

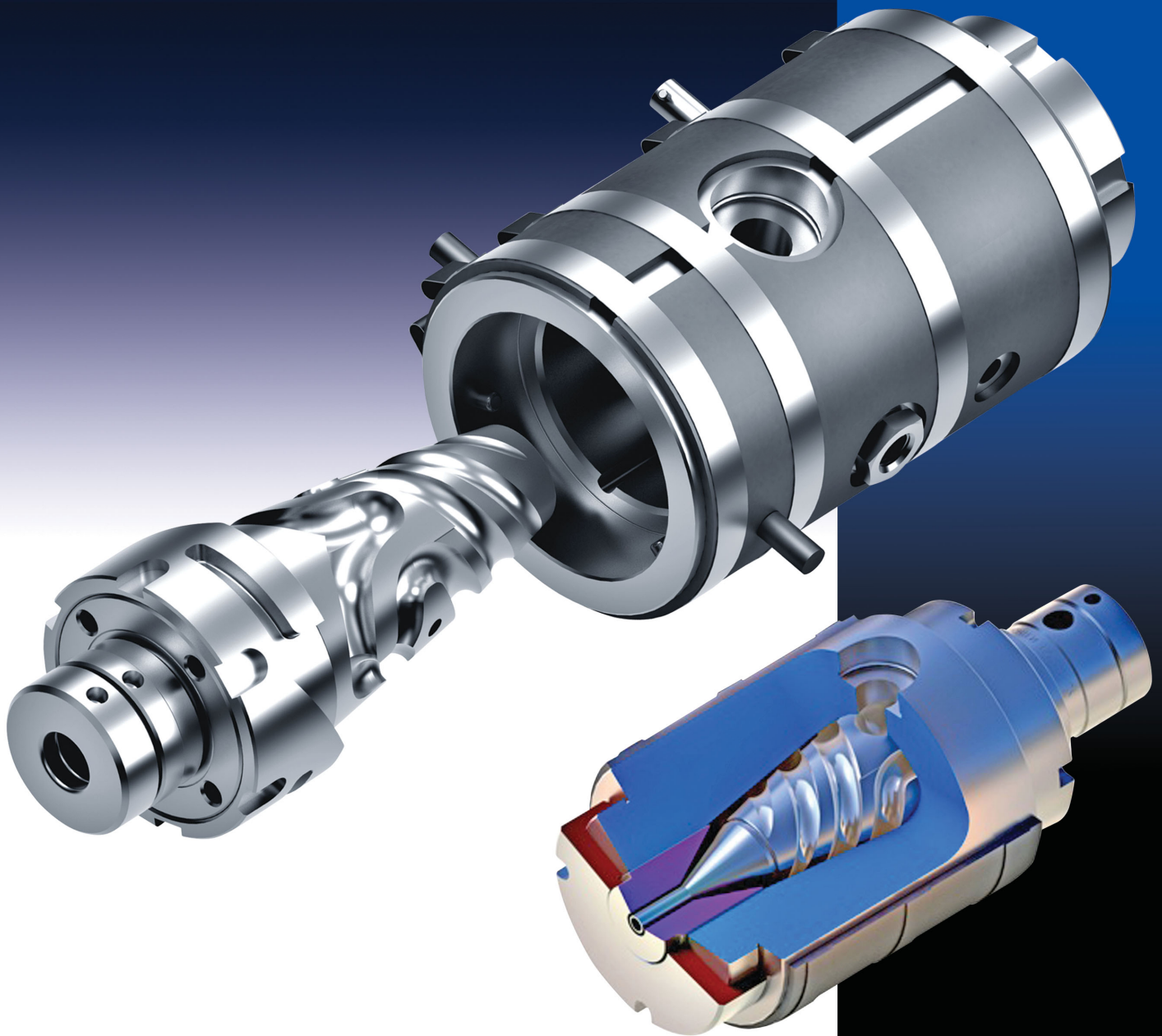
03/2019

VVA VERLAG
Cologne /Germany



EXTRUSION INTERNATIONAL

USA

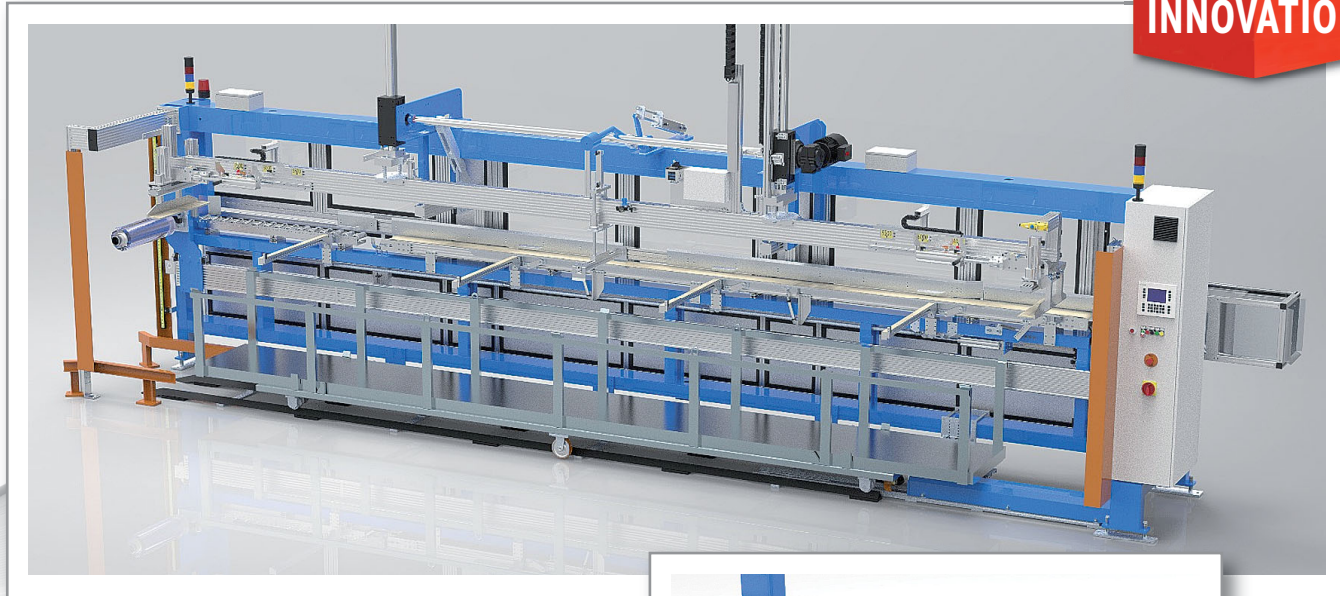


Guill
EXTRUSION TOOLING

BULLET II

Profile stacking machine PRO

INNOVATION



Profile length measurement during extrusion

Using special sensors the length of individual profiles can be detected before the formation of a profile layer to stack. The measured length can be used for checking and correcting the cutting unit of the extrusion line or for documentation (quality assurance) of the produced profile lengths.

Weight determination during extrusion

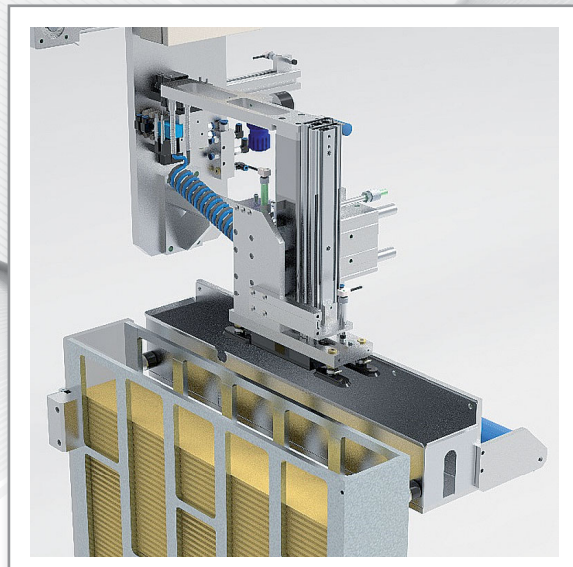
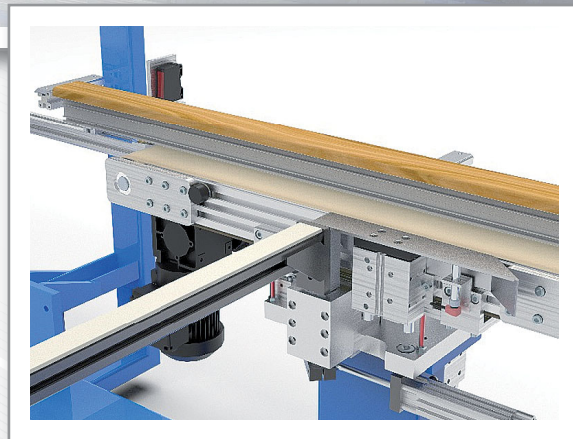
Special weighing units can be used to weigh individual profiles before forming a profile layer. The determined weight can be used to optimize the extrusion process.

Paper / Foil or Strip laying

By a paper / foil laying unit the profile stacking machines are capable to provide a paper or foil layer between stacked profile layers.

NEW: Additional to this feature plastic strips for the further stabilization of the profile layers in the transportation cassette can be provided.

The strips are positioned by a special device in defined positions on the profile layer already stacked. The next profile layer will be stacked on these strips then.



Made in
Germany

Laminating foil cutting unit

INNOVATION

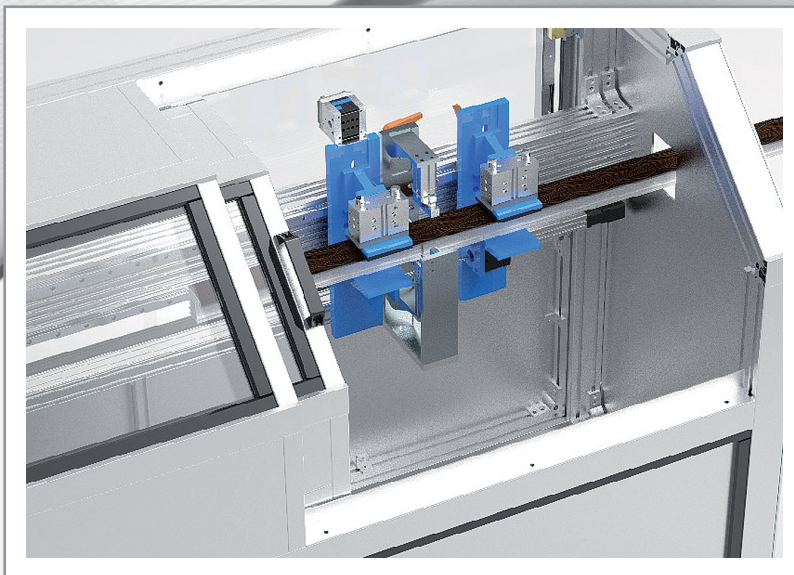


Foil cutting for laminating lines

For the offline lamination of profiles single profile sections are provided to the laminating line **end to end** and are laminated with foil continuously.

After the lamination process the laminating foil has to be cut to separate the profiles again.

The **laminating foil cutting unit** detects the profile ends, makes a gap in between the ends and cuts the laminating foil automatically.



Advantages of the laminating foil cutting unit

- No damage of the profiles when cutting the laminating foil.
- No interference of the cutting process into the laminating process.
- No danger to employees due to manual cutting.

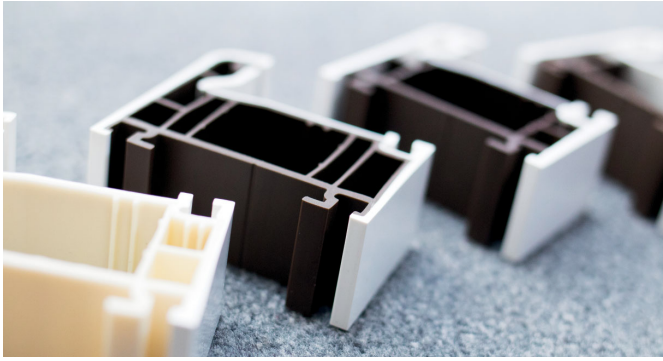
„STEIN BLUE-LINE – for a sustainable future“ stands for sustainable and energy-efficient equipment. Almost 100% domestic production and the high degree of manufacturing penetration guarantee compliance with even the most stringent of demands.



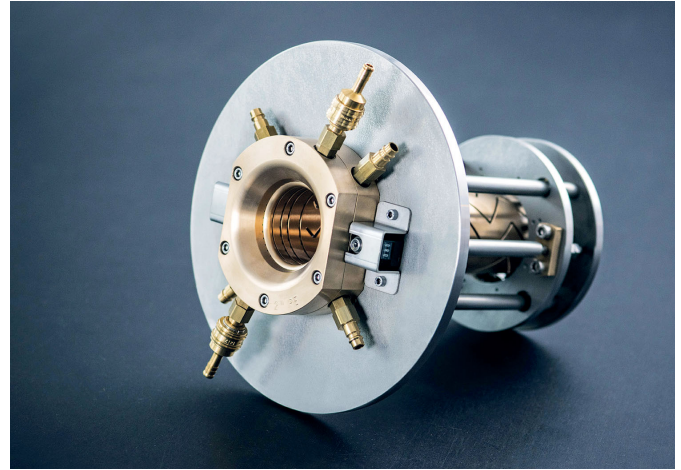
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GmbH & Co. KG**

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Firms in this issue	6	New Categories in Annual	
Imprint	7	Parts Competition – Call for Entries	24
Industry News	8	Extrusion Tooling – Latest Technology	
Calendar	8	showcased at Interwire	25
New Trading and Service Portal for		Opening of Canadian Distribution Operation	
Recycled Plastics goes live	8	announced	25
RecyClass Platform	11	365 Days Injury-Free celebrated	26
Brazilian Market for Plastics Machinery	11	First All-Plastic Twin Drum for Transport of Highly	
Market Study: Polyvinyl Chloride	12	Aggressive Chemicals launched	26
„Plastic Extruders: Rheology,		Changes in Top Management announced	27
Performance Evaluation & Maintenance“	12	Unique Augmented Reality Experience of Complete	
Newly Designed, Information-packed Website	12	Measurement System at ICE USA showcased	27
Liquid Additive increases Physical Properties of		Profile Extrusion	
Recycled Polymers	13	MILL/8 – New Customized Milling Machine	28
High-Performance PVC Elastomer Insulation		Extrusion Technology	
Compounds	14	LAYER.COEX plus – that’s Economic Efficiency	29
Acquisition	14	Pipe Extrusion	
Rebuilding started	15	Quality and Innovation for Plastic Pipe Extrusion	30
Reliable Control over Process Temperatures	16	Film Extrusion	
Four more Machines for Fujian Billion, China	16	New Pilot Plant Line for Packaging Industry	31
Further Assembly Plant	17	Extrusion Technology	
CPP High Barrier Film launched	18	Extrusion Lines for the Production of	
New Polyethylene Technology Advancements		Waterproofing Membranes	
introduced	18	in PVC & TPO supplied	32
Light Stabilizer for Greenhouse Films	19	Extrusion Tooling	
Biopolymers Applications	20	New 500 Series Rubber/Silicone	
New Plant	20	Extrusion Crosshead	33
Market Launch of ZE GP Agile		Recycling, Compounding	
Compounding Extruder	21	Regeneration of Heavily printed	
Innovative New Specialty Masterbatch Products	22	Ground Film with Tandem Line	34
Recycling Plant for Plastics to Japan	22	Automation for Plastics Processing	
Plants in Spain and Indonesia		Innovations from Italy at Plastpol 2019	36
are recently certified to Key		Measuring Technology	
Food-Contact Standard	23	Terahertz – iNOEX Technology sets Industrial	
New Recyclable Packaging launched	23	Standard	38
Plastics Machinery Shipments		Measurement Technology – Case Study	
Decline in First Quarter	24	„When producing a perfect pipe not only	
		customers will be satisfied, but we will be too“	41



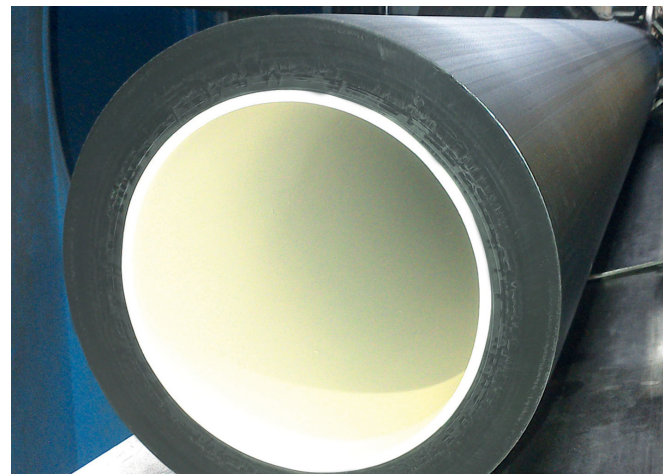
29 With LAYER.COEX plus, the latest co-extrusion technology from Greiner Extrusion, highest cost savings can be achieved due to the use of a high proportion of mixed regrind, with simultaneously highest processing reliability.



