01/2017

VM VERLAG
Cologne/Germany

EXTRUSION INTERNATIONAL DIGITAL

p. 25

Zumbach RAYEX® S – X-Ray Measuring and Control Technology for Single and Multilayer Products

STEIN BLUE-LINE
for a sustainable future

EXPERTS IN DOWNSTREAM

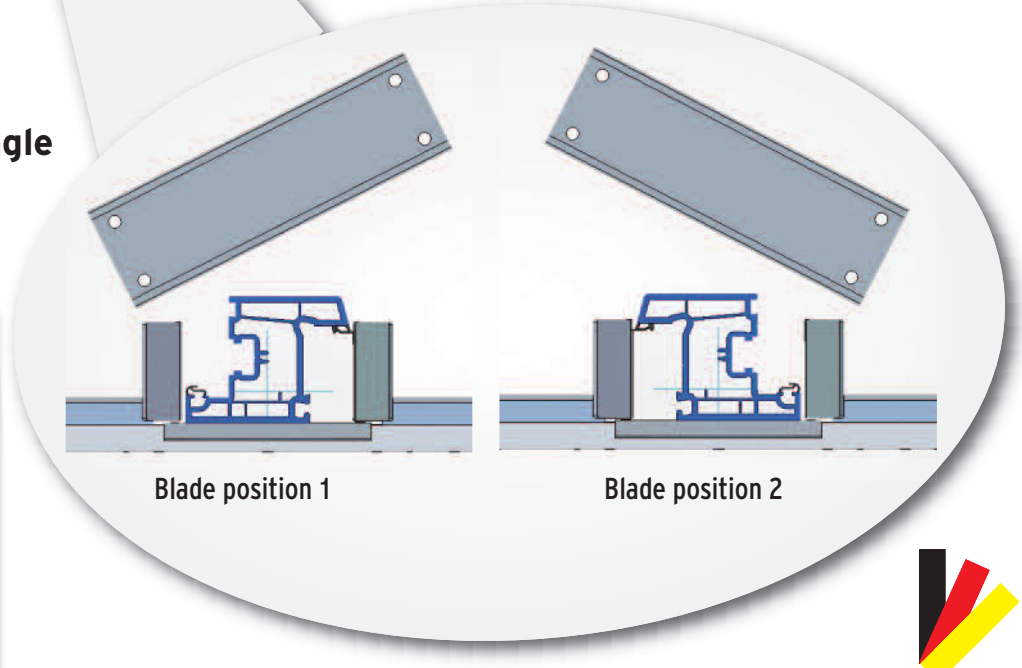
The NEW generation of cutters for profiles

- **Mirrored** changing of the **cutter angle** during **running production**
- For optimised cutting of the respective profile
- Changing within 10 to 15 seconds, between two cuts
- Without loosening screws, by hand, with pneumatic clamping device using two retaining cylinders
- **Sensational price thanks to increasing demand and manufacturing in large quantities**

The cutter was manufactured for the first time in 1998 and in constant use throughout the world. They offer the absolute best cutting quality for glass strips, small profiles, main profiles and technical profiles.

Additional devices such as automatic film wrapping, measurement wheels for precise length determination or lettering with inkjet or laser printers can be attached.

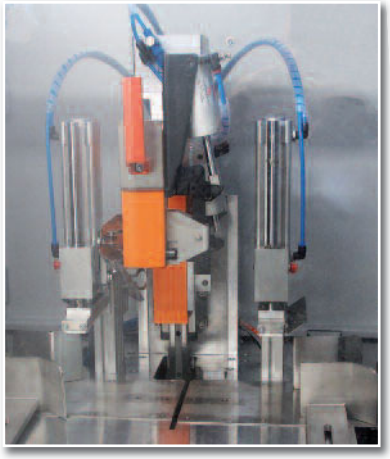
PTW-200
changeable cutting angle



Blade position 1

Blade position 2

Cutting Unit

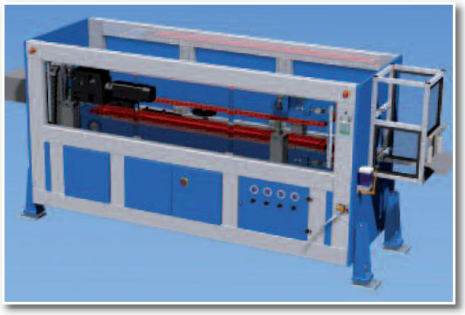


Made in Germany

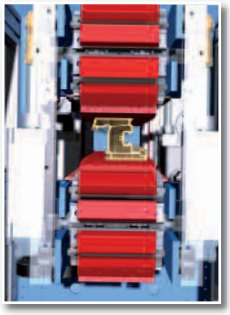
EQUIPMENT FOR EXTRUSION

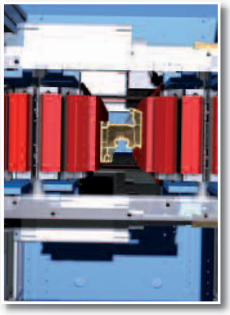
FOR PROFILE EXTRUSION LINES

Calibration table KTS 01, rear



Caterpillar Haul off

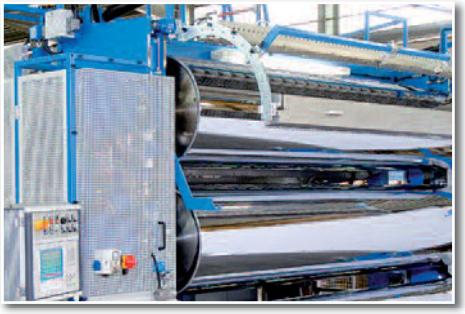




Haul off rotating 90°

PRO 63 automatic stacker

FOR SHEET EXTRUSION LINES



Calender

Roller withdrawal AZ 8, outlet side

Slitting RB 2 with four sawing stations

Transverse separating cutter QSS, inlet

„STEIN BLUE-LINE – for a sustainable future"
stands for sustainable and energy-efficient equipment.

Almost 100% domestic production and the high degree of manufacturing penetration guarantee compliance with even the most stringent of demands.

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Fax +49/63 96/92 15-25
stein@stein-maschinenbau.de ·
www.stein-maschinenbau.de

Davis-Standard's Thermatic extruder is ideal for demanding processes such as heat shrink tubing because it is built for durability, minimal maintenance, and quiet operation.

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In future, all twin-screw extruders in the ZE BluePower, ZE UTX and ZE Basic series will be equipped with the innovative BPCTouch control solution. This system substantially enhances ease of use and reduces set-up times during compound changes.

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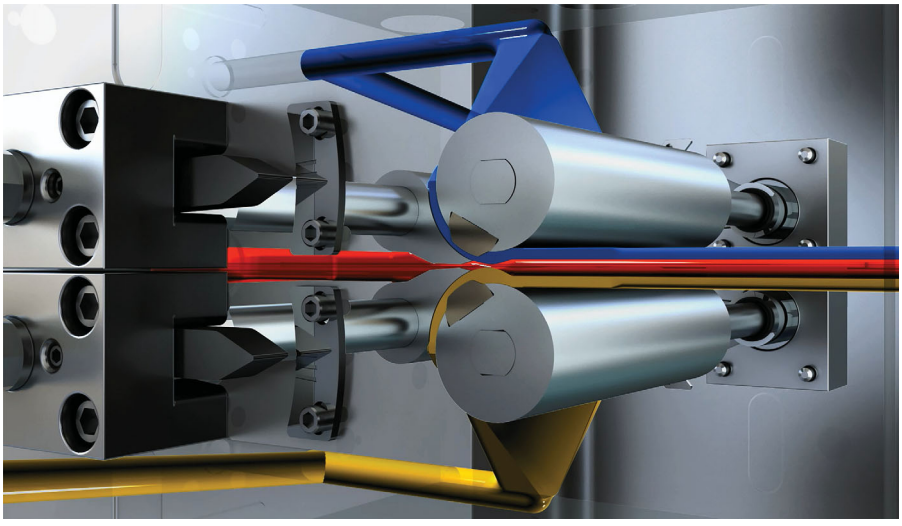
The compact 26.5 mm diameter corotating twin-screw extruder for product development of various compounds and masterbatches in engineering and high performance thermoplastics.

Page 24



The new EDI™ Ultraflow™ V-T feedblock has separate devices for fine-tuning layer stability and thickness uniformity, and both are capable of being adjusted without stopping production.

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ICE Europe 2017
21–23.03.2017
Munich/Germany
www.ice-x.de

Plastic Materials and Rubber Machines – Moulds – Subcontraction
23–25.03.2017
Parma/Italy
www.mecspe.com

SOLIDS Dortmund 2017
Trade show for granules, powder and bulk solids technologies
10–11.05.2017
Dortmund/Germany
www.easyfairs.com/schuettgut-de

CHINAPLAS 2017
11.05.2017
Pazhou, Guangzhou, PR China
www.ChinaplasOnline.com

IPTF 2017
5th International Polymer Technology Forum
13–14.06.2017
St.-Petersburg/Russia
www.iptf.ru

Equiplast 2017
The International Plastics and Rubber Event
01–05.10.2017
Barcelona/Spain
www.equiplast.com

FAKUMA 2017
International trade fair for plastics processing
17–21.10.2017
Friedrichshafen/Germany
www.fakuma-messe.de/en/fakuma/

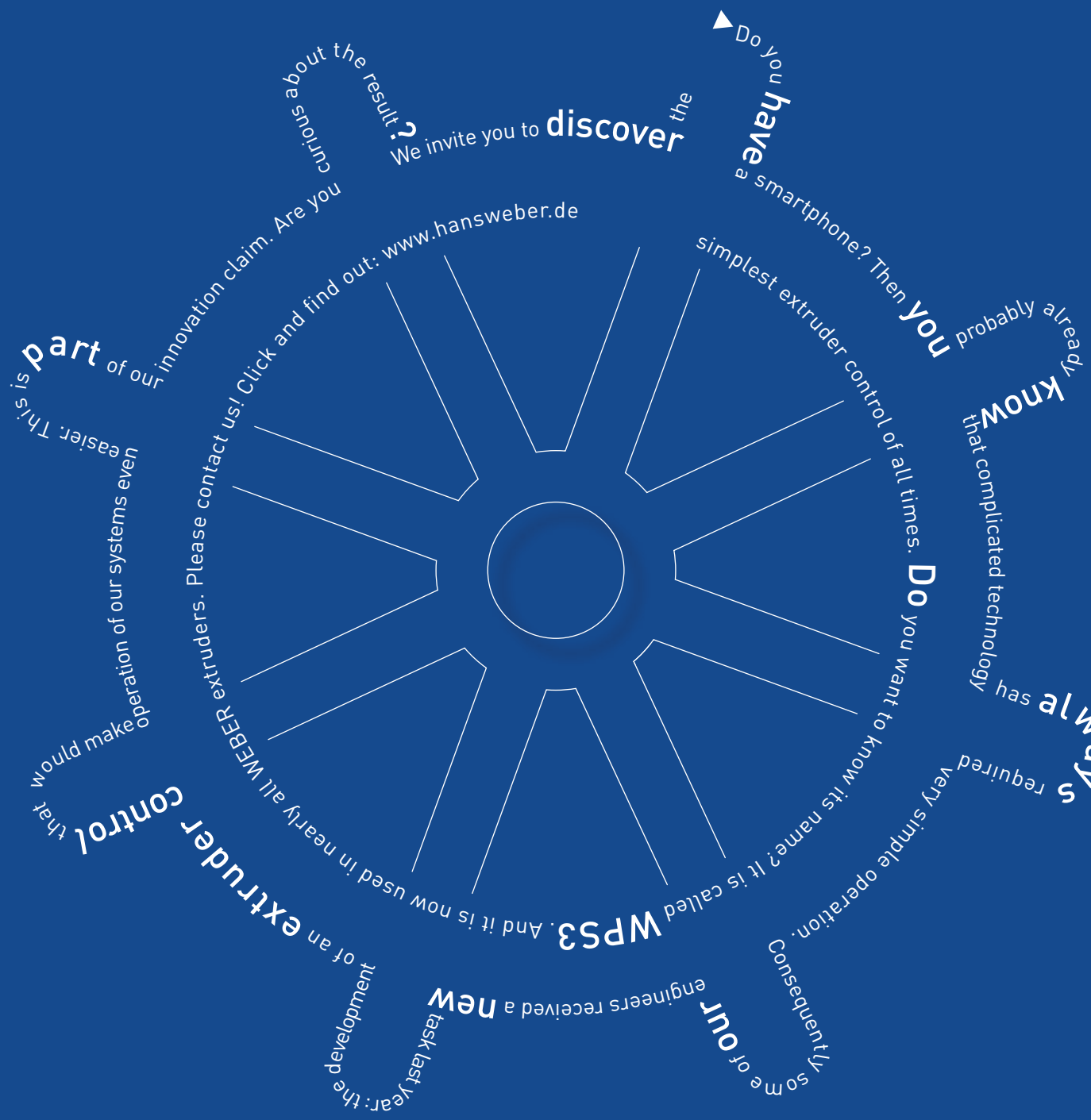
Reifenhäuser sells Reimotec to Dietze+Schell

