, and PackSys Global, presenting advanced packaging equipment.

High performance stretching line 高性能拉伸生产线



Brückner Maschinenbau
Königsberger Str. 5-7, 83313 Siegsdorf, Germany
www.brueckner.com

在2019中国国际橡塑展上展示本地化的专门技术 *Regional Expertise at Chinaplas 2019*

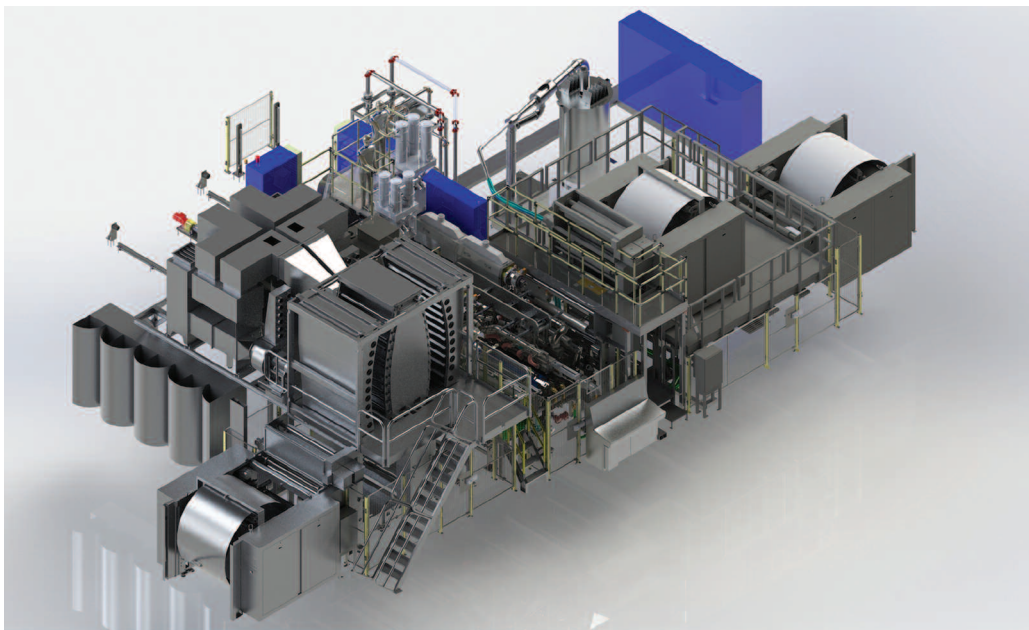
在广州举办的2019中国国际橡塑展期间，戴维斯标准 (Davis-Standard) 将在9.2展馆，展台号J41展示公司的设备创新和本地化增长方面的进展，在它旁边是其子公司麦拉菲尔 (Maillefer) 和宾顿工程 (Brampton Engineering)。戴维斯标准将与来宾分享如下信息：关于当前的并购、苏州工厂的扩张，连续挤出监视系统DS Activ-Check、dsX flex-pack™ 技术以及拉伸薄膜的性能。戴维斯标准还将展出HPE-100H, 1" 24:1挤出机。

Davis-Standard will promote the company's equipment innovation and regional growth at Hall 9.2, Booth J41, during CHINAPLAS 2019 in Guangzhou, alongside its subsidiaries Maillefer and Brampton Engineering. Davis-Standard will share information about its recent acquisitions, Suzhou facility expansion, DS Activ-Check system for con-

2018年并购宾顿，增强了公司在吹膜机应用方面多层薄膜加工技术和收卷机技术。2018年，大容量包装应用热成型设备市场领袖TSL (热成型系统有限责任公司) 也加入了戴维斯标准。TSL漂亮地确立了戴维斯标准在包装领域持续增长的地位。麦拉菲尔于2017年被并购，扩大了公司在电线电缆、管材和软管设备的供货范围，增加了在芬兰和瑞士的生产设施，能够更好地服务于客户，包括在中国的客户。

本年度戴维斯标准苏州公司的场地已扩大。新增的3,500平方英尺 (3,251平方米) 设施靠近在苏州现有的车间。将用于控制面板的组装并提供非常需要的仓储。这一增添厂房的举动反映了戴维斯标准挤出涂覆业务的强大和在这一领域长期的战略。苏州公司同时还将成为研发实验室，以支持亚洲的医药市场。这个实验室的能力已经为客户创造出了有利条件，成为了支持开发新原料以及生物降解产品的绝佳工具。

为响应智能化技术增长的需求，戴维斯标准当前引入了DS Activ-Check 系统，用于对挤出机进行连续监视。DS Ac-



图为 dsX flex-pack™ 300S

Triplex extrusion lamination line for aseptic board packaging

tinuous extruder monitoring, dsX flex-pack™ technology and stretch film capabilities. Davis-Standard will also exhibit a HPE-100H, 1" 24:1 extruder.

tiv-Check系统可以让处理器实时提供早期预警，能够提醒对挤出机的潜在故障进行预防维护。在故障发生前，设备操作人员会得到预警，避免了不必要的停机时间，在此期间还能收集到有价值的的数据。监视的关键参数包括来自于挤出机减速箱，润滑系统，电机特性，驱动功率单元，机筒加热和冷却单元的信息。

单工位挤出复合生产线dsX flex-pack™ 最新的已升级的型号是300S。这种生产线特别设计用于亚洲软包装市场。这是戴维斯标准美国、德国和中国的团队之间合作的成果，对价格、设备占地面积，速度和产量，以及更短的产品变换运行时间进行了定位。戴维斯标准同样能提供这种设备的串联式配置，称为dsX flex-pack™ 300T。今年年底，dsX flex-pack™ 300S将可以在苏州演示。