CCA GmbH develops reliable high-performance solutions for plastic pipe extrusion. The high-quality calibration sleeves are used successfully all over the world. **30**



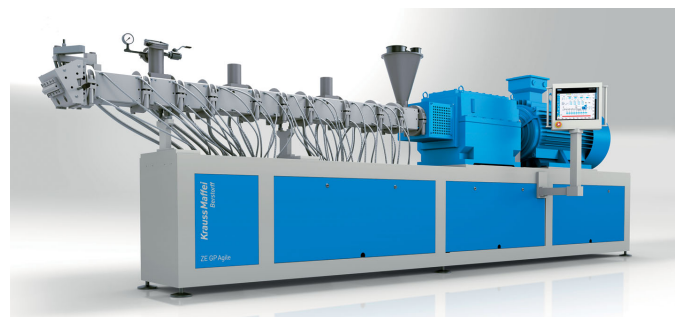
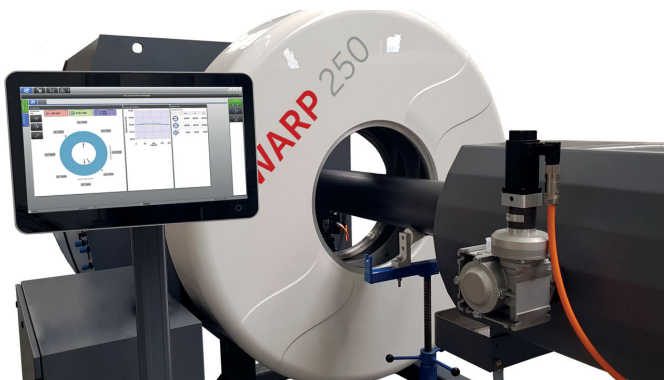
Moretto participated at Plastpol 2019. Together with the team of the local branch, Moretto welcomed the main players of the plastics industry. **36**



Since 2017, Gerodur has been using millimeter wave technology from SIKORA AG for the measurement of the wall thickness, diameter and sagging of plastic pipes during the extrusion process. **41**

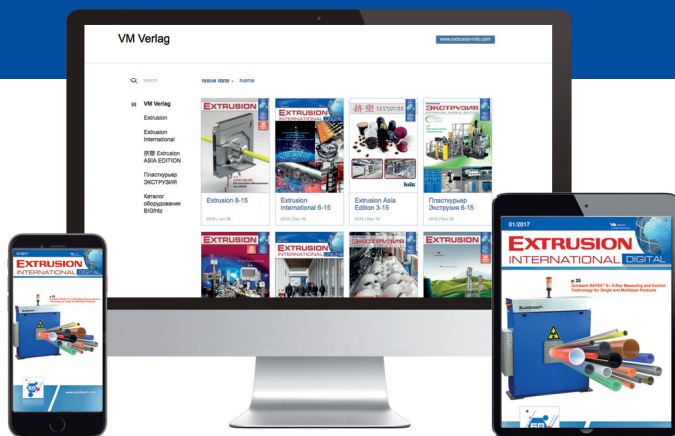
INOEX recognized the benefits of the new key technology Terahertz / millimeter waves at an early stage and has during the past 8 years developed it into a pioneering technology which is now ready for use in industrial environments. **38**

At this year's Chinaplas, KraussMaffei Berstorff showcased its new ZE GP Agile twin-screw extruder series. This extruder generation is specifically aimed at compounding companies on the growth track that intend to substantially increase their productivity. **21**



Index of Advertisers, companies and *fairs* referred in this issue

ALBA.....	22	Jwell.....	7
Ancor.....	23	Kampf.....	16
AMUT.....	20, 32	KraussMaffei Berstorff.....	21
Baruffaldi.....	28	Logoplaste.....	20
BASF.....	19	Maag.....	21
Battenfeld-cincinnati.....	31	Moretto.....	36
Bürkert Fluid Control.....	16	motan-colortronic.....	17
CCA.....	30	NDC.....	27
Ceresana.....	12	Plastics Industry Association.....	24
Clariant.....	23	PLAS MEC.....	13
Colloids.....	22	Plastship.....	8
Conventus.....	25	RecyClassTM.....	11
Cosmo Films.....	18	RIKUTEC.....	26
Davis-Standard.....	26	Riverdale Global.....	13
Euromap.....	11	Sikora.....	41
ExxonMobil.....	18	Smart-Extrusion.....	Inside and Outside Back Cover
Gamma Meccanica.....	34	SPE Thermoforming.....	24
Gerodur.....	41	Stein Maschinenbau.....	Inside Front Cover+3
GN Thermoforming.....	27	TechnoBiz.....	12
Greiner Extrusion.....	15, 29	Teknor Apex.....	14
Guill.....	12, 25, 33, Outside Cover	Troester.....	14
Herbold Meckesheim.....	15	Weber, Hans.....	.9+10
ILLIG.....	17	ZUMBACH.....	19
iNOEX.....	38		



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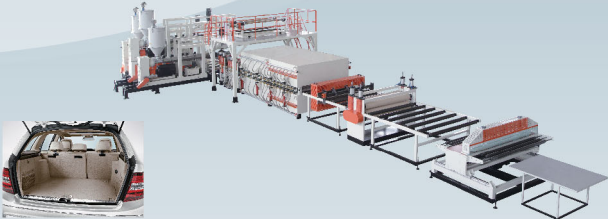
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www.extrusion-info.com

PP Honeycomb Board Extrusion Line




Double Wall Corrugated Pipe Extrusion Line



SPC Calcium-plastic Environmental Floor Extrusion Line

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www.jwell.cn
sales@jwell.cn





Biobased Coatings Europe 2019

19. - 20. 06. 2019

Dusseldorf / Germany

Active Communications International
(ACI Europe)

www.wplgroup.com/aci/event/biobased-coatings-europe

Plastic Extruders: Rheology, Performance Evaluation & Maintenance

18. - 19. 07. 2019

Bangkok / Thailand

www.plastics-industry.org

22nd PPPEXPO AFRICA 2019

International Trade Exhibition on
Plastics, Printing & Packaging

01. - 03. 08. 2019

Nairobi, Kenya

<http://www.africa2trust.com/Events/Details.aspx?id=95>

Recycled Packaging for Food Contact

18. - 19. 09. 2019

Brussels / Belgium

<https://www.cmtevents.com/aboutevent.aspx?ev=190920&>

K' 2019

16. - 23. 10. 2019

Dusseldorf / Germany

Messe Düsseldorf GmbH

www.k-online.de

Central Asia Plast World

20. - 22. 10. 2019

Almaty / Kazakhstan

www.plastworld.kz

Plastics Recyclers

21. - 22. 11. 2019

Brussels / Belgium

www.plasticsrecyclersam.org

New Trading and Service Portal for Recycled Plastics goes live

■ plastship successfully launched on 6 May 2019, is a new trading and service platform for buyers and sellers of regrinds, re-granulates and recyclates plus, in the near future, also of additives for tailoring the properties of recycled materials, as well as associated services. Operating under the slogan "new thinking for the circular economy", the portal's services include independent assessment of the recyclability of plastics packaging and products for complete product ranges and their impact on selected environmental factors. plastship also provides consultancy in optimizing product sustainability in terms of design for recycling and the use of recyclates. The new platform is available in German and English. Managing directors are Andreas Bastian and Konstantin Humm. The principal shareholder is RIGK GmbH which has over 25 years of experience as a provider of recovery systems and recycling solutions for all kinds of plastics and packaging.

Andreas Bastian explains, "plastship's three most important aims are to establish new applications for recycled plastics, to simplify and accelerate the use of recycled plastics and to develop uniform quality and information standards for recycled plastics. We provide all-round support for all parties. Well thought-out, user-friendly navigation makes it easier to identify the grade, properties and possibly the trade name of all the materials on offer, whilst a uniform standard ensures comparability. In addition to procuring materials, plastship's support can also extend to organizing shipment of the material and delivery of sample quantities. As a result, plastship provides plastics recyclers with simple, rapid access to new clients which means they can devote the time they save to their core business."

*Managing directors of the trading and service platform plastship:
Konstantin Humm, left, and Andreas Bastian (© plastship)*



▶ **Technical profiles** are versatile – e.g. **for use** in cars, in construction, in the furniture industry or in the white goods industry. And **with** profiles manufactured on extruders from **WEBER**, the quality is simply perfect.



ES 60



5-fold co-extrusion line

The best properties – the best quality

The variety of polymers, compounds and compound systems allows for application-specific and individual solutions in the extrusion of technical profiles. The selection and mixture of the materials used influence strength properties, ageing properties, UV resistance, elasticity, geometric design and many other aspects.

WEBER co-extrusion technology is used increasingly to meet the different requirements of extruded products. This allows specific use of the different polymer properties to achieve perfect results.



Scan code and
download data sheets
[extrudertechnologie.de/en/
technicalprofiles_pipes](http://extrudertechnologie.de/en/technicalprofiles_pipes)

Advantages

- // High technical standard through long-standing experience and further development
- // Highest level of flexibility through high vertical integration
- // Complete systems for manufacturing technical profiles
- // Complete systems for manufacturing PA, TPU, PC/ABS and POM pipes

RecyClass Platform

■ Much of the plastic packaging placed on the market today requires a redesign to be circular. Design for recycling is the starting point in ensuring the genuine circularity of plastics and reaching the 55% recycling target by 2030 in Europe. The main purpose of the RecyClass Platform is steering the shift towards circularity of plastics by working with the whole value chain on advancing the recyclability of plastic packaging, while making it compatible with existing recycling technologies.

Moreover, the Platform is working on the development of 'Recyclability Evaluation Protocols' for the different polymers and packaging that are placed on the EU market. As the shift towards circularity will require innovation, the objective is to develop new laboratory procedures for recyclability testing of innovative packaging. The RecyClass Evaluation Protocols aim to be an European-wide, standardized and scientific-based tool to assess and measure on a lab scale the impact of an innovative material/package in the existing recycling streams. This is crucial in order to prevent innovations that could create problems in recycling, instead of solving them. Last year, 'RecyClass Evaluation Protocols for PE films' was published*. For multilayer flexibles, the impact of barriers like ethylene vinyl alcohol, polyamide and metallization are under evaluation, to allow for a precise, scientific compatibility check during the PE film recycling process. Scheduled for this year are also laboratory tests for other polymer types.



Furthermore, any innovative technology developed by the member companies can be analyzed and endorsed by the Platform.

Among the growing network of partners that are now part of the initiative, there are raw material producers, packaging manufacturers, fast-moving consumer goods companies, brand owners and packaging decoration specialists.

■ **RecyClass™**
c/o Plastics Recyclers Europe
www.recyclclass.eu
*www.plasticsrecyclers.eu/your-plastic-film-recyclable-test-it

Brazilian Market for Plastics Machinery

■ Brazil is Europe's most important trading partner in Latin America. In 2018 the export of plastics and rubber machinery from the EU to Brazil amounted to 169 Million Euro. Reason enough to have a close look on the Brazilian Market for Plastics Machinery. This is why EUROMAP, in cooperation with the „Gesellschaft zur Förderung des Maschinenbaues“, gave MaxiQuim, the largest Brazilian consulting company for the chemical industry, the order, to analyse the current machine installations and to evaluate the prospects for the future.

As a first market segment, the Brazilian packaging industry was analysed. Therefore, MaxiQuim interviewed 75 companies producing consumption and industrial packages. The market is dominated by smaller companies with up to 100 employees and a capacity below 5000 kton of processed material per year. With an average age of 10 years of the machines, the situation in Brazil is similar to Europe. The economic recession in recent years has affected investments and the machine utilization rate was relatively low (average 75%). However, 40% of the companies plan investments in the next 5 years, partly more than 1 Million Euros. For injection

moulding higher investments are expected than for extrusion. In total, future investments depend on an effective resumption of the machine utilization rate. Higher value-added products such as multi-layer flexible packaging are identified as a future trend. As consequence, the quality of the machine has been mentioned a most important purchasing factor, followed by the price. Although an increasing level of automation and productivity is requested, Industry 4.0 (smart factory) has not really reached Brazil yet.

EUROMAP plans to conduct following studies for updating the figures and findings and for regarding other segments like automotive.

■ **EUROMAP**
c/o VDMA Plastics and Rubber Machinery
www.euromap.org

Market Study: Polyvinyl Chloride

■ Sunlight, acid or salt water: Polyvinyl chloride (PVC) can withstand practically anything and is almost indestructible. PVC plasticizers are controversial, yet, this robust material remains one of the most frequently produced plastics alongside polypropylene and polyethylene. Demand even continues to increase: The most current and already fifth PVC market report by Ceresana expects demand to increase to about 56.2 million tonnes until 2026. The Study in Brief:

Chapter 1 provides a description and analysis of the global PVC market – including forecasts up to 2026: demand and revenues are explained for each region of the world. Furthermore, demand per product and application area is analyzed. The following PVC products are examined individually: Pipes, profiles, films and sheets, cables, containers, flooring, others. The study analyzes the following application areas in detail: Flexible and rigid packaging, construction, transportation, electrical and electronics (E&E), industry, others.

In Chapter 2, information on demand, revenues, production, capacities, and trade is given for 46 individual countries. Demand per PVC product and application as well as demand per PVC type (rigid and flexible) are depicted as well. Chapter 3 provides useful profiles of the largest manufacturers of PVC – clearly arranged according to contact details, turnover, profit, product range, production sites, capacities, and profile summary. Extensive profiles of 81 manufacturers are given.

Market Study: Polyvinyl Chloride (5th ed.)



Ceresana

■ Ceresana
<https://www.ceresana.com/en/market-studies/plastics/polyvinyl-chloride/>

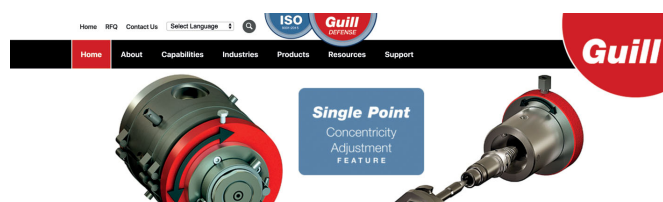
"Plastic Extruders: Rheology, Performance Evaluation & Maintenance"

18-19 July 2019, Bangkok, Thailand

■ This course is focusing on Review of Extruded Polymers, Polymer Rheology, Extrusion Principles, Analysing Flow through Extruder Die, Evaluating Extruder Performance and Extruder Maintenance'. Prof. Kirk Cantor of Penn College of Technology, with more than 25 years of experience in polymer extrusion, teaches this course, which is suitable for all types of plastics extrusion professionals – both experienced and less experienced.



■ Registration form with brochure to download at:
www.plastics-industry.org
Plastics Industry Department TechnoBiz Communications Co., Ltd.



Newly Designed, Information-packed Website

■ Guill Tool & Engineering, world leader in extrusion tooling design and manufacturing, just rolled out a new website at www.guill.com. The new site offers a detailed look at the company's entire product line, which offers a wide-range of standard and custom designed extrusion tooling, including crossheads, in-line heads, rotary heads and extrusion tips & dies.

The site includes a full listing of all product and specifications with calculation tools to compute annual cost of lengthy concentricity adjustments and crosshead replacement analysis, plus calculators to compute draw-down, feet per minute and pounds per hour. The website includes charts and tables with detailed data and a full library of downloadable literature organized by industry. Guill markets its equipment worldwide and is currently seeking new representatives in select countries.

The Guill website is mobile phone friendly and offers the convenience of allowing users to request a quote online. The website has already been awarded the 2018 American Web Design Award from Graphic Design USA.

■ Guill Tool & Engineering
www.guill.com

Liquid Additive increases Physical Properties of Recycled Polymers

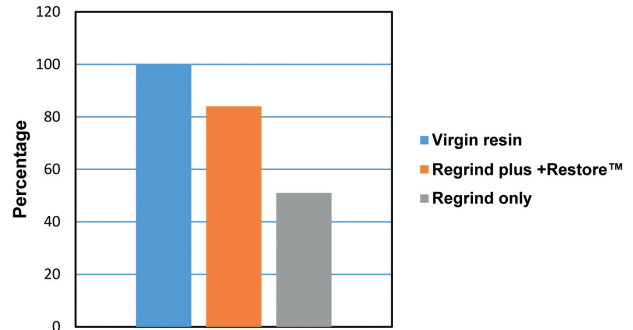
■ A new liquid additive reduces the polymer degradation that takes place during melt processing, substantially increasing physical property retention in regrind as compared with unmodified material.