■ With effect from February 1, 2017, Reifenhäuser Maschinenfabrik and Dietze+Schell Maschinenfabrik consolidate their activities in the niche markets monofilaments, strapping tapes and artificial turf. Reifenhäuser transfers the two companies Reimotec Maschinen- und Anlagenbau, and Reimotec Winding Technology to the Coburg-based company.
In the recent past, Dietze+Schell had already purchased Sima and Techno Plastic. Against this background a further consolidation was a strategically reasonable move for both parties to strengthen the new business unit by bundling competencies in this market.
The companies have agreed not to disclose the sales price.

About Reifenhäuser
The Reifenhäuser Group, based in Troisdorf near Cologne, Germany, is the world's leading supplier of plastics extrusion lines, machines, and components for the production of cast films, blown films, sheets and nonwovens. 1500 employees in five business units bundle highly specialised knowledge in design, process technology, automation systems, project planning, manufacturing, project management and logistics. Over recent years, the group has considerably grown, both organically and through acquisitions. Together, the companies generated annual sales of over 500 million.

About Dietze+Schell
The Dietze+Schell Group, based in Coburg, Upper Franconia, is the world's leading producer of spooling, texturizing, cutting and extrusion lines for applications in areas such as glass fibres, carbon, technical yarns and tapes, as well as artificial turf and strapping tapes. Together with its Italian sister company Sima/Techno Plastic, Dietze+Schell offers complete solutions for monofilaments, especially artificial turf, concrete reinforcement, strapping tapes and slit film tapes. The Dietze+Schell Group has production locations in Germany, Italy, the USA and Czech Republic and generates sales of over 100 million euros with a workforce of 300 employees.

www.reifenhauser.com



hansweber.de

WEBER

Extruder Technology

WPS3 – the brand new “cockpit”

for WEBER extruders

More structured, more intuitive, simply better: Nearly all WEBER extruders now feature the WPS3 operating unit. This new development now makes controlling the systems even easier. The 21.5“ touch screen with full HD resolution (16:9) and the modern smartphone display structure make operation of the extruder easier than ever before.

Scan Code and learn more about WPS3 extrudertechnologie.de/1/features/

Features

// Operating system on Windows 7® basis
// Intuitive operation
// Key pads and wheel integrated into the panel for precise setting of target values
// Graphic display of the machine on a full HD touch screen (16:9)
// All relevant machine data at a glance
// Integrated analysis functions
// Integrated SQL server for data recording and web server (PHP) for data queries
// Integrated interfaces CAN bus and X2X bus
// Optional: Profibus, Powerlink and OPC
// Remote query if an internet connection is available
// Pre-heating of the machine using timer function

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WEBER

battenfeld-cincinnati USA appoints new President & CEO

■ Effective 1 January 2017, Paul Godwin will take over the position as President & CEO of battenfeld-cincinnati USA. Mr. Godwin brings with him an extensive experience in extrusion processes, material and equipment. He started his career with Dow Chemical in 1979 and held professional assignments with Bayer, HPM and Maag prior to joining battenfeld-cincinnati USA, where he led sales and marketing and, most recently, the engineering department.

"Paul is an industry insider and has been with battenfeld-cincinnati USA for almost two decades. His in-depth experience ideally positions him to advance battenfeld-cincinnati's commitment to equipping customers with the technologies, services and expert support they need to succeed in today's demanding marketplace," says Gerold Schley, CEO of the battenfeld-cincinnati group.

"We have a highly experienced and motivated team, and I look forward to working with them in my new capacity. I am excited to continue the support of our customer base and promote battenfeld-cincinnati USA as the leader in technology and support," says Paul Godwin, President & CEO of battenfeld-cincinnati USA.

Paul Godwin, President & CEO of battenfeld-cincinnati USA

www.battenfeld-cincinnati.com/usa

Davis-Standard Thermatic® Extruders to China Operation

■ DSG-Canusa Polymer Technologies Company recently augmented their tubing operation in China with the purchase of two Davis-Standard Thermatic® extruders. The extruders, installed last summer, are being used for processing premium heat shrink tubing to support automotive, electrical/utility and electronics markets. In a highly competitive Chinese extruder market, DSG-Canusa chose Davis-Standard due to world-class machines, the proximity of Davis-Standard's Suzhou subsidiary, a short delivery time, and customized features for DSG's proprietary tubing requirements.

"We like the processing stability of these machines and the local technical support and spare parts services. Davis-Standard's presence in Suzhou was a key part of our decision because we can call on them locally," said Johnson Zhu, Manager, Engineering for DSG-Canusa. "The Thermatic offers a lot in terms of capabilities and versatility, but we especially like the performance of the cooling device and gearbox control system. We've built our business on quality, technology and service, and we know these machines will help us consistently produce high-quality tubing."

Davis-Standard's Thermatic extruder is ideal for demanding processes such as heat shrink tubing because it is built for durability, minimal maintenance, and quiet operation. For DSG-Canusa, this tubing includes single wall, dual wall, medium/heavy wall, specialty non-polyolefin, and automotive heat shrink tubing as well as braided sleeves. As with many of Davis-Standard's customers, DSG-Canusa appreciates the Thermatic's range of options for feedscrews and control systems, offering opportunities for future expansion. Sizes range from 1 ½ to 10 inches (40 to 250mm) with L/D's from 12:1 to 40:1.

www.davis-standard.com

ICE Europe 2017

■ *Focus on diversification of converting techniques and efficient conversion of materials*

From 21 - 23 March 2017, ICE Europe will celebrate its jubilee at the Munich Trade Fair Centre, Germany. For the 10th time, the World's Leading Converting Exhibition presents technological innovations and the latest manufacturing trends for the conversion of flexible, web-based materials, such as paper, film, foil and nonwovens. The 2017 show will focus on the efficient and sustainable conversion of premium quality flexible materials, as well as on the diversification of converting techniques in the context of automation and digitisation. ICE Europe 2015 added another record to the show's long-standing success story, with a total of 7,040 visitors from 71 countries. One of the highlights at this year's show will be the presentation of the ICE Europe 2017 Jubilee Awards in four categories. The free Show Preview and Visitor Guide in print are ready to order from www.ice-x.com/europe, where the Show Preview is also available in a new online format. Online Tickets for the exhibition will go on sale from mid-January.

Exhibition Profile

On some 11,000 m², more than 400 international exhibitors will showcase cutting-edge materials, technology, production solutions and systems as well as services from all key areas of converting: Materials, Coating/Laminating, Drying/Curing, (Pre)Treatment, Accessories, Slitting/Rewinding, Flexographic/Rotogravure Printing, Finishing, Factory Management/Waste Disposal, Retrofits/Machine Upgrades, Toll Coating/Converting/Slitting, Control, Test & Measurement, Software as well as Services, Information & Communication. Visitors to the show are managing directors, plant managers, design and production engineers, technical managers, purchasers and sales and marketing directors from Packaging, Food, Pharma/Healthcare/Medical, Decoration/Furniture, Electronics, Plastics, Printing, Building/Construction, Automotive, Textiles/Nonwovens, Wipes, Paper, Chemicals, Agriculture, Aviation, Recycling and Engineering. The results of ICE Europe 2015 represented a 7% increase in visitor numbers and a 10% increase in exhibitor numbers and floor space: 7,040 visitors from 71 countries and 439 exhibitors from 26 countries came to the previous exhibition.

Visitor Information

The official ICE Europe 2017 Show Preview features concise information about the event, as well as detailed exhibitor profiles and product information. It is now available in print and – for the first time – in an improved online format including a search function. Visitors can order their free copy via the 'Visitors' section on the ICE Europe website (www.ice-x.com/europe), the mailout will be at the end of January. The free Visitor Guide is also available to order online in five different languages. Furthermore, the multilingual website provides the latest news and updates, as well as photos, videos and a number of useful tools, such as the option to sign up to the official exhibition newsletter and create a personalised Online Show Planner (from the end of January).

New in 2017: Extended opening hours due to high demand

In response to multiple requests from the last show survey, ICE Europe 2017 will offer extended opening hours on the first two show days, 21 - 22 March, from 9.00 - 18.00; opening hours on Thursday, 23 March will be from 9.00 - 16.00.

Exhibition venue and co-located event CCE International 2017

ICE Europe 2017 will take place in halls A5 and A6 of the well-connected Munich Trade Fair Centre, accessible via Entrance East. Visitors arriving at the airport can make use of a regular shuttle bus service on each show day. Once again, the exhibition will be co-located with CCE International, the 3rd International Exhibition for the Corrugated and Folding Carton Industry, in halls B5 and B6. Experts from both industries can discover sustainable packaging trends and find solutions along the entire value chain, from raw materials to converting techniques and refinement. This year's CCE International will present cutting-edge technologies, manufacturing systems and the latest solutions for the production and conversion of corrugated and cartonboard, with a spotlight on new application fields, in the areas of print and finishing techniques.

➟www.ice-x.com/europe

New 800 Series Hybrid extrusion tooling

■ Guill announces the introduction of a new version of its popular 800 series, known as 800 Series Hybrid. In some extrusion applications that utilize crossheads and inlines, layers of the exact same material are applied multiple times, using a single die. This method is used to reduce the propensity for errors caused by gels breaking through a thin wall, weld lines, inconsistent wall thickness, plus material and process variations. Additional errors include difficult-to-process materials and demanding applications where there is zero fault tolerance.