对于拉伸膜应用，戴维斯标准提供配备了DS S3收卷机的拉伸薄膜生产线。生产线有着紧凑的排列，易于维护，出色的厚度断面控制，恒定的膜卷质量以及直观的成套控制设备。生产线的设计目标为高速度生产 厚度31到 51gauge

(7.8μ to 13μ) 的薄型薄膜。DS S3 并排式搭叠收卷机对于实现这一功能是十分重要的，能够增加最大分切宽度，适合于生产手动缠绕膜卷、机械缠绕膜卷和大膜卷。这种收卷机同样能够直接成条，实现了一种收卷机支持多个细分市场。

HPE-100H 挤出机将作为戴维斯标准绩效工程设计的样机展示，这种挤出机具备多功能的特点，有着长远的市场价值和引人注目的投资回收期。这台挤出机设计用于共挤和多层用途，根据用途不同，可以选择多种多样的DSB®加料螺杆设计。挤出机的优点包括占地面积小、高扭矩能力从而能加工各种不同的原料以及直接连接电机。型号规格涵盖¾英寸 (20mm) 到 1.75 英寸 (45mm)，长径比L/D为 24:1 或 30:1。作为提供额外的支持，对挤出机实行3年质保期。

Davis-Standard 在2019中国国际橡塑展： 奥地利展团/9.2馆J41展位

The acquisition of Brampton in 2018 augmented the company's multi-layer film processing and winding technology for blown film applications. TSL (Thermoforming Systems LLC), also added in 2018, is the market leader in thermoforming equipment for high-volume packaging applications. TSL fits nicely with Davis-Standard's continued growth in the packaging sector. Maillefer, acquired in 2017, expanded the company's wire and cable, pipe and tube equipment offering, and added facilities in Finland and Switzerland to better serve customers, including those in China.

Davis-Standard's Suzhou location is expanding this year. The additional 35,000 square-foot (3,251 square-meter) facility near the existing shop in Suzhou will house control panel assembly and provide much-needed warehousing. The addition reflects Davis-Standard's strong extrusion coating business and long-term strategy in the region. Suzhou is also home to an R&D laboratory that supports Asia's medical market. This capability has been an asset to customers, and an excellent tool for supporting development of new resins and biodegradable products.

In response to the increased demand for "smart" technology, Davis-Standard recently introduced the DS Activ-Check system for continuous extruder monitoring. DS Activ-Check enables processors to take advantage of real-time preventative maintenance by providing early notifications of potential extruder failures. Machine operators are alerted to issues before they happen, preventing unnecessary downtime while also collect-

ing valuable data. Key parameters monitored include extruder reducer, lubrication system, motor characteristics, the drive power unit, barrel heating and cooling.

The latest dsX flex-pack™ model being promoted is the 300S. This single station extrusion and laminating line is designed specifically for the Asian flexible packaging market. It is a collaboration among Davis-Standard's teams in the U.S., Germany and China, addressing the pricing, machine footprint, speeds and output, and shorter runs demanded by converters. Davis-Standard is also engineering a tandem configuration of this machine called the dsX flex-pack™ 300T. The dsX flex-pack™ 300S will be available for demonstration in Suzhou later this year.

For stretch film applications, Davis-Standard offers a stretch film line equipped with a DS S3 winder. The line offers a compact machine arrangement, ease of servicing, excellent profile control, consistent roll quality and an intuitive control package. It is engineered for producing thin films from 31-to 51-gauge (7.8μ to 13μ) at high speeds. The side-by-side DS S3 overlapping winder is essential to this capability, enabling maximum slit widths for hand-wrap, machine-wrap and jumbo rolls. This winder also makes it possible for converters to support multiple market segments on one winder.

The HPE-100H extruder being shown is an example of Davis-Standard's performance engineering for versatility, long-term market value and an attractive return on investment. This extruder is designed for co-extrusion and multi-layer applications, and is available with a variety of DSB® feedscrew designs depending on application. Advantages include a small footprint, high-torque capacity to handle a variety of resins and a direct coupled motor. Models are available in ¾-inch (20mm) to 1.75 (45mm) inches with L/D's in 24:1 or 30:1. For added support, the extruder comes with a three-year warranty.

Davis-Standard at Chinaplas 2019: Hall 9.2, Booth J41

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www.davis-standard.com

www.smart-extrusion.com

创新的橡胶挤出和过滤器解决方案以及齿轮泵技术，是高水平提升质量和提高成本效益的有力保证

Innovative Rubber Extrusion and Strainer Solutions with Gear Pump Technology ensuring High Level of Quality Improvement and Cost-Efficiency

扩展产品范围，用于温和而清洁地加工橡胶和硅胶在2019年5月21-24日中国国际橡塑展期间展出“德国制造”在第33届塑料和橡胶工业国际专业展览上，来自德国 Fulda 的 UTH 有限公司将展示最新的产品。这些产品包括细网目过滤器系统，roll-ex® 齿轮泵技术以及最近的创新如 TRP 返工者系统，高分子材料计量系统，氟橡胶过滤解决方案以及适合于硅混合料应用的 roll-ex® MDSE 技术（基于锥形双螺杆挤出机）。