+Restore™ additive from Riverdale Global has exhibited positive results with recycled commodity resins such as polyolefins, according to Jared Arbeter, technical sales manager. For example, reground homopolymer polypropylene containing +Restore additive exhibited 65% greater Izod impact strength than unmodified regrind (see chart). Improvements have also been achieved with PP copolymer and HDPE.

The new additive can be used alone or in a blend with Riverdale Global’s liquid colors. Typical usage rates are in the 0.1 to 0.5% range. Processors can use the +Restore additive to enhance the physical properties of virgin materials, though the most dramatic results are exhibited in recycling.

“+Restore enables recyclers to obtain physical properties much closer to those of virgin polymer than with unmodified

Notched Izod Impact Strength of Homopolymer PP



Graph Showing Retention of Impact Strength in Reprocessed Homopolymer Polypropylene Made Possible by +Restore™ Additive

regrind,” said Jared Arbeter. “This innovation expands end-use possibilities for recycled material, opening new applications in molded or extruded products, including fibers.”

RIVERDALE GLOBAL, LLC
www.riverdaleglobal.com



For over **50 years** a landmark in the international market for the **manufacturing** of **complete mixing plants**

PVC DRY BLEND - POWDER COATINGS
MASTERBATCH AND PIGMENTS - THERMOPLASTIC RUBBER
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High-Performance PVC Elastomer Insulation Compounds

■ Two PVC elastomer compounds for wire and cable insulation exhibit the enhanced performance required in diverse demanding applications while providing manufacturers with new options for versatility. Teknor Apex Company featured the compounds at Interwire 2019.

As thermoplastic elastomers, Flexalloy® 89504-90 and -90FR compounds provide greater low-temperature flexibility than standard PVC and more capability to withstand repeated flexure over a long working life. Both grades have Shore A hardness ratings of 90, are UL recognized for Oil I and II as insulation, and meet the requirements of the VW1 (UL 83) flame test. The FR grade provides a greater level of flame resistance and has UL recognition for meeting the 720 hour sunlight resistance test in all colors.

“Teknor Apex received dual UL recognition for Flexalloy 89504-90 products as both “PVC” and “elastomer” compounds, enabling them to be used for all cable types within UL 62 and many wet-rated applications under UL 83,” said David Braun, wire and cable industry manager for the Vinyl Division of Teknor Apex. “In cases where these insulation



Typical application: welding cable

compounds are matched with our extensive line of Flexalloy jacket materials, manufacturers can use Teknor Apex as a single cable compound source.”

■ Teknor Apex Company
www.teknorapex.com

Acquisition

■ Harburg-Freudenberger Maschinenbau GmbH (Hamburg, Germany) and TROESTER GmbH & Co. KG (Hanover, Germany) announced that the HF Group’s Extrusion Technology Business Unit was transferred to TROESTER on May 1st, 2019. Following decades of designing and manufacturing extrusion equipment and related components, the HF Group has decided to transfer its Extrusion Technology Division to TROESTER. TROESTER GmbH & Co. KG will maintain the Extrusion Business Units location in Hamburg and has taken over all Extrusion employees thus guaranteeing the continuity and product excellence which was one of the key factors of the sale.

Dr. Joern Seevers, Managing Director of Harburg-Freudenberger Maschinenbau GmbH, explains the company’s decision: “The Extrusion business has changed significantly in recent years and many of our customers are increasingly asking for complete lines and turnkey solutions for rubber extrusion. With the transfer of ownership to TROESTER we are ensuring that Extrusion – which today is highly specialized in the Indian market – can continue to develop successfully in their field of expertise. We are delighted that TROESTER, a traditionally run family business, shares similar values as HF and will continue to develop the acquired business together with its highly qualified employees.”

Dr. Peter Schmidt, Managing Partner of TROESTER GmbH & Co. KG, comments on the transfer: “HF’s Extrusion technol-

ogy has convinced us. The acquisition enables us to take over technologically excellent Extrusion products as well as a dynamic service and engineering organization, which we are looking forward to and which will open up new opportunities for TROESTER in the international market. HF Extrusion’s technical equipment and scope as well as their international network of valuable business contacts ideally complement TROESTER’s current portfolio thus providing our customers with new and enhanced equipment solutions.”

As the world’s leading supplier to the tire industry, HF will focus on its mixing equipment, tire building machines, curing presses and Press+Lipid Tech machinery in order to promote these products through innovation thus strengthening and continuously expanding their market position.

Existing HF extrusion orders and projects will be completed in close cooperation with TROESTER and both teams will continue to ensure continuity in all future business relations with customers and suppliers from their respective locations in Hanover and Hamburg.

The acquisition of HF Extrusion is another important step for TROESTER to further develop the company and establish itself as one of the world’s leading system suppliers for rubber extrusion machinery and equipment.

■ TROESTER GmbH & Co. KG
www.troester.de

SILVER.TOOLING

Greiner quality at Chinese prices



Benefit from the advantages of SILVER.TOOLING for the extrusion of smaller-sized profiles.

SILVER.TOOLING was specifically developed for the requirements of the extrusion of smaller-sized profiles such as glazing beads, connectors, interlocks, rods, technical profiles and much more. SILVER.TOOLING incorporates Greiner's know-how from over 28,000 delivered tooling systems and the experience from 40 years of tooling manufacture to give you a greater advantage in extrusion.

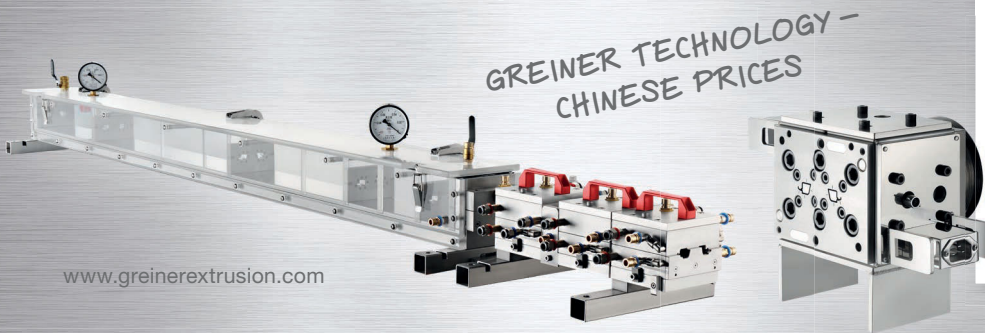


Your benefits:

- Greiner tooling performance at Chinese prices
- speed of 5-6 m/min
- Greiner technology and tooling design
- European quality steel
- absolute reliability
- 10 weeks delivery time ex works

Options:

- post-co-extrusion
- rectifying unit for improved profile linearity
- gloss heating to control gloss level
- coatable tooling design

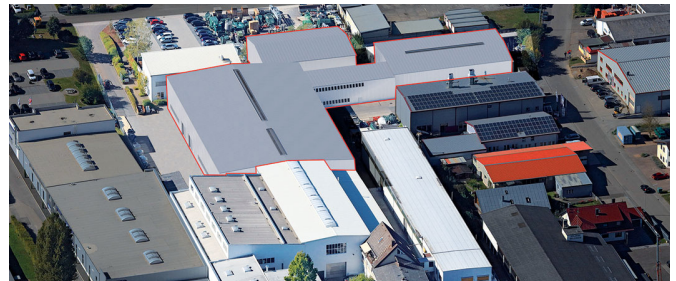


www.greinerextrusion.com

Rebuilding started

■ After the devastating fire in September 2018, HERBOLD Meckesheim (Germany) has just begun rebuilding the destroyed production halls. The whole incoming goods and shipping department, the warehouse as well as parts of the production area were devastated by the flames.

The new buildings comprise a 4000 m²-area and are supposed to be up and running in September 2019. As the General Manager Werner Herbold put it: "This was the perfect opportunity to reorganize our business activities in order to be more flexible in all our steps and at the same time relieve the traffic situation in the neighbourhood. We are very grateful to the assurance company, the municipality of Meckesheim, the Landratsamt (district



Animation of the new design: The area marked with a red line shows the planned new logistics and production halls of HERBOLD Meckesheim GmbH (Graphics: HERBOLD)

After the fire (Photo by HERBOLD)



administration) of the Rhein-Neckar District and all other authorities involved for the assistance we received, the quick decision taking and the sympathy for us in our terrible predicament. The fire started on 10th of September 2019 caused by a technical fault. The budget for the demolition and rebuilding amounts to 3 million. At the site in Meckesheim, HERBOLD employs 160 members of staff and specializes in machines and plants for recycling plastics, a market that is growing. More than two thirds of the production is exported all over the world.

■ HERBOLD Meckesheim GmbH
www.herbold.com

Reliable Control over Process Temperatures

■ Exact temperature control is a critical factor in many industrial metal and plastic processing sequences. In these scenarios, the requirements regarding temperature control can vary substantially depending on the production conditions. However, what is always required are solutions that guarantee one-hundred-percent repeatability wherever possible to ensure high product quality. They must also be simple to integrate and capable of being extended or converted as required. The modular temperature control platform developed by Bürkert Fluid Control Systems, which permits seamless adjustment to suit the most varied processes, was designed precisely with these requirements in mind. It is based on a broad range of electromotive and pneumatic

Modular platform for custom solutions in metal and plastic processing: Reliable control over process temperatures (Source: Bürkert Fluid Control Systems)



valves as well as various measurement principles, e.g. for coolant flows (ultrasound and paddle wheel), air quantities (thermal sensor) as well as pressure and temperature. Supplied as a custom assembled complete system, the temperature control can then easily be integrated into the most diverse applications.

Thanks to the modular design, individual valve clusters can easily be realised, as can multi-channel media distribution systems or complete media cabinets – always adapted to meet individual requirements. The user avoids the need to install piping between individual valves and dead spaces are reduced thanks to the compact design. In contrast to discrete assembly solutions, this allows the valve block to be placed close to the tool. Since the compact design also reduces the heat-radiating surfaces, energy efficiency improves accordingly. The service-friendly structure also makes it easier to replace individual components. Orbital welding seams and high-temperature graphite seals that can also withstand extreme temperature differences guarantee leak-free operation. The Bürkert EDIP (Efficient Device Integration Platform) can be used to connect the temperature control to all standard bus systems; the wiring complexity is reduced, start-up and parameterisation are simple. Depending on the tool and process, temperatures can be specified, the flow control set automatically, or a constant pressure maintained. Once parameters have been stored, they can be restored at any time. All things considered, the temperature control processes are reliably repeatable which boosts product quality and eliminates waste.

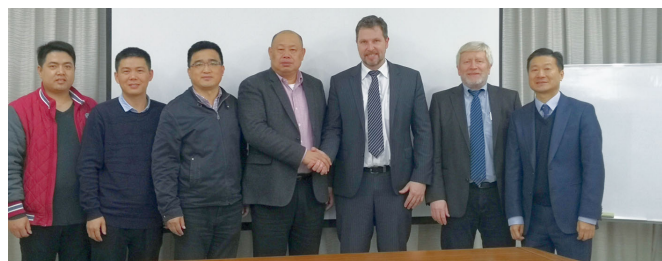
■ Bürkert Fluid Control Systems
www.buerkert.com

Four more Machines for Fujian Billion, China

■ 2019 got off to a successful start for KAMPF's good long-standing relationship with Fujian Billion High-tech Material Industry CO. LTD. Fujian Billion invested in four new BOPET lines and again relies on KAMPF for its slitting and winding technology. After challenging negotiations, the contract between KAMPF and Fujian Billion for the supply of four Universal 89/12 slitting machines was signed. The slitters will be delivered in the middle of 2020.

In 2018, the film manufacturer ordered two Universal 64/14 TF for use in the production of optical films from KAMPF. Their delivery to China will take place in the 4th quarter of this year. These slitting machines are equipped with exclusive equipment, e.g. high-quality chrome rollers, which meet the high quality standards of Fujian Billion.

Between 2012 and 2014, Billion had already installed six high-performance KAMPF machines - four Universal 89/12



Billion and KAMPF (Image: KAMPF)

slitter, one Unislit II 630 and one Unislit II 635 - which reliably produce the highest roll quality.

■ KAMPF Schneid- und Wickeltechnik GmbH & Co. KG
www.kampf.de

Further Assembly Plant



ILLIG celebrated the official groundbreaking ceremony together with official representatives of the Romanian municipalities Sibiu and Șura Mică for the building of ILLIG Maschinenbau S.R.L.


■ ILLIG celebrated the official groundbreaking ceremony together with official representatives of the Romanian municipalities Sibiu and Șura Mică for the building of ILLIG Maschinenbau S.R.L. on April 4th. The facilities will also include office space and bring 50 jobs to the community. In the industrial park in Șura Mică, 8 kilometers northwest of the county capital city of Sibiu, a modern 60,000-m² assembly plant for high-tech machines is being built.

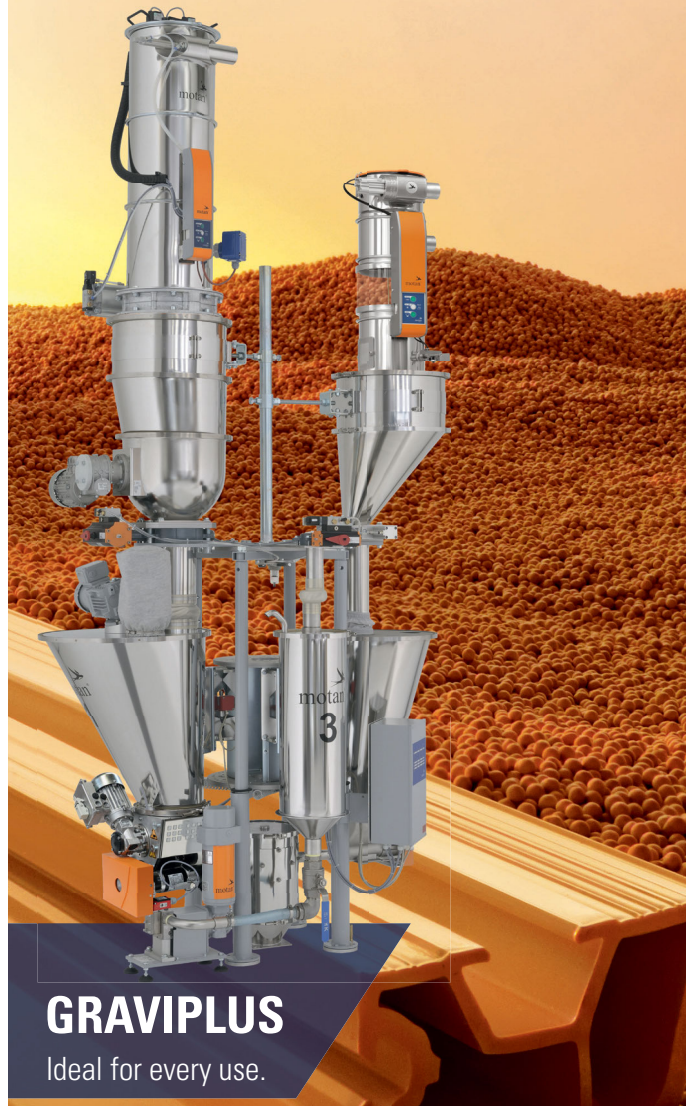
“ILLIG will be building thermoforming machines from its machine program at the new assembly plant, which will enable us to meet the growing market demands,” explains ILLIG Managing Director Dr. Heinrich Sielemann. The company is investing a total of around ten million euros in the new assembly plant, the second of its kind for ILLIG outside Germany. The region of Sibiu is ideal from an infrastructural standpoint with easy access via road, rail and air.

The new location Managing Director of ILLIG Maschinenbau S.R.L, Mihai Talabă, is happy with the investment from the German parent company: “This investment will mean 50 new skilled labor positions for the people of the region in the first step. We already have ten employees who are currently receiving training at ILLIG headquarters in Heilbronn, Germany.”



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CPP High Barrier Films launched

■ Cosmo Films, a global leader in speciality films for flexible packaging, lamination and labeling applications as well as synthetic paper has introduced a cast polypropylene (CPP) film for packaging applications requiring high moisture & oxygen barrier and high hot tack properties.



The newly launched heat sealable CPP films also offer high hot tack (>600gf/inch over a range of 100 to 140 degree celsius) and low seal initiation temperature; enabling packaging machines to run at higher speeds. As far as barrier is concerned, the films offer good moisture, oxygen, light and aroma barrier properties. The films offer an OTR and MVTR of <30cc/m²/day and <0.3g/m²/day respectively. The high barrier metallized films also offer high metal bond.