Seeking to design the next generation multi-layer die to overcome these challenges, the engineers at Guill looked for a way to incorporate this technology into an updated version of the 800 Series. This led to the creation of the 800 Series Hybrid. The inherent benefits of the 800 Series are retained, including compact design, low residence time and a common deflector bore that eliminates tolerance stack up. The challenge was to create a hybrid design that incorporates the benefits of layer overlapping, while reducing unnecessary complexity and making the technology more cost-affordable for customers. This was achieved by overlapping layers in each semi-deflector, using a single cone. The highly efficient design of the 800 Series Hybrid reduces cost and size, as opposed to other methods of overlapping layers.

Essential benefits of the 800 Series Hybrid include eliminating weld lines in materials through patented overlapping technology, producing a more consistent finished product; reduced sensitivity to changes in viscosity; reduced sensitivity to changes in line speed; myriad material and multi-layer application possibilities; works in all tubing and jacketing applications with a wide range of materials; low residence time; compact

design and a low tolerance stack-up error factor, all resulting in improved concentricity.

The 800 Series Hybrid extrusion tool greatly reduces stagnation, because overlapping layers are more inherently balanced than single layers and also because each semi-deflector is "tuned to flush." Conventional deflectors must simultaneously achieve a balance between flushing, balancing and eliminating the weld line. There is less difference between the slowest moving material and the fastest moving material in the deflector channels, thus making the viscosity more consistent in the deflector.

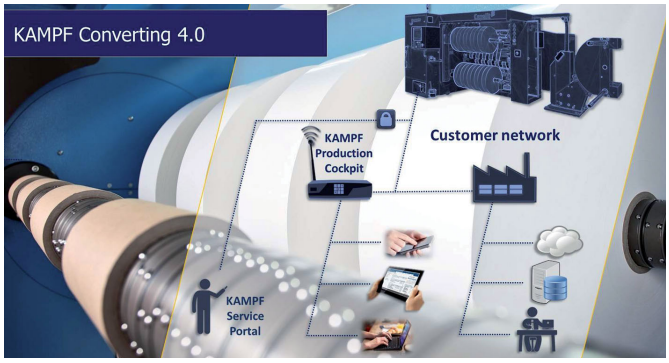
➠**www.guill.com**

More than slitting and winding

■ At the ICE europe 2017 in Munich, experts from the converter industry meet from all over the world. KAMPF shows its comprehensive range of services in the field of slitting and winding technology. The trade visitors receive information about KAMPF machines for the flexible processing of demanding materials and the services of the KAMPF Lifecycle Service.
The focus of the exhibition presentation is on new products for the growing demand for automation and digitization. KAMPF automation specialists introduce the new KAMPF Production Cockpit (KPC) in function. The visitors experience KPC live integrated into a KAMPF doctor machine, which permanently produces data. These are automatically collected, sorted, summarized and evaluated to provide comprehensive information and graphics about the production process, quality and usage as well as the associated documentation. KPC supports the producers by presenting comprehensive information about the machines in a comfortable way and in real time. The topic Converting 4.0 is complemented by further integrated technology examples of the entire process chain In addition, KAMPF shows integrated complete solutions for automation. Automated processes and procedures ensure with precision for reduction of rejected material and relieve the operator personnel.
With the statement "Processing.Unlimited" the employees of Kampf LSF explain their extensive product range. Both complex special plants for the finishing and processing of web-shaped materials such as plastic films, paper, textiles and other substrates, as well as plant technologies with handling and process steps for non-web-shaped materials have been successfully manufactured by Kampf LSF for many years.

The KAMPF Academy offers an extensive training program

KPC shows real-time data and provides „smart services"



ICE europe INTERNATIONAL CONVERTING EXHIBITION **Hall A6, booth 514**

www.kampf.de

Circular Economy and Plastics

identiPlast 2017 Vienna — 22-23 February

■ *The European benchmark event for plastic waste recycling and recovery*
IdentiPlast 2017 will be arriving in Austria's capital city, Vienna, on 22 and 23 February. This European benchmarking event for plastic waste recycling and recovery will focus on how countries in central and southeast Europe can best benefit from the latest experience in Europe and other parts of the world in order to improve their own waste management practices and infrastructure. In parallel, IdentiPlast 2017 will also be providing a forum to showcase the "life cycle thinking" approach for the appropriate management of plastic waste.
This two-day event features expert speakers from the US, Turkey, Japan and Europe presenting their experiences and learning in plastic waste management, and how best practice can be applied to different European regions to increase the recovery of plastic waste and prevent it to being landfilled.
IdentiPlast 2017 will comprehensively deal with plastics recovery, starting with collection and sorting while touching the economical, legislative, political and societal framework, reuse solutions, recycling and the provision of recycled plastics into the market.
The conference will be of particular interest to local authorities and municipalities from across Europe, policy makers, waste management organisations, plastics recyclers, manufacturers, converters and compounders as well as academia, research institutes and NGOs.

www.identiplast.eu

Trinos Vakuum-Systeme operating under the new name

■ As of January 1, 2017, Trinos Vakuum-Systeme GmbH has a new name: Pfeiffer Vacuum Components & Solutions GmbH. The company based in Goettingen employs some 160 people and has been part of the Pfeiffer Vacuum Group since January 2010. The name Pfeiffer Vacuum has stood for highquality vacuum technology, a comprehensive range of products and first-class service for more than 125 years. With its close customer collaboration and consistent focus on customer needs, Pfeiffer Vacuum is constantly optimizing and expanding its portfolio.

Pfeiffer Vacuum Components & Solutions GmbH, Goettingen

"The objective of the change in name is to further develop and strengthen our market position. Our product portfolio in Goettingen includes vacuum components, custom vacuum chambers, valves and manipulators. We see ourselves as a premium supplier of vacuum components and a specialist for customer-specific vacuum systems with a wide range of functions," explains Guido Hamacher, Managing Director of Pfeiffer Vacuum Components & Solutions GmbH. "We've planned expansive investments at our Goettingen site for 2017 so that we can continue to remain competitive in the future and secure existing jobs as well as create new ones. We are looking into the future with optimism and expect more growth in the coming months," added Hamacher.

Vacuum technology makes it possible to produce solar cells, semiconductors, thermal glass and coatings for extremely durable mechanical tools. These are just a few examples of Pfeiffer Vacuum products. Reliable vacuum products and systems are also of major importance for research and development, analytics, environmental technology and the automotive industry.

➠**www.pfeiffer-vacuum.com**

CHINAPLAS to Choreograph 3 Great Concurrent Events

■ *Place for Global Giants to Unveil Industrial Trends*

CHINAPLAS' exciting concurrent events, in which industrial giants share their experiences and attendees gain insights into industrial trends, have always been the highlight of the trade fair, and well received by exhibitors and visitors alike. CHINAPLAS 2017 will be held at the China Import & Export Fair Complex, Pazhou, Guangzhou, PR China on May 16 – 19, 2017. Focusing on the theme of "Intelligent Manufacturing, High-tech Materials, Green Solutions", the organizer of CHINAPLAS, Adsale Exhibition Services Ltd., will administrate three big concurrent events during the exhibition: the 2nd "Industry 4.0 Conference", "Design x Innovation", and the "3rd Medical Plastics Conference". Visitors can expect to grasp the cutting-edge technologies and inspiring case studies in these events, allowing them to hop on the bandwagon and understand market dynamics from multiple dimensions, explore more valuable opportunities for collaborations and expand networks to facilitate development.

Industry 4.0 is the prime focus

China has quickly become the world's second largest national economy, and labour costs have risen sharply. It is no longer a low-wage cost country – all kinds of cost pressures force businesses to opt for more automation equipment and advanced technology in the production processes. According to Mr. Stanley Chu, Chairman, Adsale Exhibition Services Ltd., China is still a developing country, and has not yet fulfilled the necessary conditions for industrial 4.0.

The 2nd Industry 4.0 Conference, presented with the support from VDMA, the German Engineering Federation, will be held in of May 16-18 2017, in China Import & Export Fair Complex, Pazhou. As a "signature dish" dedicated to visitors, the conference will provide practical and operational solutions for enterprises targeting urgent manufacturing upgrade. Industry 4.0 will eventually move towards the direction of customized, small batch production, which are also the characteristics of additive manufacturing (3D printing) technology which meet the demands for the development of more personalized products. This is the long-term goal of Industry 4.0.

The 2nd Industry 4.0 Conference, presented with the support from VDMA, the German Engineering Federation, will be held concurrently during CHINAPLAS 2017. The conference will provide practical and operational solutions for enterprises targeting urgent manufacturing upgrade

Since its inception, "Design x Innovation" has attracted a lot of attention. "Innovation Gallery", "Open Forum" and "Meet the Designers" are the programs which introduce success stories of innovative industrial designs to visitors

At the 1st edition of Industry 4.0 Conference, Arburg introduced the technology of additive manufacturing, which will be presented again at the sequel in greater depth and breadth. The Industry 4.0 Conference held last year not only brought together world renowned enterprises such as Arburg, KraussMaffei, Engel, Wittmann Battenfeld, Beckhoff, Volkswagen AG, Haier, and SAP to give presentations, but also attracted nearly 600 local and overseas professionals, who were generally satisfied, and looked forward to more case studies of Industry 4.0, which, combined with their own businesses, would promote the intelligentization of their factories, enhancing production efficiency, improving product quality and achieving lean production status. Furthermore, the Smart Manufacturing Technology Zone, a showcase of cutting-edge automation technologies, will provide a boost to the movement from "Made in China" to "Smartly Made in China."

"Design x Innovation" enlightens the upstream and downstream sectors

Enterprise transformation and upgrading calls for industrial design innovation. Since its inception, "Design x Innovation" has attracted a lot of attention. As visitors' needs get more sophisticated, the event itself gets more vibrant – "Innovation Gallery", "Open Forum", "Meet the Designers" are the programs which introduce success stories of innovative

industrial designs to visitors, who gain inspirations on application of new materials and at the same time discuss and exchange solutions face-to-face, further creating value.

The 3rd Medical Plastics Conference helps hunters uncover treasures from this sunrise industry

The growing demand for medical devices by the huge population in recent years, the rise of emerging markets and the ageing society is triggering a renewed growth of the medical device market.

China's healthcare industry is at a stage of abundant potentials, but is at the same time having a low level of technology, prompting manufacturers to find adaptive solutions to existing production lines and cost pressures. New and better materials are the key to the future development of medical enterprises. The concurrent event Medical Plastics Conference has been held successfully in the past two years, receiving very positive feedbacks from the industry.

The 2nd Medical Plastics Conference lasted two days, attracting 600 professional visitors. Topics covered: the latest medical polymer materials, 3D printing in clinical and surgical model applications, medical laws and regulations, as well as application of surgical models.

The 3rd Medical Plastics Conference, to be held of May 17-18, 2017 will bring together the upstream and downstream sectors of the industry to discuss the latest applications of medical plastics and cutting-edge production technology.