随着聚焦于橡胶挤出独特的齿轮泵技术以及细网目过滤技术，UTH 公司将针对高水平实用性，高成本效益和节省物料的应用需求，展示其解决方案。市场需求最高的质量和具备高成本效益的产品。为此，UTH 公司致力于制造出完美的橡胶和硅胶产品。产量高达 10,000 kg/h 的 UTH 公司 roll-ex® 齿轮泵挤出机系统树立了橡胶混合料细网目过滤产品全世界的基准。使用紧凑型双辊喂料器（TRF）或者锥形双螺杆喂料器（DSE）其中的一种，采用模块化设计的 roll-ex® 系统能够将过滤器组合到每一个特定的生产线设计中来。由于采用灵活和紧凑的设计，将系统无缝融合到现有的生产线也是可能的。

三十多年来，UTH 公司已经在国际市场上取得了成功，专门开发针对橡胶和硅胶行业客户需求的解决方案，以及制造和优化特殊的机器。

UTH 公司提供自动化系统和种类齐全的附件，并提供遍及全球的售后服务。

2019中国国际橡塑展：5.1号馆，A05号展台

Extended product range for gentle and clean processing of rubber and silicone “Made in Germany” at Chinaplas 2019. At the 33rd international specialized exhibition on plastics and rubber industries UTH from Fulda/Germany will be presenting its latest products. This includes Fine Mesh Straining Systems, roll-ex® Gear Pump Technology and new innovations like the TRP Reworker System, Polymer Dosing System, Fluor Rubber Straining Solutions and the roll-ex® MDSE Technology (based on the conical twin-screw extruder) for silicone compounding application.

With a focus on its unique Gear Pump Technology for rubber extrusion and Fine Mesh Straining Technology, UTH will present its solutions for applications requiring a high level of availability, cost-efficiency and material-saving. The market demands highly cost-effective products of the highest quality. Accordingly, UTH has focussed on perfecting the manufacturing of rubber and silicone products.



roll-ex® 220 TRF 细网目过滤橡胶混合料，产量可达 2500 kg/h

roll-ex® 220 TRF fine mesh straining of rubber compounds up to 2500 kg/h

With throughputs up to 10000 kg/h UTH's roll-ex® Gear Pump extruder systems have set the benchmark worldwide for fine mesh straining of rubber compounds. Using either the compact two-roll feeder (TRF) or a conical twin screw feeder (DSE), the modular design of the roll-ex® system enables the integration of the strainer in each specific line design. Because of the flexible and compact design a seamless integration into existing lines is also possible.

For over 30 years UTH has been successfully established on the international market specializing in the development of customer-specific solutions and for manufacturing and optimization of special machines for the rubber and silicone industry. UTH offers automation systems, a wide range of accessories and a global essential after sales service.

Chinaplas 2019: Hall 5.1, Booth No. A05

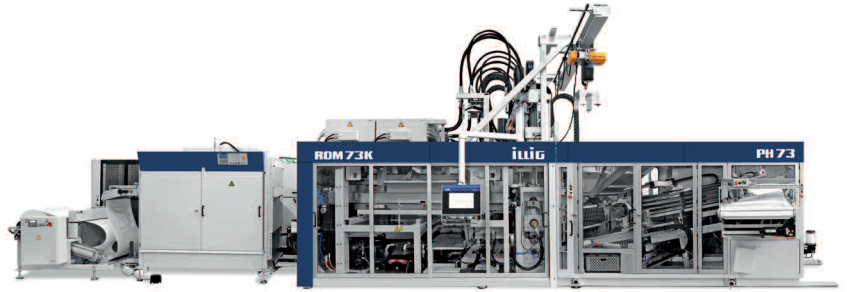
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最新 IC-RDM 73K热成型制杯机

Innovation IC-RDM 73K Thermoformer

换刀时间减少50%，性能提高25%

德国ILLIG是热塑性塑料热成型系统和模具系统的全球领先供应商。凭借独特的360°定制包装开发、Pactivity®和高性能包装系统，伊利格为其客户提供完善资源和可持续的解决方案。ILLIG将于2019年5月21日至24日在中国广州的中国国际橡塑展5.1展厅的M01号展位展出。此次的焦点自动成型机，是目前在热成型中领先的先进技术。重点是新的IC-RDM 73K热成型设备，增加产量，减少更换模具时间，集成在全自动生产线中，用于A-PET和A-PLA制成的饮水杯，以及IC-RDK 80自动成型冲压机，在椭圆形A-PET托盘上进行现场生产。ILLIG提供了关于其热成型系统、服务以及工具和模具技术组合的第一手信息。



中国国际橡塑展上，ILLIG将展示新型IC-RDM 73K自动热成型制杯机，具有高输出和快速换模系统。现场将用A-PET和A-PLA演绎制成饮料杯。

At Chinaplas ILLIG will be showcasing the new IC-RDM 73K automatic roll-fed machine with high output and a quick-change system for molds integrated in a fully automated production line for drinking cups made of A-PET and A-PLA (All pictures: ILLIG)

50% Less Tool Change Times and up to 25% Increased Performance

The German manufacturing company ILLIG is a leading global supplier of thermoforming systems and mold systems for thermoplastics. With the unique 360° packaging development, Pactivity®, and the high-performance packaging systems, ILLIG supplies its customers with resource-friendly and sustainable solutions. ILLIG will be at booth M01 in hall 5.1, at Chinaplas in Guangzhou. In the focus of the fair appearance are automatic roll-fed

machines, state-of-the-art in thermoforming. Highlights will be the new IC-RDM 73K thermoformer with increased output and halved tool change time integrated in a fully automated production line for drinking cups made of A-PET and A-PLA as well as the IC-RDK 80 automatic roll-fed machine with live production on the line of an oval A-PET tray. ILLIG provides firsthand information on its portfolio of thermoforming systems, services as well as the tool and die technologies.