The films have been tested well for biscuits, cookies & crackers, snack food applications, chocolates, and ice-creams. Available in a range of 20 to 30 microns, films are well suited for both adhesive as well as extrusion lamination.

Speaking on the development, Mr. Pankaj Poddar, CEO Cosmo Films said: "We see more & more CPP being used globally as well as India as a choice material for packaging applications in food and agriculture owing to its high transparency vis-a-vis polyethylene and excellent sealing performance. Cosmo Films with years of experience in the polypropylene space has worked hard to come up with an extensive range of CPP films that it offers today both from functionality as well as mono-materialization standpoint."

■ Cosmo Films Limited
www.cosmofilms.com

New Polyethylene Technology Advancements introduced

■ ExxonMobil introduced two new performance polyethylene (PE) polymers for high-quality flexible packaging, and recyclable (Recyclable in those communities that have programs to collect and recycle plastic film) full PE laminated packaging solutions, at Chinaplas 2019.

"Advancing polyethylene technology is an important part of our commitment to helping customers grow their businesses," said David Hergenrether, ExxonMobil Chemical vice president, polyethylene. "By working together, we can help customers create differentiated packaging solutions that offer enhanced performance and processing, while helping them to meet their sustainability goals."

New Exceed™ 2012MA performance PE polymer delivers outstanding sealing and extrusion performance for high-integrity flexible packaging films. It can enable reduced energy use, lower per unit packaging costs, and less packaging material and food waste. The following film applications, which contain Exceed 2012MA, were on display during Chinaplas: Lamination packaging with Huashan Plastics Machinery Co., Ltd.; Cast stretch packaging with Xinle Huabao Plastic Machinery Co., Ltd.; Barrier packaging with Jinming Machinery (Guangdong) Co., Ltd.; Full PE laminated stand-up pouches with Hosokawa Alpine AG and Dalian Totani Corp.

For high-quality coating layers used in laminates, new Exceed™ 0015XC performance PE polymer delivers excellent

sealing performance, a broad hot-tack window and good processing. This new polymer offers easy extrusion onto substrates such as board and paper, aluminum foil, flexible films and PE-based woven fabrics.

ExxonMobil also introduced new full PE laminated packaging solutions, containing Exceed™ XP – when eXtreme Performance matters, Exceed™ and Enable™ performance PE polymers. These solutions help overcome the recycling issues typically associated with conventional laminated structures. Often comprising a mix of PET, PA, EVOH or OPP, laminated packaging structures can be challenging to recycle, due to difficulties separating the materials. The new full PE laminated solutions can be recycled with PE film where programs to collect plastic films exists, while delivering the toughness, optical properties and stiffness needed for high-quality packaging, plus material selection is simplified. The following film applications were on display during Chinaplas: Full PE laminated film and stand-up pouches with Hosokawa Alpine AG; Full PE laminated stand-up pouches with Dalian Totani Corp.

■ ExxonMobil Chemical
exxonmobilchemical.com

Light Stabilizer for Greenhouse Films

■ BASF and Tân Hùng Cơ Masterbatch Manufacture Co. are working to help farmers increase their yields and save resources with more durable greenhouse films. Tân Hùng Cơ, a leading manufacturer of additive masterbatches for plastic films in Vietnam, is now using BASF's plastic additive Tinuvin® NOR™ 371 to increase durability and lifespan of plastic greenhouse films made from low density polyethylene. With Tinuvin NOR 371, greenhouse films can withstand weathering for at least three to four years.

To get the most out of greenhouse technologies, light stabilizers need to be added to the polymer during manufacturing of greenhouse films. These stabilizers make the films resistant to the intense sunlight and heat that develops at the contact points with the metallic greenhouse frame. If not, plastic films can become brittle and break within a few weeks.

Tinuvin NOR 371 provides durability to greenhouse films by preventing degradation from ultraviolet (UV) rays, thermal stress and

oxidation. With durable films that last for several seasons, farmers can cover greenhouses for growing chrysanthemums, roses and strawberries for the export market – thereby increasing yields of profitable crops while saving resources and reducing waste.

Additionally, Tinuvin NOR 371 helps to ensure greenhouse films can be used in a variety of growing conditions. Although the sulfur compounds approved as agricultural products to prevent and combat fungal diseases are ecologically safe, chemically they deactivate the light stabilizers and accelerate their breakdown.

To counter this deactivation of light stabilizers, stabilizers for greenhouse films – based on BASF's NOR technology – are added which are particularly resistant to sulfur compounds and other agrochemicals. As a result, Tinuvin NOR 371 offers stability that enables farmers to produce profitably for several growing seasons.

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Biopolymers Applications

■ Bioplastics is certainly the main topic discussed by plastics players nowadays. The targets globally pursued include to eliminate unnecessary packaging, move from single use to re-use attitude and promote the utilisation of materials made from renewable resources to be applied in different sectors. Since many governments have expressed the commitment towards an eco-friendly policy to free nature from plastic waste, companies involved in the plastic packaging field have to seek for new materials. They are therefore eager to receive a competent guidance and support by both machinery manufacturers and raw material suppliers on the choice of the material and on the technology to process it.

AMUT GROUP is ready for this duty and has already embraced the "GO GREEN" way-to-produce since many years. AMUT is used to help customers in finding eco solutions in partnership with raw materials suppliers.

AMUT has started a collaboration with the company NatureWorks for extrusion and thermoforming food contact approved processes. NatureWorks is a world-leading biopolymers supplier which turns greenhouse gases into a portfolio of polylactic acid (PLA) performance materials called Ingeo™. Since 2015, NatureWorks has partnered with the Ellen MacArthur Foundation to support the foundation's New Plastics Economy initiative, which is a comprehensive strategy for creating a global plastics system based on circular economy principles.

AMUT-COMI tested Ingeo™ PLA on its thermoforming machines using rolls provided by Coexpan company. COEXPAN is the Grupo Lantero division specialized in the manufacture of rigid plastic foils and thermoformed products providing packaging solutions at a global scale.



ACF820 thermoforming machine

The results were good: serviceware made with Ingeo™ well performs in hot and cold applications. Other tests scheduled will involve AMUT/EREMA extrusion line now proposed for r-PET foil food contact approved production. AMUT and EREMA are working together to offer a similar technology also for PLA treatment through a direct extrusion process.

Ingeo™ PLA is a thermoplastic material that shows high transparency, glossy and tear strength comparable with other thermoplastic materials such as PS or PP. It is easy to shape and has multiple end-of-life options including composting and recycling. The foils in made PLA assure a high food flavour and aroma preservation, making them ideal for items that require a higher product protection.

Therefore, using the PLA material for packaging applications not only boost environment preservation but also ensures the maximum quality and efficiency of the products.

■ AMUT GROUP
www.amutgroup.com

New Plant

■ Logoplaste and Tomlinsons announced a long term collaboration in Wrexham, UK. Tomlinsons, one of the UK's largest family owned dairies, has completed a sale of its bottle blow moulding production facility to Logoplaste, a leading global designer and manufacturer of value-added rigid plastic packaging solutions to a wide range of blue-chip clients.

The sale plays to the strengths of both businesses, with Tomlinsons being able to focus on growing its dairy operations, and Logoplaste bringing its expertise in rigid plastic packaging to the Wrexham bottling plant. The sale will involve the transfer of 30 bottling plant employees from Tomlinsons to Logoplaste.

Philip Tomlinson and John Tomlinson, Shareholders and Directors, commented: "We have been looking for a partner to help us consolidate the doubling of our business over the past 2 years. By selling our bottling plant we have created the operational and financial capacity to now focus on our next phase of growth and an exciting new chapter for Tomlinsons."

Gerardo Chiaia, Logoplaste's CEO, is thrilled to work side by side with Tomlinsons: "This new business is a great opportunity for both Logoplaste and our new client, where both companies will benefit. We will be inputting all our rigid plastic packaging expertise and innovative ideas to produce best in class sustainable bottles. On the other hand, Tomlinsons can focus on what they excel at, producing high quality segregated traceable Welsh, British and Organic milk as well as dairy products. It is a win-win situation."

■ Logoplaste
www.logoplaste.com



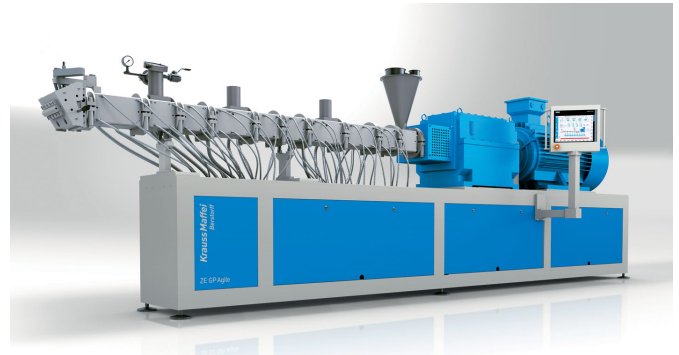
Market Launch of ZE GP Agile Compounding Extruder

■ At this year’s Chinaplas in Guangzhou in May, KraussMaffei Berstorff showcased its new ZE GP Agile twin-screw extruder series. This extruder generation manufactured at the Haiyan production site of KraussMaffei Group is specifically aimed at compounding companies on the growth track that intend to substantially increase their productivity.

“For KraussMaffei Berstorff, China is an extremely important market as the growth trend is expected to continue in the years to come,” says Leo Yuan, Vice President Extrusion China of Shanghai KraussMaffei Machinery. “The development of the new series was focused on the key requirements of customers in China and in the Asian region in general: unparalleled productivity, outstanding reliability and a highly attractive price-performance ratio.”

The series comes in three sizes with screw diameters of 52, 62 and 77 mm and is suited for a wide range of different applications and output rates. The extruders can be driven by two different water-cooled motors designed for screw speeds of 600 rpm or 900 rpm.

The new ZE GP Agile extruder generation is equipped with screw elements and shafts made of special material, enabling compounders to achieve maximum throughput rates. In addition, the innovative series scores with an extended range of 4 and 6D barrel housings to precisely tailor the processing section to specific customer requirements. All barrel housings are characterized by precise temperature control. While cooling is based on cooling water injection, high-performance electric cartridge heaters are used for direct and rapid heating. The C-clamp flange system facilitates assembly and disassembly of the barrel housings



New ZE GP Agile twin-screw extruder with a torque density of 12.0 Nm/cm³ and a screw speed of 900 rpm for enhanced performance

and substantially reduces set-up times during barrel housing changes.

The standard equipment comprises the sturdy base frame designed to accommodate the temperature control units and the oil lubrication system. The state-of-the-art control software can be seamlessly integrated into the digital factory, ready for Industry 4.0. The on-board operating panel with display of all important extruder information saves time and provides enhanced ease of use.

The new series is characterized by a constant level of excellent product quality, easy operation and uncompromising reliability. Its high productivity makes it a safe investment with a short payback period.

[4] Source : Responsible recycling of WEEE plastics containing Brominated Flame Retardants-BFR’s. EERA.2018

KraussMaffei Berstorff GmbH
www.kraussmaffelberstorff.com



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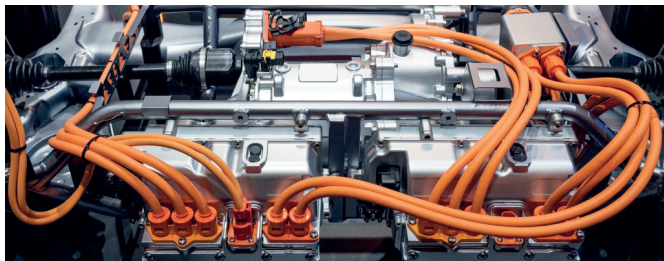
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Innovative New Specialty Masterbatch Products



At Chinaplas 2019 Colloids showcased innovative new Specialty masterbatches, including T-TEC® Signal Orange (RAL 2003) high temperature masterbatch, available in PEEK (PolyEtherEtherKetone) carrier for high voltage electrical component applications for electric and hybrid vehicle engines (Stock photo courtesy of Colloids)

■ Colloids exhibited at Chinaplas 2019. The Colloids Group, which is part of the multinational Tosaf Group, has sales, production and R & D facilities in the UK and China, globally supplying high quality masterbatches, compounds and additives to OEMs, converters, polymer producers and compounders.

The Colloids stand at Chinaplas this year showcased the latest product innovations developed by Colloids' R & D team: new Specialty black masterbatches for agricultural films and automotive interiors; a new plastic component laser marking compatible masterbatch range; a new T-TEC® Signal Orange (RAL 2003) high performance masterbatch for high voltage components in hybrid and electric vehicle engines. These four new products are key specialty masterbatch additions to the Colloids range of black, white and colour plastic masterbatch products and performance enhancing polymer additives which includes: anti-fog, anti-static, anti-wear/friction, anti-block, anti-slip, anti-stick, fire retardant, UV protection, anti-bacterial and biodegradable grades.

Colloids has developed a new high UV protection black masterbatch to high speed extrude black polyethylene (PE) products for the agricultural market that need to cope with prolonged outdoor exposure to direct sunlight. This innovative new UV black masterbatch has been successfully used for extruding improved quality overground 'drip design' PE pipe, tape and

lay-flat tubing crop irrigation systems. To maximize processing and UV resistance performance, the formulation combines optimized carrier and anti-oxidant systems with a high quality carbon black pigment which helps to produce PE drip irrigation products expected to last a minimum of two growing seasons in a temperate climate.

Polypropylene (PP) foams used in automotive interiors must meet stringent volatile organic compound (VOC) emission requirements to minimize fogging and odour levels in new vehicles. Colloids new low VOC black masterbatch has been tested according to VDA 278 for automotive materials and meets leading global automakers' emissions criteria for volatiles. High intensity black coloured interior PP foam products can, therefore, be produced with no additional residual VOCs being introduced in the formulation, or due to degradation of the black masterbatch during processing.

Colloids has recently developed the new L-TEC® laser marking compatible masterbatch range which enables plastic components to be permanently laser marked or etched with key product information and branding in either a light or dark mark instead of ink printing or engraving.

The Colloids T-TEC® high temperature masterbatch range, designed for high performance engineering polymers used in automotive, electrical, industrial and consumer appliances, now includes a new Signal Orange (RAL 2003) grade, which is the regulation colour specified by hybrid and all-electric vehicle engine manufacturers for high voltage electric cable and connector applications. The T-TEC® range can be supplied in either Colloids' proprietary universal carrier, suitable for small mouldings, or in a specific polymer carrier. For high voltage engine component applications, T-TEC® Signal Orange (RAL 2003) in PEEK (PolyEtherEtherKetone) engineering polymer carrier is now available, providing resistance to continuous temperatures up to 200°C (392°F), with short-term resistance up to 260°C (500°F).

■ Colloids Group
www.colloids.com

Recycling Plant for Plastics to Japan

■ The ALBA Group, one of the leading recycling and environmental services and raw materials providers worldwide, is expanding its engagement in Asia. In Tokyo, as part of the Japan trip of the Governing Mayor of Berlin, Michael Müller, the company signed a cooperation agreement for the construction and operation of a recycling plant for PET (polyethylene terephthalate). It is the first ALBA plant on Japanese soil.

Together with its local partner, the private waste management company SEIU Japan Ltd., Co., the Berlin company will set up the

plant in the Tokyo metropolitan area. The plant for the production of PET flakes and PET pellets will have a capacity of 35,000 tonnes per year and will go into operation in 2020. These products will then be processed into recycled material for the plastic-processing industry.

■ ALBA Group
www.albagroup.de

Plants in Spain and Indonesia are recently certified to Key Food-Contact Standard

■ Clariant announced, it has completed ISO 22000 certification for its sites at Sant Andreu de la Barca (Barcelona), Spain, and Tangerang, Indonesia, recently. Together with the Indonesian site and the former certified site in Singapore, Sant Andreu de la Barca is the third global site, and the first in Europe, to have completed the certification.

Certification strengthens Clariant's global capabilities and leadership position as a supplier of high-quality, high-performance color and additive masterbatches for the food industry. Applications supported by the Spanish site include plastics caps and closures, food tabs and bottles, as well as film and sheet. In recent years, regulators have determined that packaging that comes in direct contact with food products must be considered a food ingredient and must meet the same standards for safety. Since Clariant's color and additive concentrates are used in making plastics packaging, achieving ISO 22000 status for its manufacturing plants simplifies the certification process for its customers and their clients. ISO 22000 is a family of international standards that addresses food-safety management and lists measures that an organization needs to put in place to control eventual food safety hazards. These regulations are more stringent than earlier standards governing simple food contact. The need for such a standard is driven by an increased level of awareness of consumers towards food safety.