The admission fee is RMB 30 (one day pass) and RMB 50 (four-day pass). To enjoy free admission, please visit www.ChinaplasOnline.com/prereg to pre-register before May 9, 2017. Visitors successfully pre-register before March 1, 2017 will receive the visitor badge by mail in advance.

www.ChinaplasOnline.com

First compounding industry exhibition to take place in Germany

■ The world's first international exhibition focused specifically on the plastics compounding industry will take place in Essen, Germany on 27-28 June 2018. The Compounding World Expo is being launched by AMI, organiser of conferences for the global plastics additives and compounding markets. The exhibition will be free to attend and will cover all types of polymer compounds including polyolefins, PVC, engineering plastics, styrenics, TPEs and masterbatch, as well as plastics recycling. Free seminars, technical presentations and industry debates will take place in lecture theatres on the exhibition floor. The Compounding World Expo 2018 will reflect the growing influence and importance of the sector by providing a dedicated large-scale international meeting place for compounders and masterbatch makers. Messe Essen was selected because of its large and modern exhibition facilities that are ideally located in the centre of Europe's industrial heartland. Essen is just 20 minutes' drive from Dusseldorf airport or a short journey by train.

"Based on discussions we have had with a wide range of industry suppliers in recent months, there is great enthusiasm for an exhibition focused specifically on thermoplastics compounding," said Matt Wherlock, AMI's Exhibition Sales and Marketing Manager. "A variety of key suppliers have already reserved stands including Brabender, Budenheim, Buss, CPM Century Extrusion, Econ, Farrel Pomini, Feddem, ICMA San Giorgio, Imerys, JSW, KraussMaffei Berstorff, Leistritz, LKAB Minerals, OCSiAl, Penta, Plasmec, Plastic Systems, Polyscope, Promixon, Steer, Velox and Xinda among others".

The Compounding World Expo will be AMI's first free-to-enter exhibition for delegates.

Buss AG, a leading supplier of Kneader technology, were one of the key players to reserve a stand in the build up to the exhibition launch. Marco Senoner, Head of Marketing at Buss explained, "Through its Compounding World magazine and conferences, AMI has created a valuable platform to unify the compounding sector". Senoner added "The new Compounding World Expo represents an attractive continuation of this success story, bringing the major players of this sector together at one exhibition".

www.compoundingworldexpo.com

Brazil's economy puts its hopes in 2017

■ *wire South America and TUBOTECH will be in São Paulo for the third time in 2017*

The international trade fairs wire South America and TUBOTECH will take place against the background of expectations for an economic recovery in the coming year. As before, they will be held jointly at the São Paulo Expo Exhibition & Convention Center in Brazil from 3 to 5 October 2017. Following the pattern of the previous event, the trade fair duo is again likely to attract around 500 exhibitors from 24 countries on an exhibition space of over 32,000 square metres (gross) and more than 11,000 trade visitors.

After its successful première in 2013, this will be confirmation of a successful trade fair policy for wire South America, the international wire and cable trade fair. The event will feature machines for the manufacturing and finishing of wire, tools and auxiliary materials in process engineering as well as materials, special wires and cables. The trade fair will also cover innovations in measurement and control engineering, test engineering and a range of specialist areas.

TUBOTECH, the international trade fair for pipes, valves, pumps, fittings and components, will be held for the ninth time in 2017. Since its première in 2001, it has developed into the leading trade fair on the South American continent. The products on offer are pipes and accessories, plants and machinery for the manufacturing, processing and finishing of pipes, raw materials, used machinery, the pipe trade, process engineering tools and accessories, as well as measurement, control and test equipment.

Taken together, the two trade fairs form a superb technology pair, primarily attracting visitors from the oil and gas industries, automotive engineering, construction, metal design and mining.

Operating in partnership with the Brazilian company Cipa Fiera Milano Publicações e Eventos Ltda., the trade fair organisers are continually working on the success of wire South America and TUBOTECH. In their implementation of wire South America they have again obtained support from IWMA (the International Wire & Machinery Association), IWCEA (the International Wire & Cable Exhibitors' Association), WCISA (the Wire and Cable Industry Suppliers Association) and ACIMAF (the Italian Wire Machinery Manufacturers' Association). TUBOTECH is supported by ITA (the International Tube Association) and the Brazilian industry association ABITAM (Associação Brasileira da Indústria de Tubos e Accesórios de Metal).

www.wire-south-america.com,
www.tubotech-online.com
www.messe-duesseldorf.de

Maag Hosts Open House At Its First India Service Center

■ Maag, the manufacturer of gear pumps, pelletizing systems, filtration systems and pulverizers for use in the plastics, chemical, pharmaceutical and food industries, was pleased to host an Open House on Nov. 24 at its new rotor-sharpening workshop and service center in the city of Vadodara (Gujarat), India, which is located 400 kilometers north of Mumbai.

By being Maag's first workshop and service center in India, the facility helps Maag reinforce its reputation as a company that is committed to meeting the needs of its customer base around the globe. Also, this new presence in the rapidly expanding Asian plastics market means that Maag now has manufacturing or service/sales facilities in six Asian countries, with India joining China, Singapore, Malaysia, Taiwan and Thailand, while Brazil, Switzerland, Germany, Italy, France and the United States are non-Asian countries that are home to Maag manufacturing or service operations.

The Open House was hosted by Ueli Thuerig, CEO of Maag, and Thomas Willemsen, Maag's Vice President of Business Development, After Sales and Service Centres. Also in attendance were Dana Anand, General Manager of Dover India, and 70 visitors from various companies in India.

"Our customers have been excited about the new facility and the investment we have made to come to India," said Thuerig. "They have been keen to learn more about the equipment and technologies offered by Maag and

the event allowed us to show our customers in India the breadth of our product offering, as well as how we can provide new parts, upgrades and modifications, all of which are designed to help them optimize their operations and lower production costs. The facility also helps Maag expand its footprint in Asia, which is one of the world's fastest-growing regions for plastics manufacturing and processing."

What the attendees observed was a workshop that is fully equipped with a functioning rotor-grinding operation that includes the most modern sharpening equipment for strand pelletizers in India. The facility will also offer pump and pelletizer repair services and process support. Seven full-time employees currently work at the facility, all of whom have been trained at Maag's operation in Germany, which allows them to produce the highest level of equipment quality and service for their customers. Also on display at the Open House were pump, pelletizer, pulverizer and screen-changer technologies from Maag and the recently acquired Gala and RE Scheer, the operations of which have been fully integrated into Maag.

www.maag.com

New High Output Extruders and Sheet Extrusion Lines

■ Milacron Holdings Corp. (NYSE: MCRN), the industrial technology company serving the plastics processing industry announced its entry into the polyolefin sheet extrusion market. Polyolefins make up the highest volume of thermoplastic products in the world and uses range from rigid materials to industrial food packaging and waterproof film. Research and development are increasing the variety of polyolefins, and as a result, they are steadily replacing traditional materials in many applications.

In the second quarter of 2015 Milacron delivered its first polyolefin thick sheet extrusion line consisting of a PAK400 single screw extruder and a PAK650 single screw extruder. The twin machines increased the output rates to 2,100 lbs/hr (950 kg/hr). This represents a new product category for Milacron's extrusion offering. Milacron has since delivered a second line in the second quarter of 2016 and has additional systems to deliver in early 2017.

The first Sheet Extrusion line has been in operation for 12 months, running 24/7 and the customer is reporting excellent performance. Milacron has installed in-line embossing capability to these sheet extrusion lines, eliminating the need to emboss offline, saving the customer another setup and eliminating the need to reheat the sheet, which can result in additional stress, and cause possible warping. These new sheet lines are engineered and installed by Milacron. This advancement allows Milacron to broaden their capability in packaging, medical and other high-output sheet applications.

Milacron is known for their injection molding prowess and industry brands Mold-Masters, Uniloy, DME and CIMCOOL, all well-known entities within the plastics and manufacturing community. Included in this portfolio are some of the industry's most innovative extruder designs, a major part of the Milacron portfolio since 1972.

Brian Marston, President, Milacron Extrusion explains how Milacron's extrusion offering differs from many of their competitors, "Milacron's lineup of extrusion systems are designed and built in house, we are producing the equipment in our Cincinnati, OH, Ahmedabad, India and Jiangyin, China facilities. Our demonstration and development laboratories have made a science of optimizing processing via natural compression. This creates a highly customizable approach for our customers: one that increases productivity, output and accuracy, while reducing costs."

Marston went on to explain Milacron's depth of extrusion expertise, "From extruders, to new and rebuilt extrusion barrels and screws, pipe heads, dies and downstream equipment, with Milacron, you get powerful, reliable solutions that meet unique customer needs."

www.milacron.com

Very early on motan-colortronic recognised the opportunities of a networked production and created the necessary foundation. motan already offers the possibilities for an intelligent, smart factory with, for example, their CONTROLnet architecture with integrated controls concept. With the development of an OPC-UA interface (Open Platform Communications – Unified Architecture), motan-colortronic was one of the first periphery suppliers able to communicate with the processing machines independent of manufacturer or platform.

Step by step into the future

The consistent modular set-up of the control components also contributes to this by enabling the constant and transparent networking of the manufacturer's units with a periphery and communication network. motan-colortronic is continually working on pilot projects together with different machine manufacturers to develop intelligent solutions which support the processors in the optimisation of their value added chain.

Synchronised production start

Up to now, the established practise has been to use weekly timers to switch on the dryers and processing machines. Independent of each other, the systems then wait for production start – and use unnecessary energy during this time. No consideration is taken if the production plan has changed in the meantime.

In a Smart Factory with Industry 4.0, however, material distribution and processing machines will start in coordination with each other.

Here, each processing machine choses "its" dryer, depending on the required throughput, and communicated the time of production start. The material distribution does everything else independently. This means that the drying process starts automatically at the right time for enough material of the required quality to be available at production start. Machine and material are both ready for production at the same time and over-drying of the material is not possible. The benefits are; improved productivity, resource efficiency, and less energy consumption.

Dynamic and intelligent production monitoring

No one is immune from nasty surprises – interferences and interruptions cannot be completely eliminated. This is why the availability of material for the processing machine is monitored through targeted information exchange even during the process. Material shortages are displayed centrally at the machine.

With a dynamic, intelligent response by the material distribution (in this case the dryer), the influence of an interference, wherever it may occur, on the flow of production and the material can be minimised, if not completely eliminated. For example, it may be worthwhile to lower the drying temperature and adjust the air flow in order to avoid over-drying during longer production down-times. Due to the constant comparison of piece numbers and remaining production time, the drying system has all necessary information to prevent material shortages.

Information regarding the current or remaining supply of material, as well as the number of parts still to be produced, is shown centrally on the processing machine's display, in order to offer the operating staff as much transparency as possible regarding the current status of the entire process.

Co-ordinated production end

The material distribution knows the produced part numbers and remaining running time – the dryer knows that only a few parts are left to be produced and adapts its operation accordingly. This saves energy and prevents over-drying of the remaining material. Additionally, the targeted running empty of the drying bin can be planned for the end of production. For this, the required time until the bin is empty is calculated in regards to the remaining number of parts left to be produced. This saves energy for drying and conveying, but also minimises return of material and prevents material loss. The decentralised intelligence of motan systems enables communication in all directions. In practise, this means the operation and status data is exchanged between motan's material distribution systems and the processing machines, the data is analysed by the controls, and the required actions are started.