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IC-RDM 73K性能亮点

IC-RDM-K机器是专门为吸塑热成型性材料生产各种形状和尺寸的杯子而设计的。在中国国际橡塑展上，ILLIG将展示新型IC-RDM 73K自动热成型制杯机，具有高输出和快速换模系统。与IC-RDM 70K机型相比，新的成型面积扩大了23%。所有的改进都有助于提高高达25%的生产性能，具体取决于应用情况。最新一代易于使用的模具更换系统减少了50%以上的工具安装和拆卸时间，也就是说，更换模具可以在不到60分钟内完成。此外，ILLIG在IC-RDM 73K中始终实施了Cleantivity®概念。在橡塑展中，将在生产线上使用32个模腔的模具，以每分钟50个周期的速度，每分钟生产1.600个饮料杯。杯子由A-PET和A-PLA片材（0.7毫米厚）制成。同时机器与在线PH 73堆垛机相结合。这一个可以配备不同的放电选项。只要应用程序发生变化，就可以通过模块化系统轻松调整PH 73堆叠系统。

IC-RDM K系列的机器也经常用在连接挤出机的连线生产，有利于大量生产数百万杯的饮料杯。ILLIG IC支持大批生产的相关方面，它包括用于一般流程优化、高生产率和可用性以及最小化运营成本的模块。

IC-RDK 80热成型系统

利用IC-RDK系列，ILLIG开发了一种成型和冲压技术，适用于实现射线和铰链包装的卓越零件质量和再现性，用于运输过程中保护食品和作为销售包装。机器具有高可用性和易操作性。加热材料由预拉伸器和压缩空气形成，产品在同一周期内由材料冲压而成。该方法使产品在成型过程中不会出现边缘冲孔失配现象，从而提高了包装加工的自动化程度。在橡塑展上，ILLIG将展示IC-RDK 80自动成型冲压机，并在一个0.4 mm厚的薄膜制成的椭圆形A-PET托盘上进行现场生产，A/B堆叠使用10个模腔的模具，速度为每分钟50个周期。

利益的多样性

ILLIG热成型生产线的好处是显而易见的：薄壁包装意

味着原材料的有形节约，从而降低生产成本；高工作周期可以提高完美成型品的高产量；热成型模具可以快速轻松地更换。ILLIG代表热成型领域的开拓和创新，确保高质量产品的高速生产。

Pactivity® 360°定制热成型包装

从理念到最终包装，再到完整的生产系统：通过pactivity®，ILLIG为客户提供360°定制包装完整解决方案，提供他们的热成型包装的发展服务-一条龙整线完整服务。

Cleantivity® 高洁度概念

凭借Cleantivity® 高洁度概念，伊利格集团始终奉行提高热成型生产率战略。这部份有助于延长热成型机器的高质量运作时间，提高设备的运作效率和高品质成型品的产量。

模具车间

ILLIG模具的USP是通过在同公司内部协调开发模具和热成型机而获得的协同效益。在开发热成型机及其模具方面的共同专业知识使ILLIG处于市场上设计最先进模具的最佳位置。

IML-T®

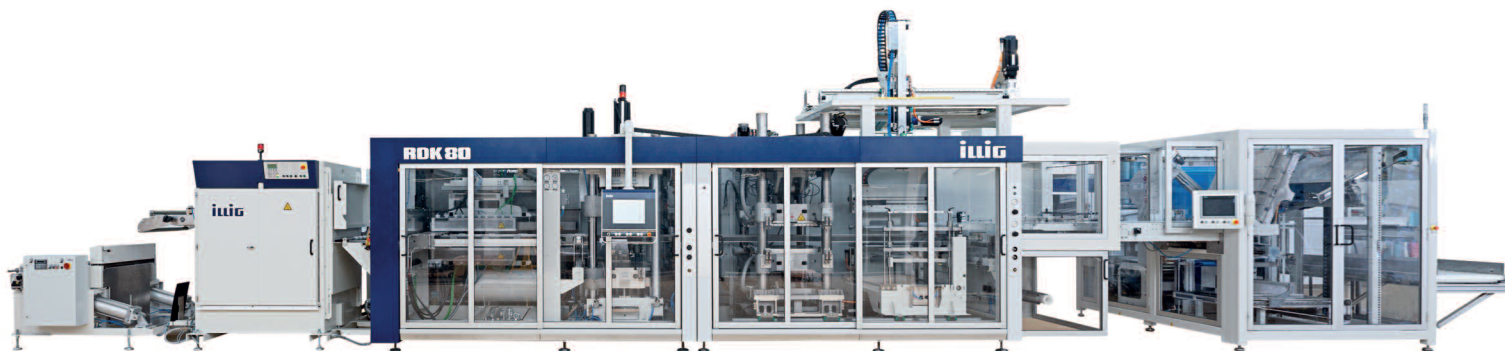
ILLIG帮助客户在销售点定位其旗舰产品，在ILLIG的IML-T® 模内贴标系统上生产。由于实现了单一材料的包装（装饰和同一材料的包装），包装也具有可持续性，从而简化了回收利用。

服务

ILLIG一直为全球客户提供全面的售后支持。这包括ILLIG 线上协助、服务热线、零备件和升级技术培训和咨询以及维修、维护和调试。

在橡塑展上，ILLIG将展示IC-RDK 80自动成型冲压机，并在现场演绎生产椭圆形A-PET托盘。

At Chinaplas ILLIG will be showcasing the IC-RDK 80 automatic roll-fed machine with live production on the line of an oval A-PET tray