Clariant masterbatches plants in Spain and Indonesia are global sites to comply with ISO 22000 (Photo: Clariant)

The certification process, which was overseen by SQS, a qualified Swiss provider of international certifications and audit systems, took roughly one full year and will undergo constant annual review. It represents a further step over HACCP (Hazard Analysis Critical Control Point) qualification that San Andreu achieved a few years ago.

■ Clariant
www.clariant.com

New Recyclable Packaging launched

■ Amcor has launched AmLite Ultra Recyclable, its first packaging product made from the company's revolutionary, more sustainable high-barrier polyolefin film that the company announced last year. The new high-barrier laminate can package a range of food, home and personal care, and pharmaceutical products, and be recycled in existing polyolefin recycling streams.

AmLite Ultra Recyclable is the latest addition to Amcor's successful AmLite product line, which was first created in 2015 to provide metal-free barrier packaging that significantly reduced the packaging's carbon footprint. This new generation of AmLite adds recyclability to the environmental benefits and is the culmination of several years of research and develop-



ment (R&D). The film and its application represent another advancement towards Amcor's pledge to develop all its packaging to be recyclable or reusable by 2025.

AmLite can be used for a variety of formats, such as pillow pouches, stand-up and spouted pouches; bags; lidding for trays and containers; stick packs and more.

AmLite achieves a reduced carbon footprint by using an ultra-thin, transparent barrier coating to replace aluminum and metalized barriers. That change, combined with recyclability, can reduce a pack's carbon footprint by up to 64%.

AmLite Ultra Recyclable and AmLite Standard Recyclable are the first laminates in the AmLite product range to offer recyclability, adding two products to Amcor's portfolio. AmLite Standard Recyclable, which provides medium- to high-barrier protection for ambient applications, is already on supermarket shelves thanks to some early adopter brands. AmLite Ultra Recyclable is now available for broader customer trials.

■ Amcor
www.amcor.com

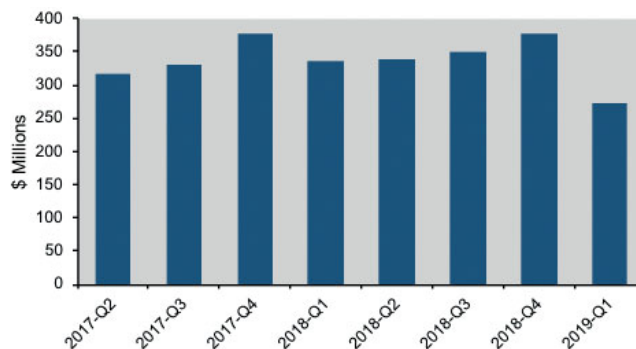
Plastics Machinery Shipments Decline in First Quarter

■ The shipments value of primary plastics machinery (injection molding and extrusion) in North America declined in the first quarter of 2019, according to the statistics compiled and reported by the Plastics Industry Association's (PLASTICS) Committee on Equipment Statistics (CES).

While 2018 ended with strong plastics machinery shipments, 2019 has started soft. The preliminary estimate of the shipments value from reporting companies totaled \$273.0 million – 27.6% lower than the fourth quarter of 2018. Injection molding shipments fell 26.3% and single- and twin-extrusion equipment shipments decreased 24.8% and 46.2%, respectively. Year over year, the value of shipments for single- and twin-screw extrusion equipment rose 19.8% and 8.3%, respectively.

"First quarter data usually comes in soft, but the declines reflect the expectation of weaker U.S. and global economic growth," said Perc Pineda, PhD, chief economist of PLASTICS. "Price effects were also at play in the first quarter. The producer price index on industrial machinery manufacturing has been on a decline from its peak in the third quarter last year."

CES also conducts a quarterly survey of plastics machinery suppliers that asks about present market conditions and expectations for the future. In the coming quarter, 70% of the respondents expect conditions to either improve or hold steady. As for the next 12 months, 60% expect the market to be steady-to-better. While growth expectations for the industrial and packaging markets remained strong, a weaker global economic forecast, the unresolved U.S.-China trade issue, and the anxious anticipation surrounding the passage of the U.S.-



Mexico-Canada Agreement (USMCA) by the three countries involved were reflected in the survey results.

On the international front, plastics machinery exports totaled \$363.1 million, with Mexico and Canada remaining the largest U.S. export markets. Exports to Canada and Mexico in the first quarter were \$77.7 million and \$72.9 million, respectively. As previously projected by PLASTICS, plastics machinery exports fell short of \$400 million – following the \$416.5 million in exports in the fourth quarter last year.

"Demand in the plastics industry is expected to remain positive against the backdrop of slower U.S. economic growth this year. However, plastics machinery makers should also consider that weaker global economic conditions will have knock-on effects on the industry," Pineda added.

■ Plastics Industry Association (PLASTICS)
plasticsindustry.org

New Categories in Annual Parts Competition – Call for Entries

■ The Society of Plastics Engineers (SPE) Thermoforming Division has announced a call for entries in its annual Parts Competition, including two new categories that will feature the latest advances in thermoforming design and application. The submission deadline is August 16, 2019.

Competition entries will be displayed on the exhibit hall floor during the 27th SPE Thermoforming Conference®, which will be held September 9-11 in Milwaukee, Wisconsin. Awards for winning parts will be presented at the SPE Thermoforming Awards Dinner at September 10.

Competition entrants may submit parts in four categories:

- Roll-fed categories are Industrial, Medical, or Food.
- Heavy-gauge categories are Vacuum Form, Pressure Form, Twin Sheet and TPO.
- Two new categories this year are Parts Produced with Recycled/Sustainable Materials and Parts Produced Using Automation and New Technology.

"Challenges often arise as companies employ more automation and rely on fewer personnel during part production,"

said Travis Kieffer, 2019 SPE Thermoforming Conference Parts Competition Chair. "Companies now look to automation to fill the dearth of skilled personnel required for production. Since the skilled labor shortage is a pervasive problem in the thermoforming industry, we are soliciting parts that have met and overcome this challenge by successfully engaging automation during the parts production process."

Guidelines for Competition entrants and the required product entry form are posted online at <https://thermoforming-division.com/parts-competition/guidelinesentry-form/>. All product images and descriptions must be emailed to Travis Kieffer at travisk@plasticsunlimited.com by the August 16 deadline.

■ Full information on the Parts Competition and the Thermoforming Conference is available at <https://thermoformingdivision.com> or Lesley Kyle: 1-914-671-9524, lesley@openmindworks.com

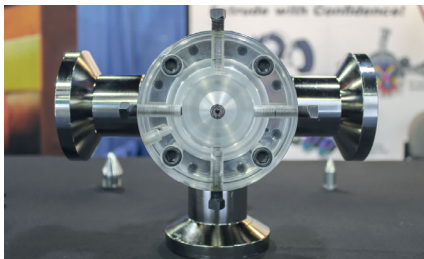
Extrusion Tooling – Latest Technology showcased at Interwire

■ Interwire, the largest and longest-running wire and cable show, took place between May 13 and May 16, in Atlanta, Georgia. Guill Tooling & Engineering had quite a turnout at their booth. Company personnel were able to share their knowledge and interact with many potential customers.

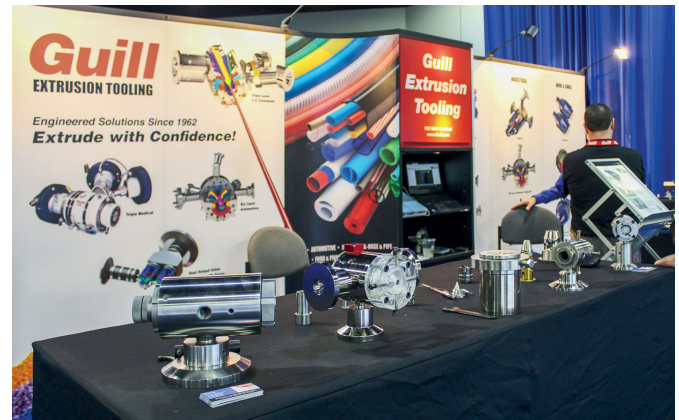
Guill was showcasing some of its latest technology. Featured were the in-line 5 layer extrusion crosshead of Series 800, single-point concentricity extrusion crosshead and Bullet II extrusion head.

Guill's 800 Series is designed to produce the highest quality, highest material-efficient OD tubing for automotive, medical, appliance and industrial applications. This series produces smooth extrusion and layer definition of fluoropolymer and other materials for all multi-layer, multi-lumen medical tubing, as well as fuel line constructions, multi-layer PEX pipe and drip irrigation applications.

The single-point concentricity crosshead uses micro-fine adjustment screws for precise concentricity. This adjustment is a unique feature of the company for the extrusion of thin-



Guill crosshead die



The Guill booth at Interwire

walled jacketing and precision ID/OD tubing. It not only accepts both vacuum and micro-air accessories, but is also ideal for pressure and sleeving applications.

Introduced in 2015, the Bullet was a new extrusion head with fixed center design, multi-port spiral flow design and gum space adjustment. There was no need for fastening hardware, so cleaning and restart were easier. The Bullet II allows quick tooling changes, as the tips remove from the back and the die removes from the front. Guill's CAM LOCK® deflector removes and installs the deflector and tip with just half a turn. Hassle free air and vacuum connections are available, in addition to reduced downtime and lowered operating costs. High-volume and low-volume applications are suitable for this crosshead.

■ Guill Tool & Engineering
www.guill.com

Opening of Canadian Distribution Operation announced

■ Conventus Polymers, a leading distributor of high-performance engineering thermoplastics, has established a Canadian distribution operation based in Toronto which offers the company's broad portfolio of products to processors and end users in the Ontario and Quebec provinces. The expansion into Canada is part of the company's overall business strategy to grow into key geographic regions.

"Our business is growing quickly and with our extensive product portfolio of specialty engineering plastics, we are firmly positioned as a strategic supplier," said John Jorgensen, president of Conventus Polymers. "This important move signals our further commitment to key national and multinational OEMs."

The Canadian initiative has increased Conventus' penetration into the automotive market, a key end-use segment for

the company, in addition to expanding its reach into existing strategic markets such as electrical/electronics, plumbing, and wire and cable, according to Jorgensen. Conventus has filed registration documents with the Canada Revenue Agency (CRA). To support the operation, the company has established a commercial presence in Toronto. Conventus has also established a warehouse in Montreal, with plans to open another facility in Toronto. Conventus is selling the same global portfolio of products in Canada including specialty nylons, polysulfones, thermoplastics vulcanizates (TPVs), and custom compounds.

■ Conventus Polymers LLC
www.conventuspolymers.com

365 Days Injury-Free celebrated



Fulton, N.Y. operating team

■ Davis-Standard announced the company's manufacturing facility in Fulton, N.Y., recently celebrated 365 days without a lost time accident or OSHA recordable injury. This is a tremendous milestone credited to Davis-Standard's high stan-

dards and safety practices for all employees. Dan Guthrie, Davis-Standard COO, said that attention to work area details, participation in safety training meetings, weekly area inspections, sharing toolbox talk points and a holistic team approach to improve safety for all site employees was key to reaching this milestone.

"Maintaining an injury-free workplace at all of our locations is our first initiative and top priority," said Guthrie. "This milestone at our plant in New York is significant in achieving this objective. I commend our employees as this is not easy to do, even when you have standards of excellence in place. We look forward to celebrating this milestone at every Davis-Standard manufacturing facility worldwide."

■ Davis-Standard, LLC
www.davis-standard.com

First All-Plastic Twin Drum for Transport of Highly Aggressive Chemicals launched

■ RIKUTEC Group, a leading blow molding technology specialist, has introduced the industrial packaging industry's first all-plastic Twin Drum which meets the highly stringent demands of the Packaging Group 1 regulations as specified by the ADR European agency for safe storage and transport of highly aggressive chemicals. The blow molded "tank in a tank," which requires no secondary container, also meets UN-sanctioned approvals in Europe and U.S. Department of Transportation regulations.

The 200-liter Twin Drum effectively stores and transports highly aggressive chemicals in an ultra-clean environment for a range of industrial markets including the pharmaceutical and semiconductor industries. The unique all-plastic drum delivers numerous advantages over competing metal and plastic-metal drums including corrosion resistance, high pressure resistance, and 100% recyclability. Another advantage is that the Twin Drum can be filled and dispensed by using QC-Dip tubes which prevents any contamination of the contents.

The Twin Drum successfully withstands the 45-degree "on rim" drop test (three times) from 2.8 meters (9.2 ft) and absorbs the impact and energy from falls for the highest safety performance for transport. The Twin Drum is a 320 kPa (46 psi) pressure-rated container for packaging group 1(X) rated high-density materials up to 1.9 kg/dm.

The Twin Drum consists of a two-layer inner drum made of high-purity, totally virgin high-density polyethylene (HDPE) with no additives or stabilizers. The two-layer outer drum is

made of UV-stabilized HDPE, providing safe 110% secondary containment. The two tanks are inserted together and a hot plate welder joins the two tanks together with an HDPE cap. All three drum structures are manufactured on RIKUTEC's patented multilayer coextrusion blow molding machine in a cleanroom environment at the company's Westerwald, Germany plant. For the industrial packaging market, RIKUTEC provides highly-rated engineering expertise and a range of in-house capabilities at its German site.

The new Twin Drum is commercially available throughout the world. It has been sold to customers in Europe and Asia and was recently launched in the U.S.



■ RIKUTEC Group
www.rikutec.com

Changes in Top Management announced

■ GN Thermoforming Equipment announced the appointment of Jerome Romkey as the company's new President. The company also announced the appointment of Paul Phillips as their new sales and marketing manager.

Romkey, a 39-year company veteran, has served in many managerial and technical roles over the years and has been a key contributor to the company's steady success. "I am honored and excited to lead GN, which has tremendous potential for higher growth and profitability," said Romkey. "I look forward to capitalizing on the company's unique machine portfolio, exceptional talent, reputation for high quality, and technical expertise to execute our growth strategy."

GN has installed more than 1500 thermoformers and the company has exported its equipment to more than 70 countries worldwide. The list is growing and Romkey is excited with the appointment of Paul Phillips who will lead GN's sales and market-



ing efforts. "Paul is an experienced sales executive who brings extensive international experience to GN," said Romkey. "He has expertise selling complex capital equipment and a proven track record of helping companies grow."

■ GN Thermoforming Equipment
www.gncanada.com

Unique Augmented Reality Experience of Complete Measurement System at ICE USA showcased

■ NDC Technologies, a leading global provider of precision measurement and control solutions, took exhibition to a new level by treating visitors to a one-of-a-kind, augmented reality experience. Visitors at ICE USA 2019 (Louisville, KY), got the opportunity to navigate, explore and interact with a virtual, life-size gauging and control system measuring a moving converted web product. NDC also displayed its range of the latest gauging systems for converters designed to optimize product quality, increase productivity and reduce production costs.

Using tablets as the window into this virtual environment, users got a close-up look at NDC's versatile Near Infrared IG710e reflectance gauge that measures moisture, coat weight, coating/laminate thickness on a wide range of paper, board and film-based substrates. The virtual IG710e was running on a NDC's virtual MiniTrak S-Frame single-sided scanner, moving back-and-forth across the web to make measurements on a virtual label stock. Viewers were able to see critical process data on the company's virtual, advanced Pro.Net TDi process controller.

Web Gauging Solutions

NDC offers a wide range of web gauging and control technologies to perform in-process measurements of coat weight, coating thickness, lamination and moisture of converted products. This

ensures each system is individually optimized to suit the product and the operational needs of the customer. Gauging technologies include Near Infrared, Beta, Gamma, X-Ray and optical technologies.

In addition to the virtual exhibition, NDC displayed the following Near Infrared gauges:

- SR710S – accurately measures thin coatings on metallic foils, metalized paper and plastics during the process.
- ConvertIR – offers fast, fixed-point, on-line measurement of paper moisture or coat weight of coatings on paper and films.

Web Surface Inspection

Also on display was NDC's Web Surface Inspection System (engineered by R.A.M.) that provides 100% product coverage, enabling manufacturers to achieve zero defects. Systems include powerful capabilities to instantly detect, classify, document and record all optical defects across a broad scope of web materials.

Product Length and Speed

NDC's latest Beta LaserMike LaserSpeed Pro encoder measures the length and speed of any moving surface with better than $\pm 0.03\%$ accuracy (the highest in the industry) and without ever contacting the product. LaserSpeed Pro uses laser-based technology to precisely measure both web and packaging products for paper, film, sheet and foil. Applications include measuring product length and speed at the slitter/rewinder, regulating coating/laminating applications, controlling critical length cutting operations, adjusting roll speeds in flying-splice processes and monitoring web tension of products. Converters realize numerous production efficiencies and material savings.