The goal, from the view of material distribution, is to ensure the required quantity and quality of available material at the processing machine. For this, the processing process must be viewed in its entirety in order to use the resources at hand efficiently – for an economic production.

www.motan-colortronic.de

With BCtouch UX a step closer to Industry 4.00

Mobile operating terminal with the new BCtouch UX control, as shown at the booth. The new extruder series conEX NG and solEX NG will also come with the new control system

The extruder specialist battenfeld-cincinnati is impressively demonstrating its motto "driven by innovation" with its new control system generation BCtouch UX at this year's K in hall 16, booth B 19. One main feature of the new system is its operating concept. Modeled on modern communica-tion media, a new platform with intuitive menu navigation has been created. With its advanced functions, the new control system supports efficient production planning and preventive maintenance intervals, and fulfills future requirements for connectivity with servers and mobile appliances. In this way, it also provides the prerequisites for comprehensive process data acquisition and evaluation, and for vertical integration according to the Industry 4.0 concept.

In the development of the BCtouch UX control system, one main focus was placed on easy operation. The modern user interface created by experts recalls familiar operating concepts of tablets or cell phones and offers multi-touch zoom as well as move and slide functions. In addition to the central operating terminal, additional terminals can be integrated without any problems along the line. Thanks to a new type of cockpit view, the process status of the entire line can be viewed at a glance. The design of the overview page and the navigation through the menu are derived directly from the line configuration. Additional features of the new operating terminal are the RFID access control system, which enables easy identification by chip card, and a context-sensitive help system. The well-known, ergonomic battenfeld-cincinnati terminal system with its swivel-and-tilt functionality was adapted to a 21.5" landscape format multi-touch display, but otherwise left unchanged.

Industry 4.0 offers every plastics processor the opportunity to run its extrusion equipment with maximum efficiency. With the new BCtouch UX control, all process parameters are monitored centrally. This enables line operators not only to carry out energy monitoring, but to calculate energy diagrams over time and on the basis of freely selectable production parameters as well. This, in turn, makes it possible to find an operating point where the line can be run with optimal resource efficiency in terms of both material and energy consumption. Since maintenance in-tervals for all line components are recorded in the control sys-tem, it supports the necessary preventive maintenance actions, thus increasing line uptime and consequently overall efficiency.

Fully in keeping with the industry 4.0 concept and the control system's facilities for communicating with other units, generally described as "connectivity", all line and process parameters included and evaluated in the system can be centrally tapped by an ERP system.

For this purpose, the battenfeld-cincinnati OPC-UA server provides a future-proof interface for vertical integration of the line at the customer's plant. In addition to on-site operation, BCtouch UX also supports an alarm system via Internet or Intranet, with data of definable line statuses being transmitted to mobile units either by LAN/WIFI or by UMTS/LTE, according to the customer's choice.

www.battenfeld-cincinnati.com

Innovative control system for highly efficient machine operation

– State-of-the-art technology for easy control and configuration
– BPCTouch control system supports Plastics 4.0
– User-friendly touch panel for machine and line operation

KraussMaffei Berstorff's newBPCTouch control software features a clear menu structure to reliably guide the machine operator through all process steps

The K 2016 marks the launch of Krauss Maffei Berstorff's new control system. In future, all twin-screw extruders in the ZE BluePower, ZE UTX and ZE Basic series will be equipped with the innovative BPCTouch control solution. This system substantially enhances ease of use and reduces set-up times during compound changes. It offers decisive benefits in terms of costeffectiveness and flexibility especially for compounding companies facing the challenge of processing a continuously increasing variety of compounds in ever smaller batches.

K 2016 - launch of new BPCTouch control system for all twin-screw extruders of the ZE BluePower, ZE UTX and ZE Basic series

State-of-the-art access authorization technology

"Easy operation with a user-oriented interface is the key to improved system control," says Peter Roos, President of KraussMaffei Group's Extrusion Technology Segment and CEO at KraussMaffei Berstorff. The intuitive BPCTouch control software features a clear menu structure to reliably guide the machine operator through all process steps. All relevant peripheral components and downstream equipment can be rapidly integrated into the software using standardized interfaces. Each operator must log in at the integrated transponders by RFID chip card. Depending on the user level, access to the assigned functions is granted. The control system completely records all steps performed by the operator. Moreover, the innovative control system exhibited at K 2016 offers enhanced metrology performance, enabling measurement of the energy consumption of the extruder and peripheral equipment.

BPCTouch control system supports Plastics 4.0

Plastics 4.0 is the KraussMaffei Group's translation of Industry 4.0 – the forth industrial revolution – for its plastics operations with the Intelligent Machines, Integrated Production and Interactive Services categories. As an example for the Integrated Production category, the BPCTouch control links order management and production data and enables retrieval of order data, preset data transfer and triggering of processes at any time. The control system is equipped with a remote maintenance interface for target-oriented and extended service features, which also allows additional interactive service options to be installed at a later date.

User-friendly touch panel for machine and line operation

Twin-screw extruders with BPCTouch control system are operated using a clearly structured ergonomic on-board multi-touch panel. The 21.5 inch panels perfectly meet all industrial application requirements, in particular in dusty or humid environments. They comprise a fanless housing with IP54 protection rating, an IP65 rated front and are protected by an easy-to-clean glass pane. The panel offers unparalleled working comfort and helps to avoid operator errors thus considerably contributing to quality assurance. "The new BPCTouch control system ensures higher twin-screw extruder productivity and substantially increases the added value of the line," says Roos.

www.kraussmaffei.com
www.kraussmaffeiberstorff.com

TEX25αIII, co-rotating twin-screw extruder

The Japan Steel Works, Ltd. JSW, shows at K 2016 its TEX25αIII laboratory extruder with a special side feeder, the compounding range of which extends to super engineering plastics and rubber/elastomer compound. The compact 26.5 mm diameter co-rotating twin-screw extruder (first worldwide debut in 2014), for product development of various compounds and masterbatches in engineering and high performance thermoplastics is the smallest one of eight types in the TEX-αIII series (up to 129.5 mm diameter) available in Europe.

TEX25αIII high-performance extruder for demanding R&D in compounding

The TEX25αIII compounding range covers all general purpose/engineering plastics recipes and extends to super engineering plastics such as PEEK, PPA, PPS, LCP, PEI, and PI, also rubber/elastomer compound such as TPV. This makes the compounder ideal for research and development with frequent material and process changes, as cartridge heaters and a barrel clamping mechanism enable easy and rapid barrel section block changes., The total screw length/diameter (L/D) ratios can be selected from 42 with 12 blocks, 52.5 with 15 blocks, and 70 with 20 blocks. The machine accommodates vented or closed barrel sections and side feeding of abrasive reinforcements, heat- or shear-sensitive compound additives and materials into the melt via a downstream barrel section. Wear resistant LSP-2 modified tool steel screws and barrels in N60-S nickel based alloy made by JSW promise long life of barrel and screw (high wear and corrosion resistance) for various kinds of compounds containing abrasive and/or corrosive materials and additives.

TEX25αIII series advantages include a new gearbox design combined with enhanced gears and bearings, screw shafts and barrels as well as individual barrel temperature control. The result is a surprisingly high torque of up to 194 Nm per shaft (or 387 Nm in total) combined with wider processing windows as well as more aggressive kneading and mixing. Its torque density value is 18.2 Td i.e. reduced screw speed without reducing the throughput and keeping the temperature at an optimally reduced level. A standard torque limiting function disengages motor and gearbox to stop the screw rotation and protect the machinery. A low noise water-cooled motor is optional, as is direct drive instead of the standard V-belt drive in Europe.

A TKD Twist Kneading Disc screw element with a twisted tip developed for energy-efficiency of kneading and mixing supports this "tip-clearance technology" by ensuring fast material conveying and relatively low material temperature while retaining appropriate mixing efficiency. "Such features make the TEX25αIII the worldwide highest performance compact twin-screw extruder," says Jun Kakizaki, JSW Europe General Manager since July 2016.

JSW's patented TEX-FAN Flow Analysis Network R&D support tool developed for TEX25αIII analyses polymer melt pressure, temperature, residence time and fill factor with special dedicated software developed by JSW. The TEX25αIII comes with JSW's EXANET 64-bit RISC high-speed control system. Its 15-inch colour LCD touchscreen provides for easy operation, optimum process control and monitoring, storing thousands of operation conditions and process parameters. It integrates with auxiliary equipment, from JSW's gravimetric feeders, side feeder, through to strand and underwater pelletizer units.

The NIC special kneading barrel developed by JSW is discussed as a possible option. It achieves good mixing/dispersion at repeated high-low shear rate and high viscosity for good compound material properties – without dead zones at the mixing zone through the introduction of several longitudinal grooves of particular geometry on the inside barrel surface for more screw to barrel clearance. New "TEXenter": "We would also like to announce that we will open our new technical center called "TEXenter" at K2016 in Düsseldorf from January 2017," says Hayato Hobo, Sales Representative at JSW Europe since June 2016. The "TEXenter" will be equipped with all high-end equipment for R&D on extrusion processes, compounding, dewatering, devolatilizing, pelletizing etc. The TEX44αIII will be installed for high-end compound test and a specialized TEX30α will be available for devolatilizing test. The 700 square meter floor space "TEXenter" is combined with a 200 square meter office section. "We welcome customers and prospects to come to us for TEX-αIII demonstrations," promises Kenji Inagawa, Process Engineer. Apart from hands on equipment, the "TEXenter" has the appropriate facilities for seminars, lectures and training on customer demand.

http://www.jsw.co.jp/en/products/index.html

Measuring unit RAYEX® S

Zumbach RAYEX® S –

X-Ray Measuring and Control Technology for Single and Multilayer Products

In order for a manufacturer to select the measurement and control solution with the best price-performance ratio, the suitable technology must be chosen.
After many years of experience in using eccentricity gauges with X-rays and ultrasonic, laser diameter and inductive measurement devices for different products and material, ZUMBACH expand the X-RAY family for dedicated tube and hose applications.