Performance-Highlight IC-RDM 73K

IC-RDM-K machines are designed specifically for serial production of cups in various shapes and sizes from thermoplastic material. At Chinaplas ILLIG will be showcasing the new IC-RDM 73K automatic roll-fed machine with high output and a quick-change system for molds. Compared to the IC-RDM 70K machine, the forming area of the new machine was enlarged by 23 percent. All improvements together contribute to an up to 25 percent increased production performance, subject to application. A new, easy to use system for block change of molds reduces tool installation and removal times by more than 50 percent, i.e. the change can be performed in less than 60 minutes. Moreover, ILLIG consistently implemented the Cleantivity® concept in the IC-RDM 73K. At Chinaplas 1.600 drinking cups will be produced on the line using a 32-up mold, at a speed of 50 cycles per minute. The cups are made of A-PET and A-PLA films (0.7 mm thick). The trade fair machine is combined with an in-line PH 73 stacking machine. This one can be variably equipped with different discharge options. Whenever the application changes the PH 73 can be easily adapted thanks to the modular system.

Machines of the IC-RDM K series are also frequently used as in-line systems with pre-linked extruders, e.g. for large-volume production of drinking cups in quantities of millions. The ILLIG IC supports the aspects relevant for large-volume production. It includes modules for general process optimization, high productivity and availability as well as minimization of operation costs.

IC-RDK 80 Thermoforming system

With IC-RDK series ILLIG developed a forming and punching technology suitable to achieve excellent part quality and reproducibility of rays and hinged packs, used for protection of food during transport and as sales packs. The machines feature high availability and easy operation. Heated materials are formed by means of pre-stretcher and compressed air; the part is punched out of the material in the same cycle. Thanks to this method, parts can be manufactured without punching mismatch in the rim area and thus automatic pack processing is improved. At the trade fair ILLIG will be showcasing the IC-RDK 80 automatic roll-fed machine with live production on the line of an oval A-PET tray made of a 0.4 mm thick film with A/B stacking using a 10-up mold, at a speed of 50 cycles per minute.

The variety of benefits

The benefits of an ILLIG thermoforming production line are unmistakable: Thin-walled packaging means a tangible savings in raw materials and thus lower production costs; the high working cycle results in a high output of flawlessly formed parts; and the thermoforming molds can be exchanged quickly and easily. ILLIG stands for pioneering and innovation in thermoforming, which ensures high-speed production of high-quality parts.

Pactivity® 360°

From the idea to the final packaging and to the complete production system: With Pactivity®, ILLIG provides the customer with a 360° custom-made packaging solution including development services for thermoforming packaging – all from a single source.

Cleantivity®

With the Cleantivity® concept ILLIG has consistently pursued a strategy of increased productivity in thermoforming. Learn more about optimized quality time and clean production with high machine availability.

Mold and die shop

The USP of ILLIG molds is the synergistic benefits gained through the coordinated development of both molds and thermoforming machines in the same company. The shared expertise in developing both the thermoforming machines and their molds puts ILLIG in the best position to engineer the most highly developed molds on the market.

Brilliantly decorated with IML-T®

ILLIG helps the customer's to position their flagship products at the point of sale, produced on ILLIG's IML-T® systems. The packaging is also sustainable because of realization of single-material packaging (decoration and packaging in the same material), which simplifies recycling.

Service

ILLIG has been serving its customers across the globe with comprehensive worldwide after-sales support. This includes ILLIG NetService, Hotline, Spare parts and upgrades Technical training and consulting as well as repairs, maintenance and commissioning.

ILLIG at Chinaplas 2019: Hall 5.1, Booth M01

2019中国国际橡塑展 : 展馆5.1 展台号M01

ILLIG China 海宁伊利格
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最新技术分切复卷机用于薄膜生产和后加工

State-of-the-Art Slitter Rewinders for Film Processing and Converting

中国作为塑料橡胶生产加工最重要的市场 – 德国是中国生产厂商及后加工厂商主要的设备供应商。紧密的合作关系已经延续多年，尽管中国橡胶塑料行业的发展于今年趋缓，这种紧密的合作仍将继续。中国依旧是市场的主要全球参与者：最终用户市场在发展并且高质量产品的需求在增加。格贝尔艾玛斯通过提供高性能的分切复卷设备产品组合来回应发展的需求，设备覆盖了基材宽度从 1800 毫米到 12000 毫米。

作为创新分切复卷解决方案的世界领先供应商，格贝尔艾玛斯将在中国国际橡塑展 2019 高调展示其全面的高性能分切复卷设备组合：从 5 月 21 到 24 日，该历史悠久的设备制造商欢迎来访者到 A47 展台，5.1 展馆品鉴其最新分切复卷解决方案：MONOSLIT 莫诺系列，INTERSLIT 因特系列，XTRASLIT 艾特 2 型，及 INTERSLIT BSF 因特电池隔膜分切机。设备覆盖了基材宽度从 1800 毫米到 12000 毫米的全部范围并且在薄膜生产和后加工设立标准。所有分切复卷设备具有最新前沿技术结合了高性能及顶级质量。

MONOSLIT 莫诺系列，包括 MONOSLIT 莫诺型分切机工作宽度 9000 毫米及 MONOSLIT GIANT 工作宽度 12000 毫米。设计用于加工多种薄膜如，BOPP, BOPET, OPP, CPP, BOPA, BOPS 及其它特种薄膜。薄膜厚度从 0.5 到 500 微米，加工速度高达 1500 毫米/分钟，高速运行极为平稳确保最佳成品质量。新的机器设计能够适用放卷直径达 1.8 米，收卷直径达 1.5 米，收卷工位最大承载料卷重量达 5000 公斤。