■ NDC Technologies
www.ndc.com



MILL / 8

New Customized Milling Machine

This is a new concept modular milling system, completely customized according to the customer's specific production requirements, which extrudes large-scale multi-wall PVC profiles up to 355 mm for the building sector



The milling unit is aimed at processing round holes along the extrusion axis of the 4-wall boxed profile, with the flexibility of managing different punching patterns, set by the operator panel. The dedicated milling tools are studied for the machining of various types of inserts in order to minimize the material removed and allow a clean cut without burrs. The oil-bath mandrel system, that ensures a lasting and excellent refrigeration, has a multiple movement to hold the removed disk and the subsequent release at the end of the process. The scraps of the milling process are sucked by the powerful system aspirator, while the milled disks fall into the appropriate collection channels and from there conveyed on the belt that unloads them in the special container placed at the exit of the cabin, for the subsequent recycling.

Thanks to its structure and special customized software, the system also offers the great advantage of being used both in and out of line.

Baruffaldi always takes in consideration to have a safety work environment. The two 2 tunnels (in and out) and the soundproofed safety cabin comply with safety regulations as the processing noise is much lower than the requirements of the related regulation admitted on working environments. The MILL/8 has a user friendly operator

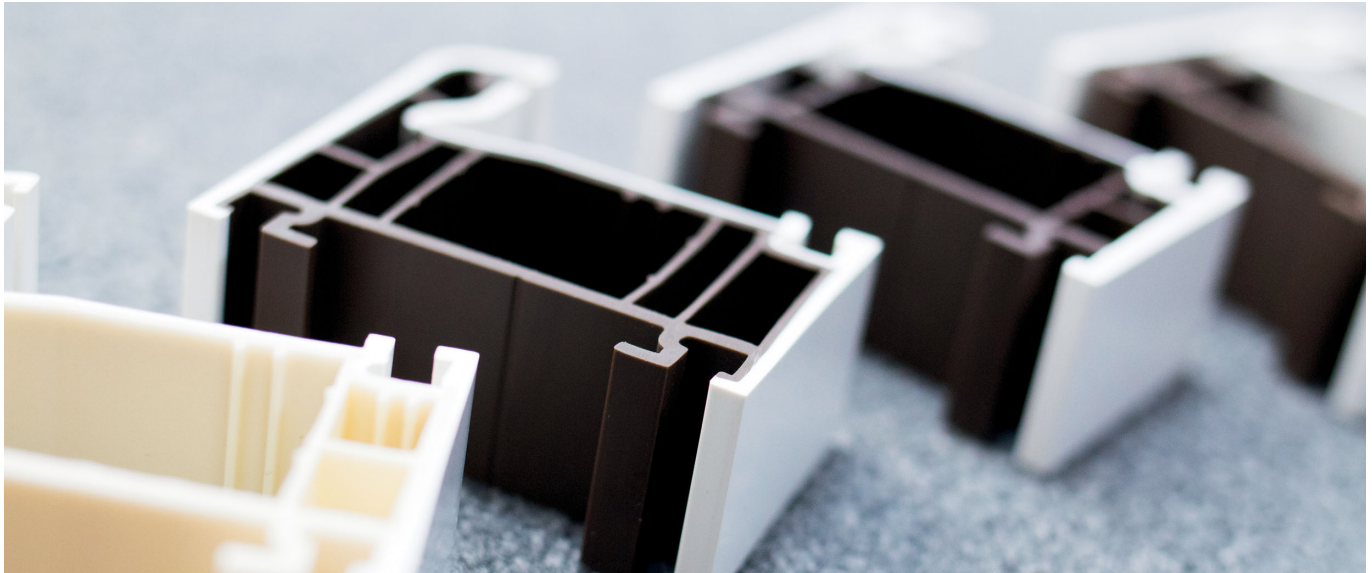
panel and an easy routine maintenance. Moreover, the remote assistance system allows Baruffaldi to give immediate assistance to the customer, acting side by side.

In inline mode, the brushless motor – which manages the longitudinal movement of the carriage along the extrusion axis – together with the encoder, guarantee the perfect synchronization of the carriage with the extrusion speed of the profile.

Currently equipped with 4 independent modular milling tool sets, the machine is able to process the profile at a process speed of 1 m/min. both in- and outline. Thanks to the doubling of the milling heads, the speed would also reach 2 m/min, with high performances in terms of quality and speed.

The R&D team of the Baruffaldi-Primac technical office has given life to a plant of considerable dimensions, in which innovation, modularity, flexibility and technology are successfully combined with solidity, robustness and precision. The new Baruffaldi plant improves the quality of the product profiles and optimizes the production process with a reduction in costs.

Baruffaldi Plastic Technology Srl
Via W. Tobagi 13/15, 48034 Fusignano, Italy
www.baruffaldi.eu



LAYER.COEX plus – that’s Economic Efficiency

Co-extrusion has been introduced in many profile applications. Intelligent solutions by Greiner with innovative material distribution allow the use of recycling-materials and guarantee highest profile quality. With LAYER.COEX plus, the latest co-extrusion technology from Greiner Extrusion, highest cost savings can be achieved due to the

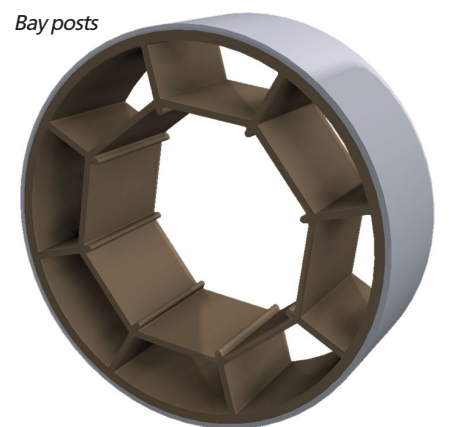
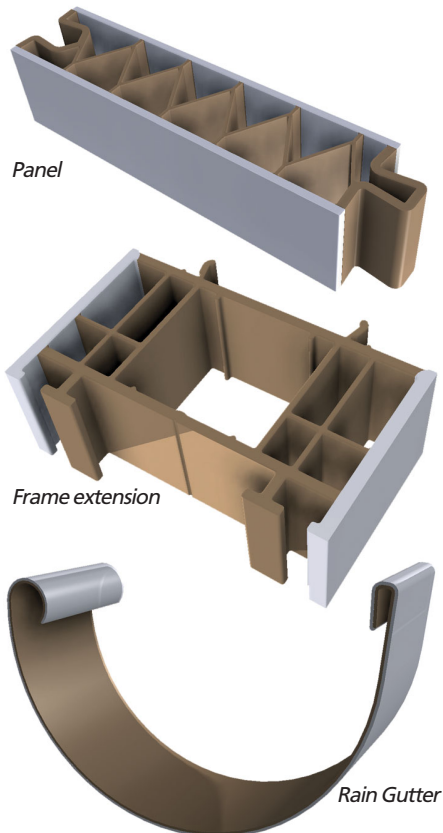
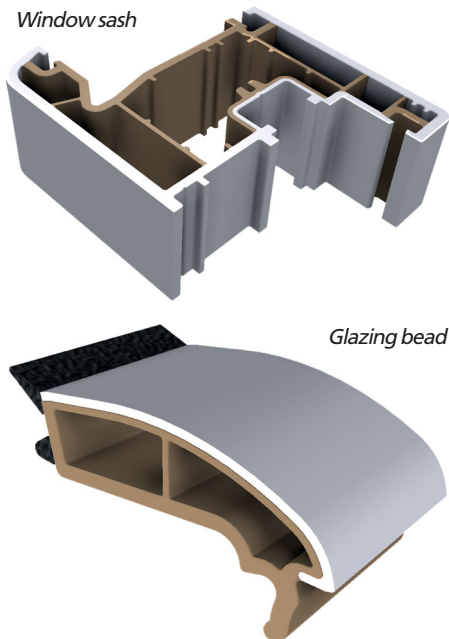
use of a high proportion of mixed regrind (55 to 65 %), with simultaneously highest processing reliability. Com-

pared to mono extrusion with virgin PVC, the total cost savings are 18 %.

Advantages:

- maximum safety when processing the profiles with a high proportion of mixed regrind
- 55 to 65 % core material content
- thick layer technology
- cover-coat up to 75 % of profile wall thickness
- core material optionally from main or co-extruder
- use of mixed regrind possible

Application examples for co-extrusion



Greiner Extrusion GmbH
Friedrich-Schiedel-Str. 1, 4542 Nussbach,
Austria
www.greinerextrusion.com

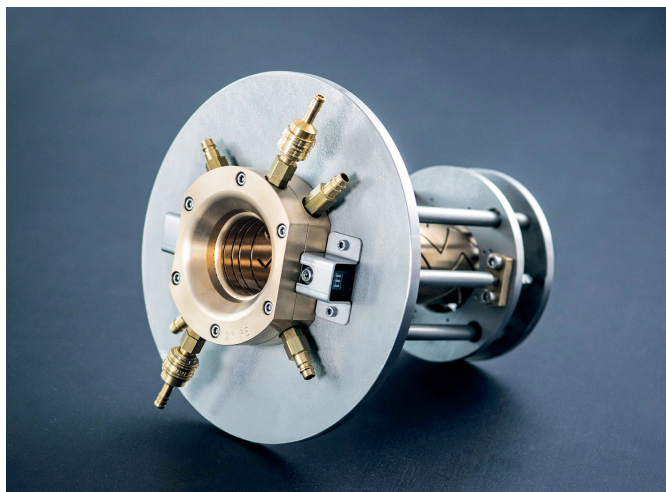
CCA GmbH, based in Löhne, Germany, develops reliable high-performance solutions for plastic pipe extrusion. The high-quality calibration sleeves are used successfully all over the world.



Quality and Innovation for Plastic Pipe Extrusion

The adjustable calibration sleeves for the pipe diameters 14 to 2.500 mm are patented products for practical solutions to optimize complex production processes. They are developed to precisely match the customers' production requirements. And the sleeves are continuously adapted to the latest state-of-the-art technology in order to improve the calibration speeds and to reduce the costs.

Adjustable calibration sleeves with easy and robust adjustment



By means of the CCA adjustment unit, the calibration sleeve can be adjusted. During ongoing production, you are able to

- Compensate differences in the shrinking characteristics of various materials and wall thicknesses
- Improve the pipe tolerances
- Shorten the retooling time considerably
- And thus increase the availability of the extrusion lines, improve the pipe quality, save material

Ovality adjustment

Four adjustment points allow the adjustment of both the diameter and the ovality of the calibration sleeve. In this way it is possible to counteract the ovality during the pipe production so that a „round“ pipe can be manufactured.

CCA looks forward to presenting their adjustable calibration sleeves at the K 2019 in Düsseldorf, Germany – booth G58, hall 10.

CCA GmbH
Werkstr. 10, 32584 Löhne, Germany
www.ccagmbh.de

New Pilot Plant Line for Packaging Industry

The latest addition to the battenfeld-cincinnati Germany GmbH pilot plant in Bad Oeynhausen is a multifunctional thermoforming sheet line. The complete extrusion line is equipped with cutting-edge machine components and can produce sheets and thin boards made from new materials, recycled materials, bioplastics, and combinations of materials. "The new pilot plant line will enable our customers to develop new types of sheets or optimize their existing products – something that is becoming increasingly important in the context of "design for recycling", " says CTO Dr. Henning Stieglitz



Roll Stack Multi-Touch

The core components of the pilot plant line are the high-speed extruder 75 T6.1, the STARextruder 120-40, and the Multi-Touch roll stack with a width of 1,400 mm. The three modern units clearly demonstrate that the specialist in sheet and board extrusion is committed to developing and improving its individual components and, hence, its complete extrusion lines on a continual basis and is constantly adapting to changing requirements in the industry. The extrusion line comprises the two main extruders and a 45 mm co-extruder, each with a multi-component dispensing unit, melt pump, and screen changer, a feed block for B, AB, BA, or ABA layer structures, as well as the Multi-Touch roll stack with subsequent winder. Depending on the configuration, the line can achieve a maximum output level of 1,900 kg/h for PP or PS and around 1,200 kg/h for PET with line speeds of up to 120 m/min.

When pilot plant tests are carried out, the relevant machine components are

combined in line with the product specification. If materials such as PS, PP or PLA are to be processed into sheets, the high-speed extruder is used as the main extruder. The tried-and-tested compact processing machine with a screw diameter of 75 mm and a processing length of 40 D is very energy-efficient and now offers better performance levels than ever before. High-speed extruders ensure optimum melt characteristics and enable rapid product changeovers. The STARextruder, on the other hand, is ideal for producing PET sheets from new or recycled materials. The single-screw extruder with central planetary roll section processes the melt very gently and achieves exceptional degassing and decontamination rates thanks to the large melt surface in the central section. "The STARextruder really comes into its own when processing recycled materials, as it reliably removes volatile components from the melt. When it comes to the possibilities that this system can offer in the

context of the circular economy, there is still a huge amount of untapped potential," says Dr. Henning Stieglitz.

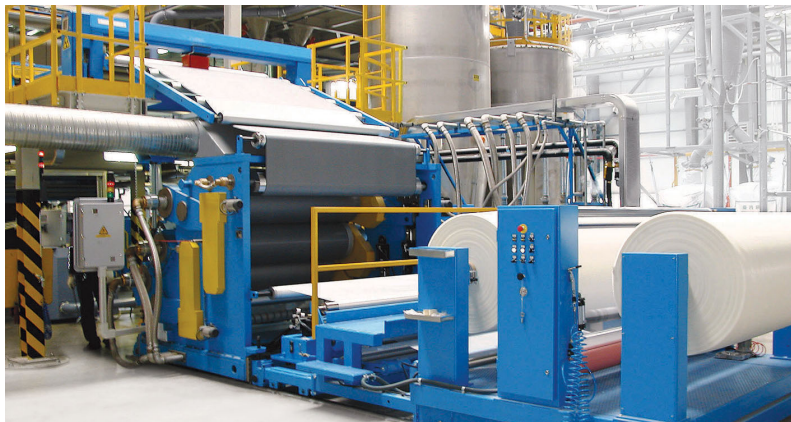
The Multi-Touch roll stack ensures outstanding sheet quality regardless of the raw materials used. The special functional principle of this type of roll stack means that the top and bottom of the sheet or board can be cooled almost simultaneously, thus achieving much better transparency and flatness. At the same time, the tolerances can be significantly reduced due to the increased number of effective nips. Reductions of 50 to 75% can be achieved. The two main precalibration rolls are arranged in a 45° position – ideal for PET processing.

Many of the key issues facing the packaging industry at the moment relate to the recyclability of its products. Mono-products with a corresponding properties profile, alternative material combinations, or bioplastics are just some of the options being considered in the context of "design for recycling". Dr. Stieglitz: "We are confident that the new pilot plant line will not only demonstrate our machine expertise in this sector, but will also provide our customers with a special service, enabling them to work together with us to produce and test optimized sheets under production conditions."

View extrusion line



Extrusion Lines for the Production of Waterproofing Membranes in PVC & TPO supplied



“We are becoming the largest supplier of waterproofing materials around China reaching a productivity capacity of 10,000,000 m²/year of waterproofing membranes in polymer and 20,000,000 m²/year of waterproofing membrane in bitumen. With these two new extrusion lines supplied by AMUT GROUP as turnkey project, we will rise our production up to 25,000,000 m²/year of waterproofing membrane in polymer”, stated Qian Lindi, Board Chairman of Jiangsu Canlon Building Materials Co. Ltd.

Jiangsu Canlon company was recently awarded with the China Building Materials Academy of Karen Waterproof Technology R&D Center.

“All of our products have to be thoroughly tried and tested and comply

with the international standards concerning building and roofing applications. For this reason, we looked for an European supplier with solid reputation and important references. AMUT GROUP was the only company capable to guarantee as turnkey project the performances of the extrusion lines and the quality of the final products which is first priority for us. We met Andrea Peretto, Sales Manager of AMUT in charge of Southern Asian countries, more than 8 years ago. The mutual dedication of AMUT technical team in Italy and in China led us to have the best solution to achieve our targets considering also the fully automatic downstream that will permit to produce final packed and palletized customized reels”, continues Qian Lindi.

First Line:

For the production of PVC membranes The membrane has a 3-layer configuration with the possibility to have different reinforcement such as PES mat, glassfiber net and polyester fleece. The membrane rolls have a net width of 2000 mm and a thickness up to 3.000 μ . The output is 2.200 Kg/h.