ZUMBACH's static X-ray system RAYEX® S has especially been developed for any kind of foamed pipe, vulcanized products, hydraulic hoses, etc. RAYEX® S measures and controls diameter, ovality, wall thickness and eccentricity of single and multilayer products with up to four layers. It provides precise measuring values and highest reliability for pipe and hoses with an outside diameter of up to 80mm. The system features the latest X-ray technology and software solutions.
In combination with the data aquisition and processor system, an automatic control of the line is possible. By controlling line speed or extruder speed the parameters are controlled to the nominal value. The display shows all measurement values numerically and graphically as well as trends and statistical data. A line presentation with pictograms of the connected devices provides a clear overview to the operator. At thhe same time, the system reduces the wall thickness to a minimum value. Quality assurance and the reduction of material lead to a significant increase of productivity.
Key Features and Advantages
• High stability and accuracy
- Repeatability typically with in ± 0.02 mm
• Measuring frequency up to 10 Hz (in standard mode)

• Simple concept and easy to use
- 4 wall thickness points, 2 diameters, ovality
- 2 X-ray sources positioned at a 90° angle
- No recalibration is necessary but can be done if required
- Integrated exhaust device for keeping measuring windows always clean

• High safety level of the X-ray sources
- Unique screening concept
- Minimal scatter, no lead inside the equipment
- Outside radiation level meets national and international standards

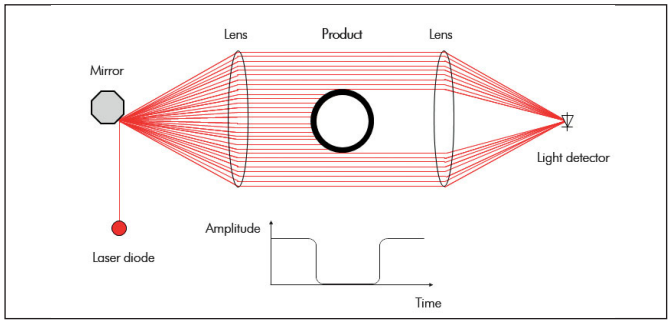
• X-ray sources
- Extremely robust and stable
- Easy to exchange, no realignment
- No water cooling required

www.zumbach.com

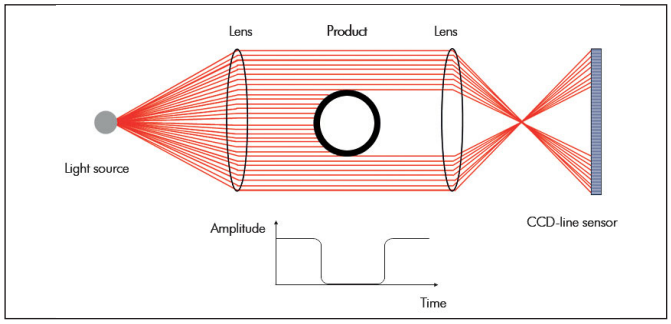
Technologies for the measurement

of the diameter, wall thickness, eccentricity and sagging during the hose and tube extrusion

Manufacturer of hoses and tubes have been investing intensively in measuring and control technology as well as line control over the last years, aiming for an online quality control, process stability and cost reduction. Nowadays, online measuring devices with a connected control are a standard for extrusion lines. Used test devices include, amongst others, gauge heads that measure the inner and outer diameter, the ovality, eccentricity as well as ideally the sagging ("sagging" of the melt during the solidification at a too high viscosity) of the product during the extrusion process. The used measuring systems are based on varied technologies for different application areas. The following article provides an overview of conventional as well as innovative measuring technologies and discusses the advantages and limits of their usage in extrusion lines.



Pic. 1: Scanning method with rotating mirror



Pic. 2: Scanning method without rotating mirror, with CCD-line sensor

Technologies for diameter measurement of hoses and tubes

For the measurement of the product diameter of hoses and tubes, two established techniques are used: the "Scanning System" as well as the "CCD line sensor technology".

„Scanning System"

The scanning method is based on a rotating mirror or a rotating disk, whereby a laser beam scans across the measuring field. In-between the rotating mirror and the light sensor, two lenses are arranged. The first lens diverts the laser beam almost parallel across the measuring field while the second lens directs the light beam onto a light sensitive detector. The product is arranged between these two lenses and disrupts the laser beam, while it is scanned across the measuring field. Therefore, the product diameter is calculated by comparing the time the laser beam needs to pass the whole measuring field with the time the laser needs to scan the complete product surface. In this case, time equals the diameter (Fig 1). The measuring rate depends on the rotation speed of the mirror. An increase of the measuring rate is made possible by the use of a polygon mirror. This highlights the problem that the mirror surfaces need the exact same perfect surface finish. Often, an averaging from several measurements is necessary to achieve a reasonable accuracy.

„CCD line sensor systems"

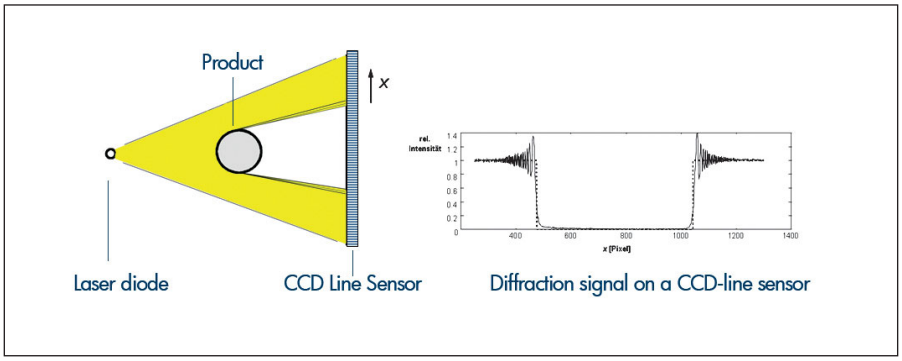
There are two measuring methods for the CCD line sensor technology prevalent. The first method is based on a laser beam that is focused on one line sensor using optics (lenses). By counting the darkened diodes from the shadow image of the object, the diameter is determined. The advantage of this method is the omission of moving parts, but the costs for the lens are high (Fig 2).

The second approach is an intelligent method for which a high-resolution CCD line is directly illuminated by a laser and the diameter is calculated from the diffraction fringe. The measuring rate is extremely high and only limited by the chosen CCD line sensor. The advantages of this second method are the omission of the expensive lenses as well as moving parts.

The main difference between scanning and the line sensor technology is that the CCD line sensor technology works solely digitally and does not need moving components. Therefore, accuracy, repeatability and measuring rate are higher and a calibration is not necessary. Gauge heads that work with the line sensor technology measure the diameter in two or three planes. They are capable of measuring opaque as well as transparent products from all kinds of material with a diameter from 0.05 to 500 mm. In addition, some models offer up to 5,000 measurements/per axis/ per second and therefore, as well a reliable detection of lumps and neckdowns.

Technologies for the measurement of diameter, wall thickness and eccentricity

For applications where a diameter measurement is not sufficient, manufacturers of hoses and tubes use measuring systems that additionally measure the wall thickness and



Pic. 3: CCD line sensor measuring principle and analysis by diffraction analysis without optics and moving parts

Pic. 4: X-ray measuring system installed in a hose extrusion line

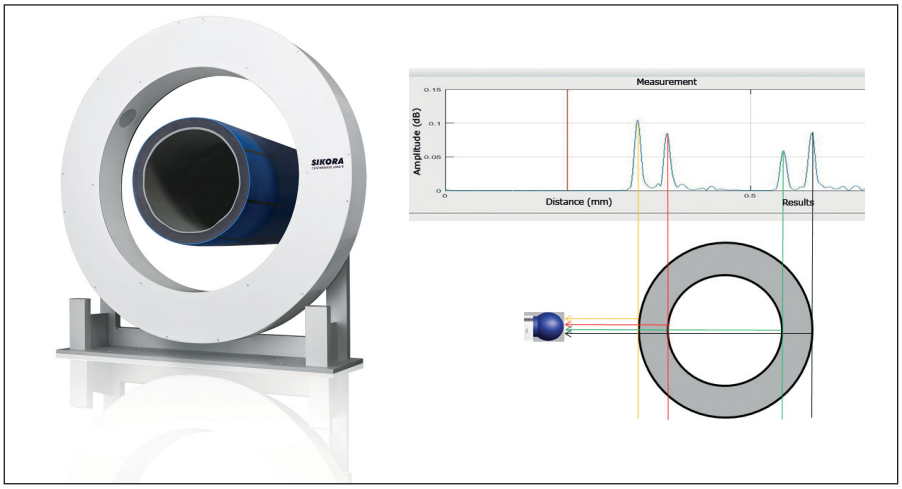
the eccentricity of the products. Thereby, in addition to the quality control and process optimization, the saving of plastic material and cost reduction play an essential role. Conventionally available technologies are, for example, based on ultrasound technology. This method is suitable for the basic measurement of the wall thickness of single layer products but reaches its limits due to its function and dependence on material properties, the plastics temperature and the coupling medium. A precise measurement of all product parameter without the dependence on environmental or material influences is nowadays ensured by the X-ray technology.

Ultrasound technology

The ultrasound technology is only partly suitable for online quality control of hoses and tubes. For example, the ultrasound is not able to penetrate the aluminum layer that is used as a vapor barrier in composite pipes and is therefore not applicable for this application. Measuring rubber hoses, the ultrasound signals are largely absorbed by the porosity and absorption of the rubber so that they are also not reliably measurable. Furthermore, multi-layer rubber hoses contain typical fabric reinforcements, which divert the ultrasound echo and make a measurement impossible. The ultrasound measurement is usually realized in a water bath as the water is used as a coupling medium for the transmission of the sound. A precise temperature compensation is necessary as the propagation speed of the ultrasound, which is used for the calculation of the eccentricity, depends on temperature and material. This technology requires a calibration. Further, an estimation of the wall thickness is typically only possible by combining the ultrasonic technique with an additional gravimetric system.

X-ray technology

The X-ray technology is based on an imaging principle. The X-ray technology does not require an adaptation to



Pic. 5: The measuring system based on millimeter waves technology for the determination of the diameter, wall thickness and the sagging based on the time difference analysis of reflected signals

materials and no coupling medium is needed. The technology is independent of the temperature of the material, what makes it possible to integrate an X-ray measuring device directly into an extrusion line without any additional efforts. A calibration is not necessary. The system is either installed directly after the extruder (hot measurement) or at the end of the line (final quality control). With a 4-point online measurement, the measuring values for the wall thickness, the eccentricity, the inner and outer diameter and the ovality are determined by one device. The system measures up to three different material layers. These measuring values are visualized numerically and graphically in the form of the tube/pipe cross section in real-time and enable the user to perfectly center the extrusion tool. Important for highest efficiency is the automatic control of the line speed or extruder rpm while considering the minimal values. Thus, the quality of the hose is ensured. On the other hand, the control to the minimal values ensures that only the needed material is used. X-ray technology is available for products with a diameter from 0.65 to 270 mm. Concerns on the safety of X-ray devices are arbitrary, as the radiation is because of the low energy of no relevance. Practically, a human is exposed to a much higher radiation on a flight from New York to Frankfurt.

Technologies for the measurement of large plastic pipes

For the dimension measurement of large plastic pipes starting at a diameter from 110 mm, as they are found in the building and service area, the above-described technologies can be used. Nevertheless, these technologies reach their limits either functionally (ultrasound) as well as regarding the costs, the limited measuring range and number of measuring points on the circumference (X-ray) or the limitation in the measurement of the diameter only (laser). A further technology for the quality control is currently tested. It uses terahertz pulses, which activate a powerful fiber laser that is aimed at the material. The wall thickness is determined by means of the reflected echoes from the inner and outer boundary layers. The usage of this technology for the measurement of larger wall thicknesses and materials with a high damping, as for example PVC, are however limited. Furthermore, the durability of the laser is limited and the costs are very high.

Millimeter waves technology

An innovative, significantly less expensive technology for the dimension measurement and recording of the sagging is the radar technology FMCW (Frequency Modulated Continuous Waves). These systems work within the sub-terahertz range and are already used for some time in the automotive technology for distance measurement. They are based on semiconductor technology, are inexpensive and practically not limited regarding their lifespan. Within the chosen area from 80 to 300 GHz all plastic materials are penetrated with low absorption and thus, the wall thickness is measured. One or two continuously rotating transceiver continuously send and receive frequency modulated millimeter waves while moving around the tube. As an alternative, a static system measures selectively the wall thickness and outer and inner diameter of a tube with two transceiver at 4 points. A rotating gauge head is used when the complete measurement of the wall thickness around the whole circumference of the tube is required. In this version, also the sagging is measured and displayed precisely. The measurement uses the time difference of the signals that are reflected by the boundary layers of the front and back site of the plastic material. The measurement is realized with an accuracy of few micrometers and a measuring rate of 500 single measurements per second. The millimeter waves technology measures products with a diameter from 110 to 3,000 mm precisely, around the complete circumference, with no need for coupling medium and is not influenced by the temperature or plastic material. Furthermore, the measuring system adapts the properties of the extruded plastics by itself – a calibration by the user is redundant. Furthermore, the technology provides information for centering the extrusion tool and thermal control of the line. Thereby, the measuring values are used to ensure an optimal concentricity and minimal wall thickness.