INTERSLIT 因特型分切机，已经被证明非常成功，特别是在亚洲市场。因特型分切机基于莫诺型，设计用于高产量加工薄膜宽达 7000 毫米。另外特别紧凑设计的艾特 2 型分切机适用于薄膜宽度达 3600 毫米。设备适于厚度从 0.5 微米到 500 微米的包装薄膜，电容膜，热转移薄膜，镀铝膜及工业厚



膜或光学膜。机器收卷工位能够承载特别大重量膜卷达 5000 公斤，配合放卷直径达 1550 毫米，收卷直径达 1300 毫米。由于采用超轻浮辊系统确保高速生产基材张力的恒定从而使最高速度 1200 米/分钟得到保证。因特型能够生产窄幅料卷，最小分切宽度从 180 毫米起。

尽管名字相同，因特BSF型分切机确实不同：该初级分切复卷机特殊设计用于加工超敏感材料如湿法电池隔膜。为达到最高效率，因特BSF型分切机为每个用户特殊定制，适用于薄膜宽度达6000毫米，放卷和收卷直径以及运行速度依用户要求而调整。为了获得最佳效果，该创新分切复卷机提供多种最新特性。特别紧凑的收卷工位概念配合放卷到收卷的最短薄膜路径从而提供最为低张力的范围。凭借人体工学的设计，设备功能便于全方位接近确保卸卷及设定的最高效率。极为精确的无粉尘最佳分切方案采用独立驱动剪切顶刀嵌入在独立驱动碳纤维底刀轴。另外可选择传统剃刀刀座。额外的切刀吸尘系统及双面膜面清洁装置可供安装在下游收卷工位。所有格贝尔艾玛斯分切复卷机包括数字交流驱动技术提供高能源回收，节省能耗以减少运行成本。更进一步，设备可以提供经济型和标准型号以备选择，同时可选择一系列的技术特性升级。

2019中国国际橡塑展：5.1号馆，A47号展台



China is the most important market for manufacturing and processing plastics and rubber – Germany is the major supplier of machines for Chinese manufacturers and converters. This close relationship exists for many years and there is no end in sight even though the economic growth of the Chinese rubber and plastics industry has recently slowed down. Still, the People's Republic is one of the main global players in the market: The end-user market is growing and demands for high-quality products are rising. GOEBEL IMS answers this trend by offering a top-performing portfolio of slitter rewinders, that covers the complete web width from 1,800 to 12,000 mm.

As one of the global leaders in innovative slitting and winding solutions, GOEBEL IMS will highlight its comprehensive portfolio of high-performing slitter rewinders at Chinaplas 2019: From May 21st to 24th, the long-established manufacturer welcomes visitors at booth A47 in hall 5.1 and informs about its latest slitting and winding solutions: MONOSLIT series, INTERSLIT, XTRASLIT 2 and INTERSLIT BSF. The machines cover the complete range of web widths from 1,800 to 12,000 mm and set standards in film processing and converting. All slitter rewinders combine high performance and top quality with cutting-edge technology.

The **MONOSLIT** series, comprising the MONOSLIT with a working width of up to 9,000 mm and the MONOSLIT GIANT with a 12,000 mm working width, are designed for converting a broad spectrum of films, such as BOPP, BOPET, OPP, CPP, BOPA, BOPS and other special films. Materials with thicknesses between 0.5 and 500 µm can be converted at a speed of up to 1,500 m/min, featuring an extremely smooth run at maximum speed while guaranteeing outstanding quality of the end product. The new machine design allows for an unwinding

diameter of up to 1,800 mm and a rewinding diameter of up to 1,550 mm, with winding stations carrying a maximum finished roll weight of up to 5,000 kg.

The **INTERSLIT**, that has already proven very successful, especially on the Asian market, is designed for the highly productive processing in the range of intermediate widths of up to 7,000 mm. It is, on the one hand, based on the MONOSLIT and, on the other hand, on the especially compactly designed XTRASLIT 2, that covers working widths of up to 3,600 mm. The INTERSLIT is suitable for foil thicknesses of 0.5 to 500 µm and processes packaging films, capacitor films, thermal transfer films, metallized films and thick films for industrial or optical applications. The machine's winding stations can accommodate a remarkably high roll weight of up to 5,000 kg with an unwind diameter of up to 1,550 mm and a rewind diameter of up to 1,300 mm. Top speeds

of 1,200 m/min are guaranteed thanks to the ultra-light dancer roller ensuring constant web tension even at high speeds. The INTERSLIT allows for the production of narrow rolls, starting from a minimum slitting width of 180 mm.