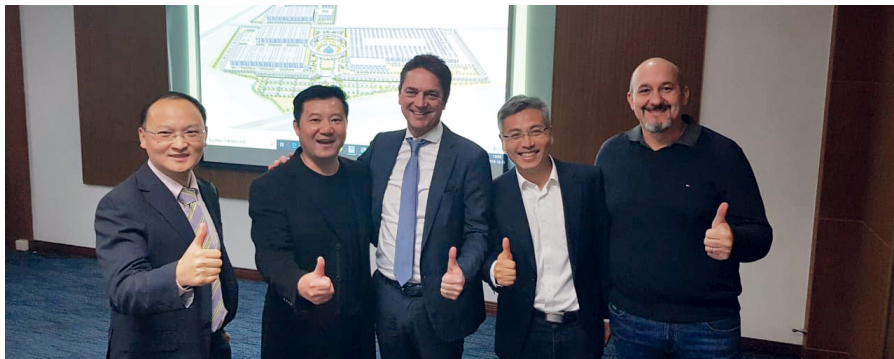
Second Line – For the production of TPO membranes:

The membrane has a 3-layer configuration with the possibility to have different reinforcement such as polyester grid or PES-non-woven textile. The membranes rolls have a net width of 2000 mm and a thickness up to 2.000 μ . The output is 2.000 Kg/h.

Both lines can deliver 2.000 mm-diameter jumbo rolls or customized rolls with max 350 mm-diameter.

AMUT supply includes also the fully automatic packaging system to pack each roll with a PE sleeve and to apply the label containing the main characteristics of the membrane. The system is equipped with a special unit for finished rolls handling and automatic palletizing.

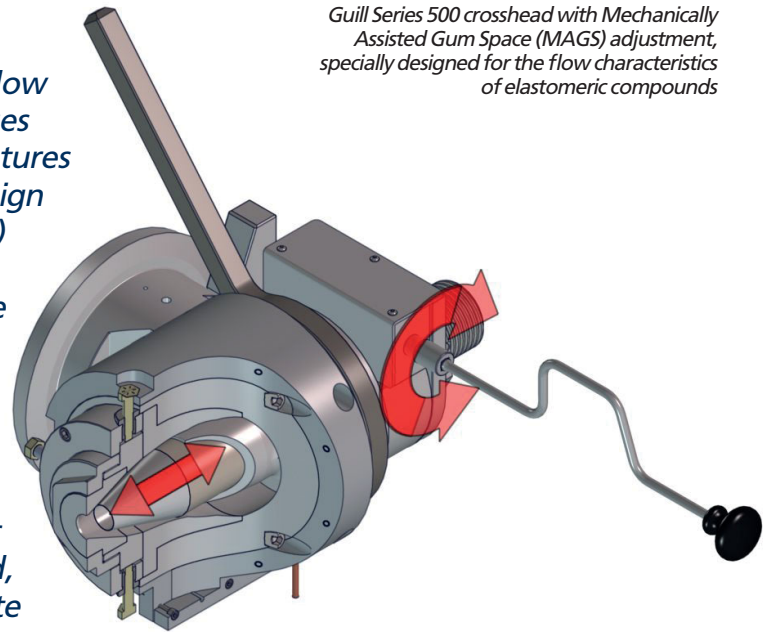
AMUT GROUP
Via Cameri, 16 – 28100 Novara – Italy
www.amutgroup.com



New 500 Series Rubber/Silicone Extrusion Crosshead

Guill Tool introduced the NEW 500 Series crosshead with MAGS gum space adjustment. The 500 Series is designed specifically for the flow characteristics and unique processing challenges of elastomeric compounds. One of the key features engineered by Guill on this new crosshead design is the mechanically assisted gum space (MAGS) adjustment system. This new method of gum space adjustment allows the operator to make an effortless adjustment from a single point using a common socket wrench.

No more need to struggle with multiple nuts and bolts in order to adjust gum space, which leads to faster adjustments. The visual indicator on the core tube allows the operator to see how far the gum space has been moved, making those adjustments much more accurate and repeatable



Guill Series 500 crosshead with Mechanically Assisted Gum Space (MAGS) adjustment, specially designed for the flow characteristics of elastomeric compounds

The hardware-free and patented cam lock design of the NEW 500 Series from Guill means no time is wasted unbolting and re-securing fasteners for disassembly and re-assembly. Only half of a rotation of the cam nut is required to loosen and automatically extract the deflector from the head body, which is another time saver. Also, with no undercuts on the deflector, there are no material hang-ups when extracting the deflector, allowing for faster and easier cleaning and changeover.

The new 500 Series also features the latest Center-Stage concentricity adjustment system that significantly reduces pressure on the tooling, allowing easier and more precise concentricity adjustments without loosening the face bolts. Easy-Out inserts for the adjusting bolts also allow simple replacement of locked or damaged adjusting bolts, which further saves on repair and downtime.

Another innovative feature of this new rubber/silicone crosshead is a cast aluminum liquid-fed cooling sleeve that allows the user to switch out the cooling jacket in the event of a line obstruction, again reducing downtime compared to traditional integrated cooling systems.

The new 500 Series crosshead with MAGS gum space adjustment is a drop-in replacement on most existing NRM lines, however this crosshead design can also be adapted to fit any extruder design or line layout.

The addition of a newly designed flow inlet channel reduces the shear and heat that is generated as the materials are being processed. This leads to lower head pressures allowing the material to move through the head in a much more balanced and even flow.

All crossheads supplied by Guill are furnished with a tool kit for assembly and disassembly as well as a detailed operator's instruction manual.

For a video of the new Guill 500 Series crosshead with MAGS gum space adjustment, please go to: <https://youtu.be/jeNovmMtcBs>

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

Regeneration of Heavily printed Ground Film with Tandem Line

Gamma Meccanica SpA, an Italian company specialized in the production of lines for the regeneration of plastic materials, has developed Tandem technology to meet the specific needs of processors or recyclers who want to recover materials that otherwise (not being profitable and difficult to recycle) would be destined for landfill. With Tandem technology it is possible to recycle the materials that is normally mixed with other materials. Sometimes this can also requires the use of additives significantly affecting the final price of the granule as it is re-extruded with high production costs



Leaf polypropylene (or ground film) from industrial waste is one of these materials: it is difficult to recycle because of print coverage greater than 100% on one side and aluminum on the other. An example of this material is the chocolate and hazelnut cream snack packaging of a well-known multinational food company. The thickness (or gauge) of this film is very thin: 15 to 20 μm where the external part is printed with several layers of superimposed ink that makes recycling very difficult.

Thanks to Gamma Meccanica's Tandem lines recyclers or processors can recover this material with a 100%

yield, without the additional drying and antioxidant process. The functioning of two extruders arranged in succession ensures a uniform granule composition. With an innovative degassing system installed on the Tandem lines, the surface of material exposed to the action of vacuum is 10 times greater than in a normal extruder. This guarantees the extraction of large quantities of gas produced during the process avoiding the inclusion of gas in the granules. The process does not stress the material which, as confirmed by laboratory tests, does not degrade, nor requires the use of additives. The final

result is a granule of excellent quality at low production costs.

Gamma Meccanica offers different models of Tandem line according to the production needs. The production capacity of a GM 160 Tandem with this type of material is 1200 to 1300 kg / h of recycled PP granules.

Al Compound, the polymer division of Agricola Imballaggi: over twenty years in the regeneration of plastic materials

A GM160 Tandem line was purchased by the Italian company Agricola Imballaggi for its Al Compound divi-

sion that for over twenty years has been dedicated to the regeneration and granulation of industrial plastic waste. Agricola Imballaggi specializes in the production of sturdy and recyclable disposable plastic boxes for fruit and vegetables. In 1996 the company created the AI Compound polymer division with the task of polypropylene scraps recycling and use of recycled granules to produce the boxes. To optimize the investments, the company immediately began to address other customers as well. By purchasing industrial waste both in Italy and abroad, AI Compound produces high quality recycled granules that are sold to manufacturers of plastic items in various areas: from the production of outdoor furniture, automotive sector, household goods and packaging. Among the recyclable materials are PP waste in neutral or printed films, doubled PP waste as PP + PP, PP + PE, PP metallized film waste, non-woven fabric waste and many others.

The main consumer of AI Compound granules remains the "boxes sector" of the company, for which it produces 180 tons / month of recycled granules. Both activities are growing



thanks to the regulations that encourage the use of recycled plastics. Initially the regeneration was performed with standard single-screw extruders. The desire to expand the range of recycled products and to recover the most difficult materials has prompted AI Compound to choose new generation lines such as the GM Tandem line from Gamma Meccanica. These systems are more versatile and give the possibility to

optimize production processes offering maximum energy efficiency. "We continue to research and to put it into practice to propose manageable materials for molding - says John Ferrara, administrator of Agricola Imballaggi. There are many plastic materials that cannot be processed with conventional lines. This is why we have decided to invest in technologies for regeneration such as Gamma Meccanica lines, which allow us to expand our product range and to be engaged in research on those materials that are not easily recoverable." After the purchase of the first GM Tandem, already in production for several months, the company purchased a second GM160 Tandem line that will be delivered shortly. Agricola Imballaggi has found an attentive partner in Gamma Meccanica that is able to respond concretely to its needs. From this synergy was born a project to develop a new model of Tandem, different from those up to now realized, designed for special applications. Construction and production is expected within the year.



Gamma Meccanica S.p.A.
Via Sacco e Vanzetti, 13, 42021 Bibbiano
(RE), Italy
www.gamma-meccanica.it

Innovations from Italy at Plastpol 2019



Moretto participated at Plastpol in Kielce from 28th to 31st May 2019. Together with the team of the local branch, Moretto welcomed the main players of the plastics industry, in a large and modern space

Since its foundation in 1980 Moretto has pioneered auxiliary equipment for injection molding, extrusion and PET processing customers, innovative solutions characterized by employing the latest technologies available and customized to meet their needs.

The Moretto's East Europe branch, based in Częstochowa, plays a key role in the local business by promptly responding to the needs of customer, providing efficient and turnkey solutions, supporting them with know-how and services, pre, during and after-sales.

Entering the booth means getting in tune with the world of Moretto: high technologies 4.0, strong and attractive devices, video screens and technical information and support held by specialized staff ready to welcome visitors.

On display at Plastpol was a wide range of Moretto's machines specifically designed to manage a perfect polymer treatment, in particular for conveying, drying, dosing, grinding, temperature control and cooling phases.

"Energy efficiency" is the focus for the plastics processing industry, increasingly characterized by specific complexities and high levels of performance, mainly required by sectors such as automotive, medical and packaging.

To achieve the goal Moretto offers a wide range of efficient, smart and automatic machines, all connected with MOWIS 3, the advanced supervising and management system for the integrated control of the entire supply chain in plastics processing plants.

Among the main 4.0 products on display at Plastpol there was surely the adaptive conveying system One Wire 6 which allows maximum efficiency and self-calibration in conveying systems. This server is the only patented intelligent system available on the market able to define and maximize the amount of granule to be delivered thanks to the exclusive VIBE technology. The entire transport por can also be easily managed by a wireless touch interface and, like most Moretto products, also interfaces with MOWIS supervisory control system.



Together with the One Wire 6 station, the Venturi and Kasko hopper loaders and the automatic manifold Dolphin completed the conveying solutions displayed at Plastpol.

At Plastpol visitors could discover EUREKA PLUS, "the most advanced low consumption drying system available on the market" able to reduce energy consumption by 56% compared to conventional drying systems. Eureka Plus consists of four Moretto patented technologies:

- X MAX, the only high performance multi-bed modular dryer
- FLOWMATIK, a dynamic airflow management system,
- OTX, innovative hoppers with an exclusive internal geometry
- MOISTURE METER MANAGER, this revolutionary device measures polymer residual moisture in-line, adapts the drying system operations, manage and control in close loop the drying process guaranteeing product certification and incredible energy savings.

By working together, these four automations provide an "on demand" self-adjusting, modular and energy-saving drying system.

At Plastpol Moretto also highlighted the powerful mini dryers X Comb, a complete range characterized by strong turbocompressors, zeolite technology, dew point equalizer (up to -60°C) and the exclusive OTX hopper. X Comb is mostly requested by strong sectors, like medical and automotive, for drying small quantities of material (hourly production from 1 to 36 Kg/h) and saving 50% of energy. Moretto also presented a great range of dosing machines: the new loss-in-weight dosing unit DPK, the gravimetric dosing unit DGM Gravix and DBK Gramixo, ideal for extrusion. These devices allows high precision dosing, modularity, reaction speed, connectivity and remote control.

*Interview with M.Sc. Ralph Klose,
Director Technology iNOEX GmbH:
"Systematic further development of Terahertz technology"*

30 years of practical experience in measurement and control in the extrusion technology which has always included the creation of revolutionary ideas and patents are the distinguishing features of iNOEX GmbH. Being one of the first movers in the field, iNOEX recognized the benefits of the new key technology Terahertz / millimeter waves at an early stage and has during the past 8 years developed it into a pioneering technology which is now ready for use in industrial environments. The products QUANTUM and WARP define the technological standard of Terahertz / millimeter waves for the pipe extrusion industry with more than 150 systems currently in the market



*M.Sc. Ralph Klose,
Director Technology iNOEX GmbH:
"Our innovative capacity lies with our staff
and their special know-how. In Melle,
35 engineers are employed in our R&D
department."*

Terahertz – iNOEX Technology sets Industrial Standard

Mr. Klose, please explain to us what is understood by Terahertz technology?

Ralph Klose: Terahertz technology is based on an electromagnetic wave between 100 GHz (0,1 THz) to 10 THz. In the electromagnetic spectrum you will find it between infrared and microwave radiation and it offers a number of significant advantages of the adjacent ranges. When electromagnetic waves are generated in this specific frequency range and corresponding transmitters and receivers are established, non-conductive materials such as e.g. plastic material can be measured. Plastic materials are almost transparent for Terahertz waves, therefore non-destructive and non-contact product testing becomes possible. The movement of a THz wave through plastic material is braked by a difference in the refraction indexes. This difference creates a reflexion of the wave caused by the transition zone between different material types (e.g. air, PE). The transit time of the reflected echos is the information we are looking for. We use it to determine the wall thickness of each

layer with an accuracy of a few micrometers. The refraction index is the material-dependent calibration value which defines the transit time in the material. Our WARP systems do not have to be calibrated manually as these systems are able to self-calibrate automatically and continuously. An important feature for extrusion processes where aggregates such as carbon black or calcium carbonate are added in an unstable process.

The term "millimeter waves" is often heard, does this term relate to the same measuring principle?

Klose: Yes indeed, this term describes the same measuring principle. The frequency range of millimeter waves overlaps with the Terahertz range in the lower frequency area and features are almost the same. iNOEX uses both ranges for different applications. Summarizing, one can say: the higher the frequency and the wider the frequency, which is used, the smaller the layers (e.g. EVOH) which can be measured. However, this comes at

the expense of the maximum measurable layer thickness – lower frequencies are an advantage. Due to the fact that iNOEX is able to cover the frequency ranges of both Terahertz and millimeter waves, we decided for Terahertz (THz) as the uniform term. „Millimeter waves“ is used as a marketing term.

You have already mentioned some of the advantages of Terahertz technology. Are there others, too?