Summary

With the increasing quality requirements at the production of hoses and tubes, the precise and reliable quality control for plastic pipes at the extrusion by a Non-Destructive Testing (NDT) becomes significantly important. Furthermore, an efficient usage of materials for costs savings is in focus of the plant management. Measuring and control systems monitor and control important product parameters continuously. Thereby, hose and tube manufacturers may choose from various technologies with different functions and diverse applications.

The laser technology offers a reliable online measurement of the diameter from 0.05 to 500 mm. Additionally, X-ray measuring systems measure the wall thickness and eccentricity of products with a diameter up to 270 mm. A further innovative technology, based on millimeter waves, is used for extrusion lines where large plastic pipes up to 3,000 mm are produced. The technology is applicable for different material types and measures common tube dimensions as well as the sagging precisely. Which measuring technology should be used in an extrusion line depends, therefore, on the application area and the requirements of the user regarding measuring and control technology for quality assurance, process optimization and cost savings.

www.sikora.net

PC16S®-wave transmission sensor

The PC16S®-wave transmission sensor from BST ProControl works with an innovative sensor technology based on non-ionizing electromagnetic waves and stands out due to its outstanding performance as well as flexibility

With the brand new PC16S®-wave transmission sensor, BST ProControl, a subsidiary of BST eltromat International, is expanding its extensive sensor offerings for layer thickness and basis weight measurement. The innovative sensor was celebrating its world premiere at K 2016, and does not work with ionizing electromagnetic waves. Therefore, neither its operation nor its transport and its disposal require national or international permits. Thanks to its outstanding EMC characteristics, the PC16S®-wave guarantees smooth operation and fulfills all legal requirements. With its touch-free absorption measurement procedure in transmission, it measures polymer-based monofilms particularly quickly and precisely. Typical examples of implementation are the measurement of basis weights, measurements of flat web materials, and the control of calenders and flat film extrusion systems.

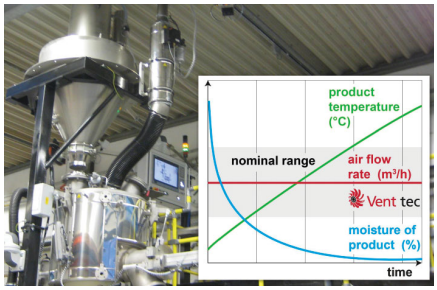
The PC16S®-wave offers some special characteristics that offer BST ProControl's customers additional possibilities for help when measuring polymer-based monofilms. That is how with this transmission sensor, among other things, materials can also be measured if large amounts of fillers were added to the polymer in production as a colorant. For instance, white films are frequently filled with titanium dioxide and black films with soot. While these fillers often strongly influence the measurement results of traditional measurement materials, such as x-ray or infra-red technology, for example, the influence is typically negligible with this new transmission sensor.

In comparison with sensors with ionizing radiation, the PC16S®-wave achieves extremely high measurement accuracy of up to 0.05 g / m². In addition, the innovative sensor covers a large measurement area of up to 2,000 g/m². And because its measurement method is based on non-ionizing technology, with the PC16S®-wave, the inevitable costs for radiation protection that come with traditional transmission sensors are gone.

In addition, its use is versatile. Thanks to its modular construction, it can be efficiently adapted for various applications and outfitted with the respective, necessary components for these tasks. Even with service cases, the modular construction, in combination with technical innovations, guarantees a high availability of the new transmission sensor. Therefore, the PC16S®-wave has a quick clamping device for mounting the sensor and a quick changing device for measurement windows, among other things. Because measurement windows are typically made of thin plastic films that can tear or get dirty, simple interchangeability was sought after here. Thanks to the quick-change mechanism for the measurement window, this market demand is fulfilled in a particularly intelligent way on the PC16S®-wave. In addition, the emitter module, including the transmitter, can be changed in about five minutes. The exchange of the complete unit barely takes five minutes. All components of the new transmission sensor are very easily accessible, which additionally simplifies its replacement and further increases system availability.

The measurement data, transferred at a sampling rate of 100 Hz, are quickly transferred via the Profinet protocol, because the PC16S®-wave is equipped with an open analysis unit from Siemens. That is advantageous for many customers because they are confident in using the programming language of the analysis unit, which is very widespread in this market, and, in the event that service is needed, replacement parts are easily acquired. Ultimately, for BST ProControl customers, both aspects mean cost benefits. Additional advantages of the new transmission sensor are its compact construction, the possibility of combining it with other types of sensors, and the ease of integrating it into existing production systems.

www.bst-procontrol.com



Unlike conventional systems, the new Vent tec 2.0 high-performance aspiration systems for heating/cooling mixer combinations control their own performance independently as a function of actual process parameters. They are thus key to achieving constantly high product qualities in the plastics processing and chemical industries

High-performance mixer aspiration

ensures constant process conditions

With the launch of Vent tec® 2.0, MTI Mischtechnik presents a new generation of its proven high-performance aspiration systems for heating/cooling mixer combinations. Unlike conventional solutions, these devices are the first ever to control their operation autonomously as a function of actual process parameters, thereby providing constant processing conditions irrespectively of changes in process and ambient conditions. Accordingly, they significantly facilitate the task of maintaining uniformly high product quality in the plastics processing and chemicals industry.

Main applications include the production of rigid and soft PVC dryblends and natural fibre compounds (WPC/NFC/PPC) as well as thermal processes where Vent tec® 2.0 devices serve to dehumidify the mixture and/or to reduce the volatiles content. The new generation aspirator systems are available in various sizes for all mixing volumes and accommodating nearly all ATEX environments and mixer designs. Thanks to their autonomous control technology, they can also be retrofitted on other manufacturers' machines.

Prevents deposits, saves time and cost

At process temperatures markedly exceeding the boiling point of water, even low humidity levels may interfere with the process. This is even more relevant for PVC recipes containing hygroscopic stabiliser systems. Without a high-performance aspiration capability, the result may often be massive deposits on the interior surfaces of heating mixers, cooling mixer walls and extruder dies, as well as in calibration devices. The potential consequences may include a diminished mixing quality, extruder problems and fluctuations in the final product. In all such situations, Vent tec® mixer aspiration technology by MTI Mischtechnik provides the necessary uniformly high dehumidification rates for constant production results. Compensating effectively for variations in raw material moisture and seasonal influences on the processing properties of the mixture, these systems provide an unvaryingly high dryblend quality with ultimate humidities ranging down to below 0.05%.

For the manufacturer, this high performance leads to compelling advantages. Thus, an almost fully dehumidified dryblend will permit a high output of downstream machinery. Little or no deposits minimise the time and cost of cleaning the mixing system and all additional equipment, while a constantly high product quality reduces scrap. Together, these three benefits can provide significant cost savings and extended maintenance intervals, thereby resulting in a clearly increased availability of the entire production line.

Closed-loop control for constant drying performance

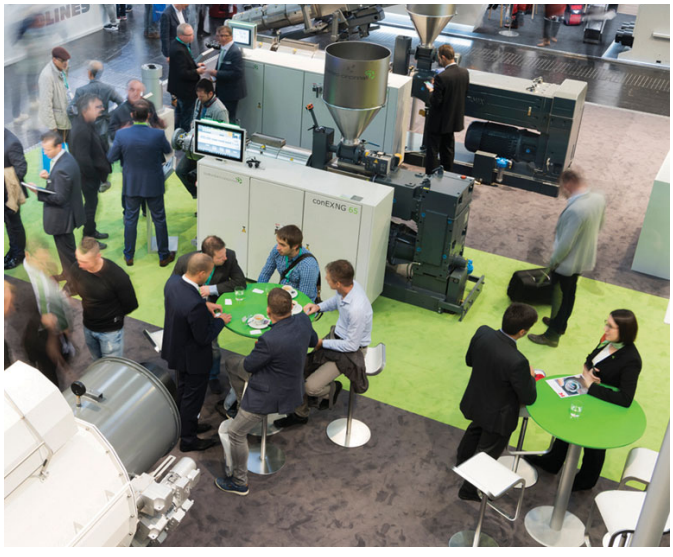
More traditional aspirator systems would not take into account changing process parameters but instead activate/deactivate the exhaust air system as dictated by the process, with filter cleaning being performed at fixed predefined trigger points. This approach is typically linked with disadvantages such as diminishing air output due to progressive filter contamination, causing quality variations in the final product. MTI Mischtechnik's Vent tec® 2.0 aspiration systems, in contrast, continuously monitor all actual operating conditions via key parameters such as intake air and system air temperatures, air pressure, humidity and, with high significance, the aspiration air flow rate. Their electronic controller continuously analyses these variables and adjusts the aspiration system accordingly with due regard to the filter status, keeping aeration airflow conditions constant. In addition, the system reports incipient wear of the process filter at an early stage, thereby allowing preventive maintenance to be carried out. Thus, Vent tec® 2.0 aspirator systems are key to both constantly high drying performance and product quality.

www.mti-mixer.de

The international battenfeld-cincinnati team at the K

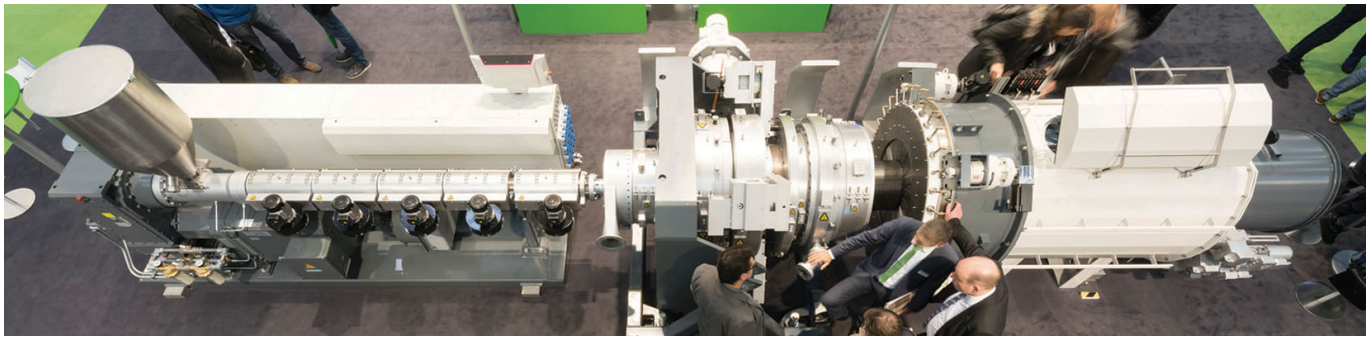
Several orders placed directly

The Indian customer Jain Irrigation Systems Ltd opted again for battenfeld-cincinnati and ordered a complete extrusion line to manufacture large polyolefin pipes up to 2,500 mm in diameter at the K. Not the only order received by the machine manufacturer at this year's K! "We are really excited about the enormous positive feedback for our trade fair presentation. We had many more visitors than three years ago, especially from Africa, Asia and the Near and Middle East, and we received several major orders directly at the fair. For us, this is the best proof that we are able to fulfill precisely our customers' needs with the new machine concepts we have developed, according to our motto 'driven by innovation'", Gerold Schley, CEO of the battenfeld-cincinnati group, sums up with satisfaction.