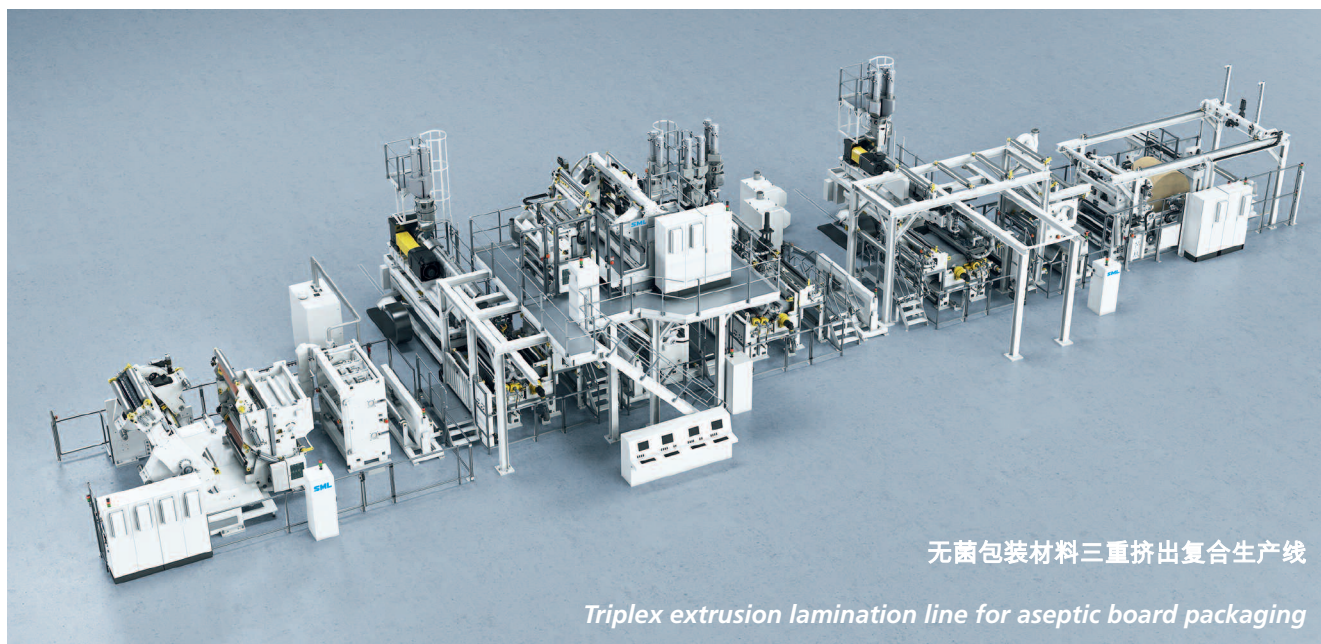
Though sounding similar, the **INTERSLIT BSF** is truly different: This primary slitter rewinder is specifically designed to process hypersensitive materials such as battery separator film also based on wet-processed BOPE. To achieve maximum efficiency, the INTERSLIT BSF is tailor-made for every customer. It can convert web widths of up to 6,000 mm while unwind and rewind diameter as well as speed are adjusted according to customers' needs. To ensure the best results, the innovative slitter rewinder offers multiple state-of-the-art features. The especially compact station rewinder concept with a short web path from unwind to rewind keeps the web on track and allows lowest web tension ranges. Thanks to the ergonomic design, the machine is functionally accessible all around and thereby ensures highest productivity during unloading and set-up. The top solution for most precise and dust reduced cutting are individual driven shear top knives which are embedded in a carbon fiber body bottom cutter shaft that also can be driven independently. Alternatively, classical razor blade holders can be used. Additionally, knife de-dusting systems and double-sided web-cleaning devices downstream the unwinding unit are available. All GOEBEL IMS slitter rewinders comprise a digital AC drive technology that allows for highly efficient energy recovery and, thus, helps reducing operational costs and improves energy savings. Further, the machines come as an economic, basic model and with special upgrade options including a range of technical features.

Chinaplas 2019: Hall 5.1, Booth No. A47

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Triplex extrusion lamination line for aseptic board packaging

三重挤出复合生产线：化繁为简

Triplex extrusion laminating line: refines complexity into simplicity

SML推出新颖的三重挤出复合生产线，在不同的放卷单元和三台复合装置之间，通过精密的交互作用可处理完全不同的材料，如纸张、纸板和铝箔，是SML这台设备根本特征之一，通过一步简单和经济合算的加工过程，即可生产出用于无菌包装的材料。这条复杂生产线的特点是精心的设置，它与坚固耐用的机器设计、经验证的可靠部件和最新的先进技术结合在一起，为操作者带来了极大的便利，实现了最高的生产效率。与最新推出的自动化系统以及功能强大的数据记录系统一起，为最终用户提供了最大化的可追溯性和质量控制，这意味着设备已准备好迎接工业4.0的挑战。

MDO单元带来了极大的灵活性和卓越的薄膜产品

基于数十年的经验，SML已经设计出了新型单向拉伸装置，为加工数量巨大的各种各样不同种类、不同结构的宽幅薄膜提供了巨大的灵活性。设备的主要优点在于能够通过伺服电机在70到350mm之间联机改变拉伸间隙的方式控制薄膜的性能。这一点很重要，因为要获得最好的PP和PE薄膜特性需要较短的拉伸间隙，而拉伸PET薄膜需要较大的间隙。该装置在改善薄膜外观质量、获得更好韧性、增强阻隔性能的同时减少薄膜厚度等方面可确保优异的效果。并且不要忘记，还可生产用于卫生领域的透气薄膜。

总之，采用SML新颖的MDO拉伸技术，意味着较高的生产速度和产量，并且还具有工艺的灵活性以及卓越的薄性能性。

PET片材生产线和三种挤出的选择

SML挤出理念的第三个重点是PET/rPET 片材挤出生产。

由于SML在PET挤出方面拥有深厚的经验，能够针对客户的不同产品用途和原料来源，协助其选择最好的挤出系统：带有预干燥装置的单螺杆挤出机、回收挤出机，或者锥形双螺杆挤出机解决方案。不管采用哪一种高性能解决方案，都意味着稳健的资本投入，以及高产量、低能耗、操作简便和最少的维护需求。

SML 在2019中国国际橡塑展： 奥地利展团/9.2馆A61展台

The precise interaction between different unwinding units and three laminators, managing very different materials like paper, board and aluminium, is one of the essential characteris-

tic of SML's new triplex extrusion lamination line for aseptic board packaging in one simple and cost-effective process. The complex line is characterised by an elaborated setup, which is combining durable machine design, proven components and the latest state-of-the-art technology with a maximum of operator convenience and production efficiency. With the newly introduced automation system in combination with a powerful data logging system it is giving maximum traceability and quality control to the end user – making the machine ready for the challenge of industry 4.0.