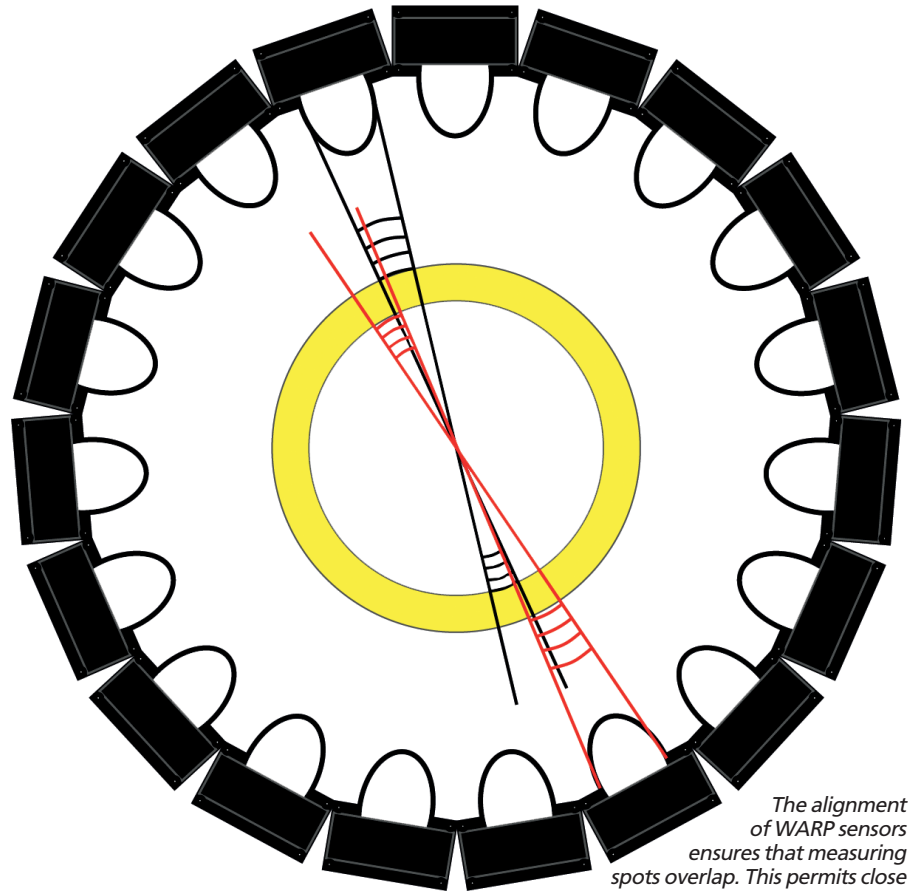
Klose: This technology naturally competes with other measuring principles, such as e.g. ultrasound or X-ray. Compared to measurement by ultrasound, Terahertz does not require any coupling medium which means that measurement is contact-free. Besides, measuring is independent of the temperature of the measuring object. Compared to X-ray, Terahertz is based on non-ionising radiation and is therefore not harmful to health. This fact really facilitates mounting conditions and there is no need to engage a radiation protection supervisor.

Further, multiple product layers are measurable as well as foam pipes and equally thick-walled pipes. We offer a real 100 % measurement and a variety of systems with 1 to 38 measuring spots. Clear and simple user guidance is offered and the consistent implementation of the Industry 4.0 protocol OPC UA. This makes our THz-systems plug & play systems which are very easy to implement into any extrusion process. THz technology is not only suitable for pipe extrusion, but also for numerous other applications, e.g. blow moulding or the production of sheets and profiles.

When did iNOEX start this technical development? And what is the state of the art today?

Klose: We started this development in 2011 as a research project. We cooperated with Fraunhofer-Institute HHI and the Kunststoffzentrum in Würzburg (SKZ). At the time the THz community was able to provide a technical solution but no product application. There was still a long way to go until we succeeded in making the technology usable for the industry and together with our partners we learned a lot on this path. A technology which was created in the lab now has become an industrially usable measuring technology. Our systems are field-proven and have been used by leading pipe producers for some years now. The good cooperation with our customers and their feedback have continuously led to the implementation of improving design features. Today we can say that we currently work on the next generation of THz systems.

Most significantly however is the fact that the iNOEX THz system QUANTUM features the latest THz femtosecond laser technology which permits the measuring of layer thicknesses starting at 25 µm and a measurement rate of 1600 Hz. The system WARP consists of an intelligent sensor technology based on FMCW-microchips, frequencies are between 60 – 170 GHz (depending on the application). All systems are CE compliant, have been certified in accordance with RED and FCC-compliant.



The alignment of WARP sensors ensures that measuring spots overlap. This permits close monitoring also in extrusion direction.

What is important in this context is the variety of patents/patent applications developed in our R&D department and generated together with our cooperation partners which are integrated into iNOEX GmbH.

For the past 8 years you have done intense research and development in the Terahertz field. Where do you presently see the greatest challenges and what is your view on the future development of this technology?

Klose: THz technology becomes more and more intelligent and complex and will be used increasingly in other applications, too, such as e.g. layer thickness measurement and process engineering. We are working full steam on these technical projects and on other specific applications and we do this together with our cooperation partners. In this context we also decided to invest into a new THz testing and assembly center in Melle which will cover a total surface of approx. 1.400 square metres.

Mr. Klose, you mentioned two different Terahertz measuring systems. What is the difference between QUANTUM and WARP?

Klose: The essential difference between the two systems is how the THz wave is technically generated and the number of sensors which is used for the system's performance. QUANTUM is based on the optical laser generation of Terahertz waves. This technology offers very high frequencies and a large bandwidth. Therefore, QUANTUM is mainly used for measuring thin layers or multiple layers. WARP, on the other hand, is operated in the lower Terahertz frequency range. Terahertz waves are generated electronically by an iNOEX microchip. Thus, the system is suitable for large and medium-size wall thicknesses of 5 mm or higher. Thinner wall thickness sizes larger than 3,5 mm will be measurable in the foreseeable future. As mentioned, there is a difference in the number of sensors

used. QUANTUM features one sensor which reverses around the pipe. Coverage is a full 360° of the total pipe circumference. Thus, this is not a real 100 % measurement. For WARP we use static sensors which are distributed around the pipe for continuous and parallel pipe measurement. Consequently, based on an increase of the number of sensors, WARP carries out a real 100 % measurement.

Please do explain: what is meant by „real“ 100 % measurement?

Klose: We talk of a 100 % measurement as a „real“ 100 % measurement as long as the pipe coverage is complete, independent of the pipe dimension or the line speed.

Our specially developed optical system focusses Terahertz waves on the pipe center. Sensors are arranged in a way to make measuring spots overlap so that we get a close coverage also in extrusion direction. This principle has been field proven for many years as we also use it for our AUREX ERS system. Further, the sensor system is able to carry out measurements without reciprocal influence. Measurements are carried out and evaluated in parallel and at a maximum repeat rate. Yet another highlight is that WARP sensors are able to measure throughout the pipe, this means also on the opposite side of the pipe. In other words, we virtually double the number of sensors. WARP 100/630 thus carries out 1.520 measurements per second.

Highly precise WARP systems offer time and material savings, end products are high-quality products. Relevant data is available in real time.

You just talked about the „real“ 100 % measurement. That sounds as if there exist „fake“ 100 % measurements, too?

Klose: The term „fake“ is not correct. We call a reversing or rotating measuring technique such as it is carried out by our QUANTUM a 360° measurement. Due to the continuous sensor movement along the pipe surface, a large number of measuring points is generated. The disadvantage of this technique is caused by the pipe moving through the system. Therefore, we term this kind of measurement only a continuous wall thickness measurement around the pipe circumference. In order to achieve a 100 % coverage, the sensor would have to rotate at a very high speed around the pipe in order to achieve an overlapping in extrusion direction. This very fast rotation would require a very high measuring frequency, too.

Mr. Klose, are there any legal provisions which need to be observed by the customer when he uses Terahertz technology?

Klose: There are no provisions which have to be observed by the customer. Of course, iNOEX has to observe limit values, something we have taken into account right from the beginning when we designed our systems. We got the confirmation by several measuring labs that we not only comply with limit values but are way beyond permitted limits.

You have already sold a number of systems. How about their acceptance in the market?

Klose: In the meantime, we have established more than 150 systems in the market. We received a particularly positive feedback for our WARP portable. This handheld device features the chip-based FMCW technology and is widely accepted for medium and large-sized pipes, also due to the fact that measuring results are available within seconds and measuring is simple. In the beginning some persuasion work was of course necessary but the combined solution of our inline measuring system and the proven iNOEX gravimetry offers a complete solution for the automation of pipe extrusion. The process-optimized design of our systems makes their implementation into new or existing production lines easy.

What are your visions being a leader in innovations? What are you particularly proud of?

Klose: We are particularly proud that we are a pioneer in the introduction of Terahertz based measuring systems to the market. And we are justly proud that we carried out a large part of the development work ourselves (software, hardware, sensors and mechanics). This consistent know-how chain with the important components all coming from one source is such a significant advantage because it will permit us to continue our developments flexibly and efficiently. In the future we will always be able to offer the most recent technology. Further, we have accumulated not only in this area many years of know-how but also throughout our complete field of business. More than 100 iNOEX patents filed are convincing evidence.

Mr. Klose, we thank you for this interview.



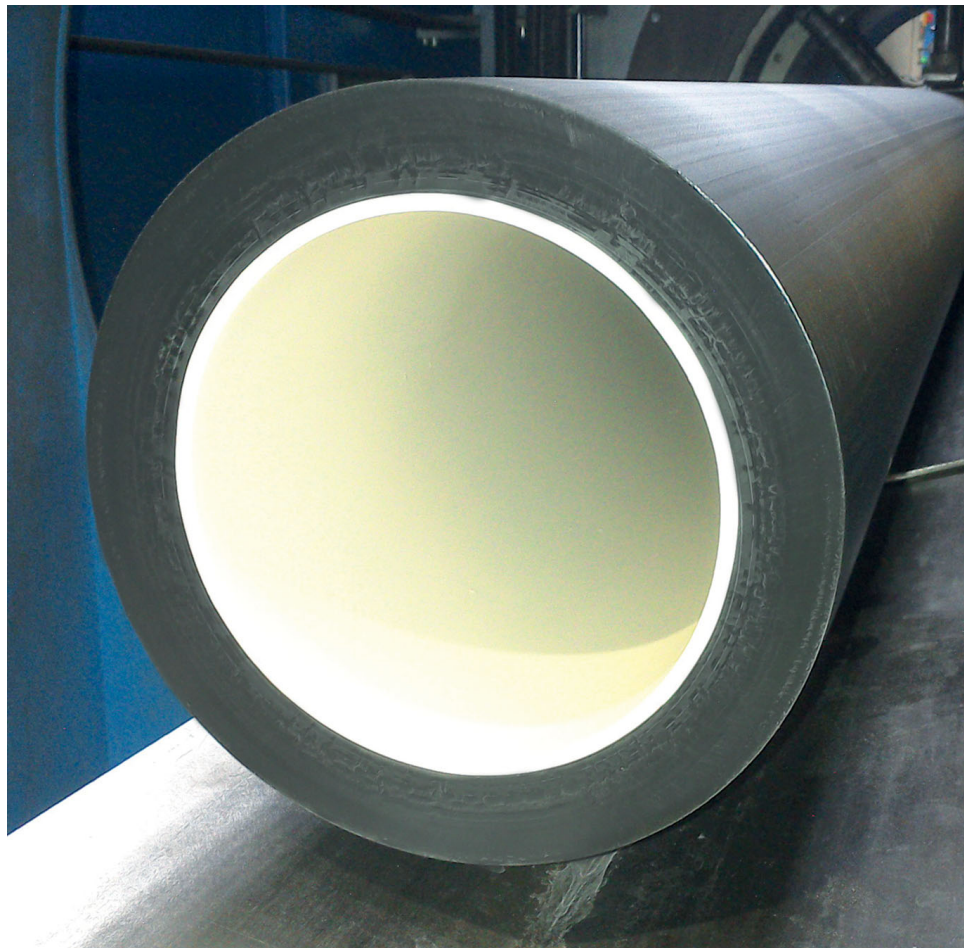
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“When producing a perfect pipe not only our customers will be satisfied, but we will be too”

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

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

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



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

mined by standards. Since the foundation 26 years ago, Gerodur has been producing first-class plastic pipes with the focus on the highest product quality, optimal processes and profitability. For the internationally operating manufacturer, the application of innovative measuring and control technology in

extrusion lines is a matter of course. The first contact with SIKORA, manufacturer of measuring and control devices from Bremen, was made several years ago. At that time, Gerodur was looking for measuring technology for smaller product dimensions in the area of heating and sanitary facilities and found the

solution in X-ray technology. For two years now, the company has also been using a new technology from SIKORA that is based on millimeter waves and which is applied during the extrusion of large plastic pipes and thus follows a future-oriented approach. "There are several methods for quality control on the market. The newly developed millimeter wave technology convinced us with its smart measurement principal", says Andre Richter, Team Leader of the division piping systems at Gerodur. "Especially for the measurement of large pipes in the dimension range of 250 to 630 mm and wall thicknesses of up to 60 mm, we see significant benefits", he continues.

In the line, the millimeter wave system CENTERWAVE 6000 is installed directly after the first vacuum tank. The system measures over 360 degrees of the pipe circumference the diameter, ovality, wall thickness and the sagging in real-time and, thus, enables a fast centering of the extrusion tools. An alternative measuring method on the market is ultra sound. This technology also measures the pipe diameters, however, due to its temperature dependency, it can only be applied later in the production process. "It is our goal to receive reliable and accurate information about the pipe dimensions as early in the pro-

cess as possible in order to take actions if necessary. Thereby, an early measurement of the wall thickness is of significant importance considering that pipes with large diameters and large wall thicknesses are being produced at a line speed of 0.5 meters per minute", adds Richter.

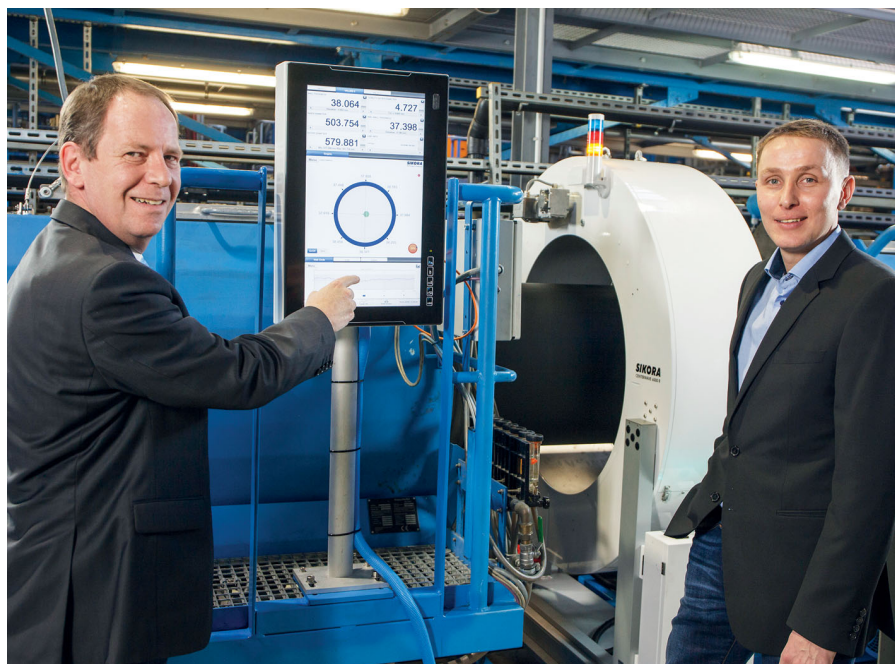
An optimized start-up process – meaning time saving and manufacturing at nominal dimensions while, simultaneously, avoiding waste – leads to process reliability and an efficient production, which is often crucial with regard to competition. Gerodur understands its business as a continuous improvement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

Gerodur also places high demands on its suppliers. Process technology, which includes measuring and control technology, is a crucial component within the value-added chain. The data supplied by the measuring technology is

the basis for process improvements and has an impact on business correlations within the company. "We are in close exchange with SIKORA and develop further together. For example, we are discussing ideas to adapt the system to our line requirements even after purchasing the device. This applies, for instance, to customized software modifications or individual visualizations of measurement data to support the operator", explains Mantey. The results are optimal processes and high productivity.

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

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



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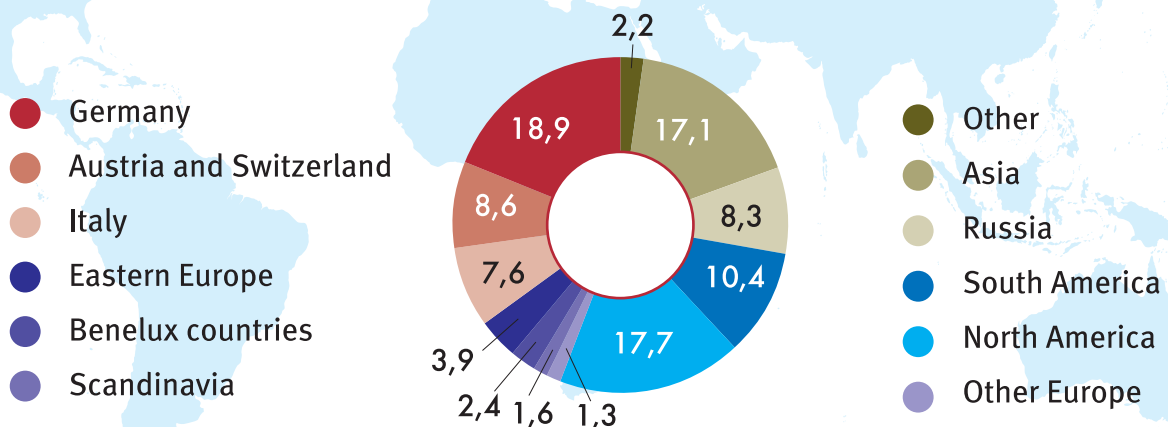
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