The battenfeld-cincinnati booth was well frequented throughout the fair. The new conEX NG with the new BCtouch UX control system is visible in the background

One of the highlights at the booth and a part of the large-diameter pipe extrusion line for the Indian customer was the new solEX NG extruder series. The high-performance extruders of the "next generation" (NG) with their processing length of 40 D have been created on the basis of the proven solEX extruders. However, their completely re-designed process technology con-cept is setting new benchmarks. A barrel with internal grooves in combination with a matching screw and grooved bushing ge-ometry optimizes the extruder's processing attributes. The result is a lower melt temperature by up to 10°C along with a com-pletely changed axial pressure profile in the feed zone and bar-rel, which leads to an overall reduction of the load on the system and consequently a cut in energy consumption of up to 15%. "The interest shown by the pipe industry in these new extruders is very lively", Gerold Schley remarks with pleasure and then adds: "Together with our FDC system, which was also on dis-play, the range for pipe manufacturers is very attractive all round." With its FDC (fast dimension change) system, battenfeld-cincinnati has broken new ground. This pipe dimension



View of the FDC (fast dimension change) line arrangement, from the left: solEX NG extruder, FDC pipe die, FDC calibration sleeve, FDC vacuum tank and FDC vacuum sealing

change system operates fully automatically across a wide range of diam-eters and allows not only a change of external diameters, but also of pipe wall thickness during running production. It is per-fectly synchronized from pipe head to cutting unit, so that di-mension change can be started by the push of a single button. FDC lines cover an enormous bandwidth of diameters, ranging from 90 to 630 mm, which is currently unique on the market. The FDC pipe dies with an adjustable melt gap are available for diameters of up to 1,200 mm, and FDC vacuum tanks, cooling tanks, haul-offs and cutting devices for diameters of up to 1,000 mm.

"At this year's K, the interest in our solutions not only for pipe production but also for the packaging industry was particularly strong", Gerold Schley continues. With its XXL-Multi-Touch roll stack, the machine manufacturer presented an ideal solution for making top-quality, stress-free sheet for packaging at high speeds of more than 110 m/min and with enormous outputs of up to 3,300 kg/h (PET) and 2,700 kg/h (PP). The Multi-Touch roll stacks combined with the proven high-speed extruders are the ideal equipment for high-speed thermoforming sheet extrusion. battenfeld-cincinnati also offers STARextruders, a special machine series for PET processing.

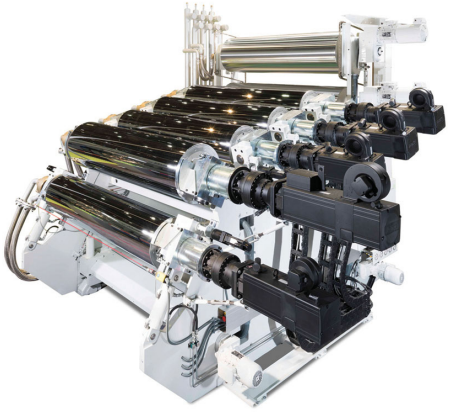
An absolute novelty in the battenfeld-cincinnati product portfolio is a special 3-layer feedblock for thermoforming sheet production, which is completely manufactured in-house in Bad Oeynhausen (Germany). The concept of using a pin with a milled distributor curve to achieve an optimal layer thickness distribution so impressed customers that eight orders have already been placed. This is an added incentive for the machine manufacturer to offer this type of technology for 5-, 7- and 9-layer feedblocks in future as well.

battenfeld-cincinnati has seldom had so many new extruders and machine components on show at its booth. Apart from its new solEX NG single screw extruder series, the conEX NG twin screw series for PVC pipe and profile production also celebrated its premiere. These new extruders, too, were created by a complete re-design of the processing unit: a longer pre-heating zone and an optimized screw geometry ensure higher outputs with significantly reduced shear stress and machine wear. All extruders are easy to operate, thanks to the new BCtouch UX control system, featuring clarity and easy handling, which customers could experience first hand directly at the booth.

"The very positive response shows that our motto 'driven by in-novation' and constant work on new, innovative solutions has paid off. We will keep this up and will present an even wider range of new technological solutions both in the coming years and at the K 2019", is how Gerold Schley expresses his outlook for the future. At the same time, the machine manufacturer is strengthening its sales and service team to enable it to act even faster and move closer to its customer.

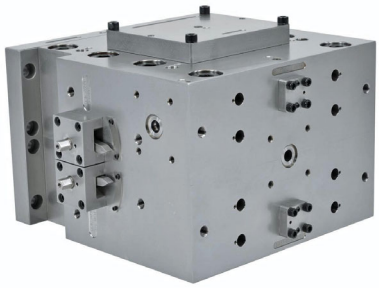
www.battenfeld-cincinnati.com

The XXL version of the Multi-Touch roll stack on display at the booth was delivered directly to a customer after the K



battenfeld-cincinnati's new feedblock for standard applications in thermoforming sheet extrusion

A new-generation coextrusion feedblock from Nordson Corporation enables processors of film, sheet, and coatings to fine-tune individual layers as well as accommodate changes in layer ratio, and to adjust the tuning system without removing the feedblock from the production line.

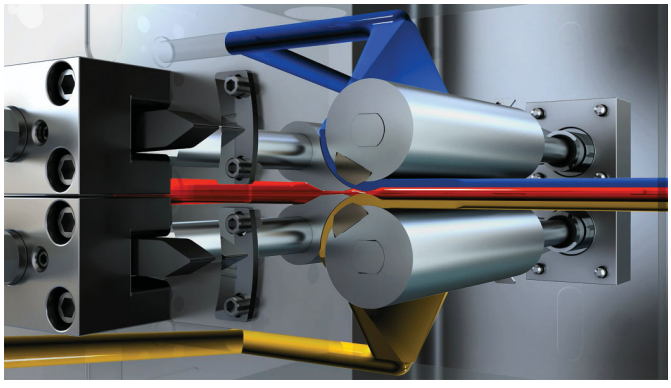


Internal Components of Feedblock

New feedblock fine-tunes each layer

A feedblock combines melt streams from separate extruders into a multi-layer "sandwich" that the extrusion die subsequently distributes to target product width. The new EDI™ Ultraflow™ V-T feedblock has separate devices for fine-tuning layer stability and thickness uniformity, and both are capable of being adjusted without stopping production. As in the widely used Ultraflow™ V feedblock, one of these devices is a pair of "combining planes" (located where the outer-layer melt streams join the core layer in the central flow channel) that fine-tune the overall structure by adjusting the gaps at the point of layer combination. What is new is a pair of "profiling actuators" (located opposite the combining planes) within which are mounted interchangeable "profile bars" that fine-tune the thickness uniformity of the individual layers (see schematic). For coextrusion of more than three layers, additional tuning devices are placed farther downstream, where more melt streams join the central structure.

"Because the profiling actuators are large in diameter, they accommodate wider profile bars and enable them to be positioned either close to or farther from the layer combining point," said Sam G. Iuliano, business development manager for polymer dies. "This provides more area for tuning layer thickness uniformity and thus makes possible more accurate and effective tuning. In addition, changing the position of the profile bars dramatically changes the result, allowing for significant process refinements to be made on-the-fly."



Schematic of internal working components of EDI™ Ultraflow™ V-T feedblock shows fine-tuning of a three-layer coextrusion. Flow direction is from left to right. First, two tear-drop shaped "combining planes" tune the overall structure by adjusting the gaps at the point of layer combination, where the outer-layer melt streams (blue and gold) join the core layer (red) in the central flow channel. At the same time, two cylinder-shaped "profiling actuators" (located opposite the combining planes) tune the thickness uniformity of the individual layers by means of interchangeable "profile bars" (brown components mounted on the profiling actuators. For coextrusion of more than three layers, additional tuning devices are placed farther downstream, where more melt streams join the central structure

The positioning of the profile bars with respect to the combining point is adjusted by rotating the profiling actuators. This is accomplished by turning nuts on the outside of the feedblock in accordance with a position indicator and does not entail stopping production.

The profile bars are available with various surface configurations, including a standard bar with a uniform raised surface and others designed to correct such issues as heavy end flow, heavy center flow, or "M" or "W" patterns. The bars are installed in dovetail grooves in the surface of the profiling actuators. A cover plate in the feedblock provides access for replacing one set of bars with another. Adjusting the profiling actuators in the Ultraflow V-T feedblock makes it possible to influence the distribution of a particular layer. If further adjustment is necessary, one can replace the profile bars by briefly stopping production, without having to remove the feedblock from the extrusion line. Nordson will specify a feedblock whose flow channel differs in size from the standard 4 in. (100 mm), with widths available from 2 in. (50 mm) up to 7 in. (180 mm) depending on the width of the product to be extruded. Larger volume feedblock channels reduce the shear stress levels at the layer interfaces and a wider feedblock channel contributes to a more consistently on-specification product. In the case of a 100-in. (2,540-mm) die, for example, the spreading ratio is 25:1 for a 4-in. feedblock channel but only about 14:1 for a 7-in. channel.

As in the Ultraflow V feedblock, the combining planes in the new Ultraflow V-T system combine polymers in a parallel-path manner, achieving optimal layer ratio stability throughout the structure. Their ability to be adjusted 'on the fly' increases uptime and allows for greater end-product versatility.

The Ultraflow V-T feedblock is available with Nordson's optional selector spool that allows the layer sequence to be pre-arranged upstream of the combining point, without removing the feedblock from the production line.

www.nordson.com

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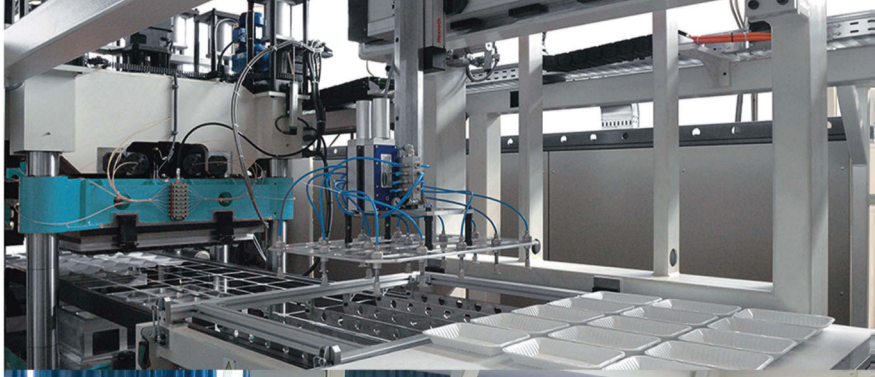

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Resource- and energy-saving, plastics recycling
Industry 4.0 in extrusion, compounding, granulation and mixing
Injection moulding

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- extrusion lines, molding machines, peripheral equipment suppliers – **15 companies**
- polymers, additives, fillers suppliers – **9 companies**

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