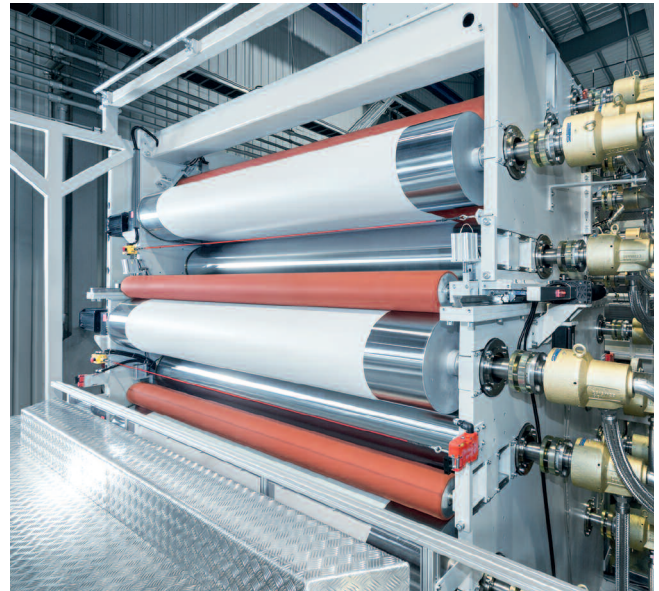
MDO units for greater flexibility and excellent film results

Based on decades of experience SML has designed a new mono-axial direction orientation unit which offers greater flexibility in terms of processing a huge variety of different film types and structures in large film widths. Its main advantage lies in its ability to control film properties through the inline variation of the stretching gap between 70 and 350mm using a servomotor. This is significant because the best PP and PE film characteristics result with a shorter gap, while a longer gap is required when stretching PET film. Excellent results are guaranteed in terms of improved visual qualities, achieved tenacity, increased barrier properties and reduced film thickness. And not to forget the breathability for hygiene applications.

In short, stretching using SML's innovative MDO technology means higher production speeds and output in combination with process flexibility and excellent film properties.

PET sheet lines and the choice of three extrusion concepts

SML's third focus is on its extrusion concepts for PET/rPET sheet production. Due to SML's vast experience in PET extrusion, SML assist its customers in the selection of the best extrusion system for their application and available feedstock: single-screw extrusion with pre-drying, recycling extruder or conical twin-



SML的 MDO单元大大提高了生产效率
SMLs MDO unit boosts productivity

screw extruder. No matter which high-performance solution is used, they mean moderate capital expenditure, along with high output, reduced energy consumption, ease of operation and minimised need for maintenance.

SML at Chinaplas 2019: Austrian Pavillon / Booth no: 9.2A61

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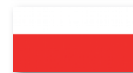
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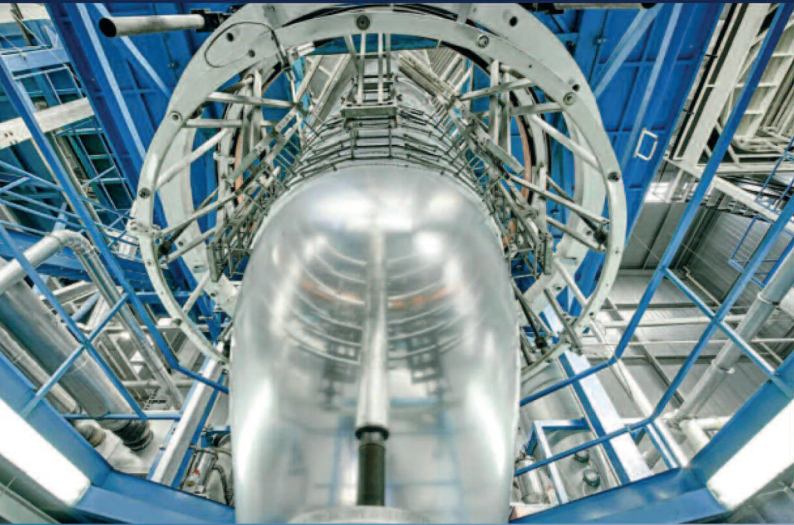


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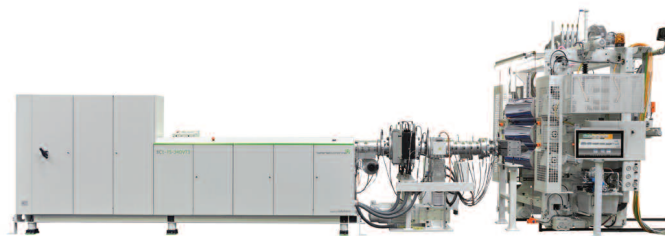
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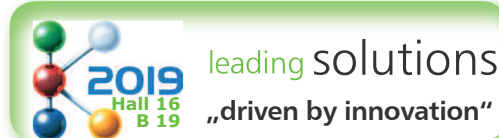
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