04/2019

VERLAG
Cologne /Germany

EXTRUSION INTERNATIONAL

STEIN BLUE-LINE
for a sustainable future

EXPERTS IN DOWNSTREAM

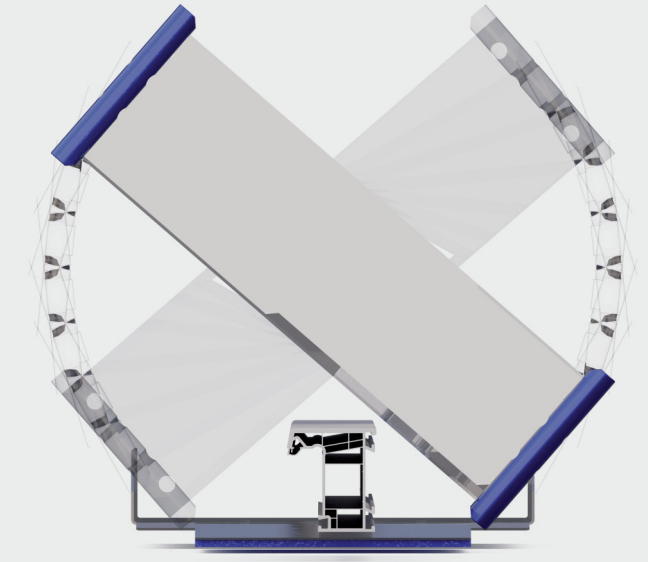
Profile guillotine PTT-200

INNOVATION

- Especially for complex as well massive profiles.
- Basic construction consists a frame in solid Aluminum construction in which the controls are integrated.
- Through large sliding windows fast and comfortable access to the cutting unit.

Particularities:

- For this special version of the cutting knife head the cutting knife can be set in any position. This allows the slope of the knife to the respective profile geometry optimally adapted become.
- A new clamping system, which fix the knife at 4 points. It allows more pulling force on the blade to cut more massive profiles.
- The new clamping system result in a much higher angular accuracy of the cut.

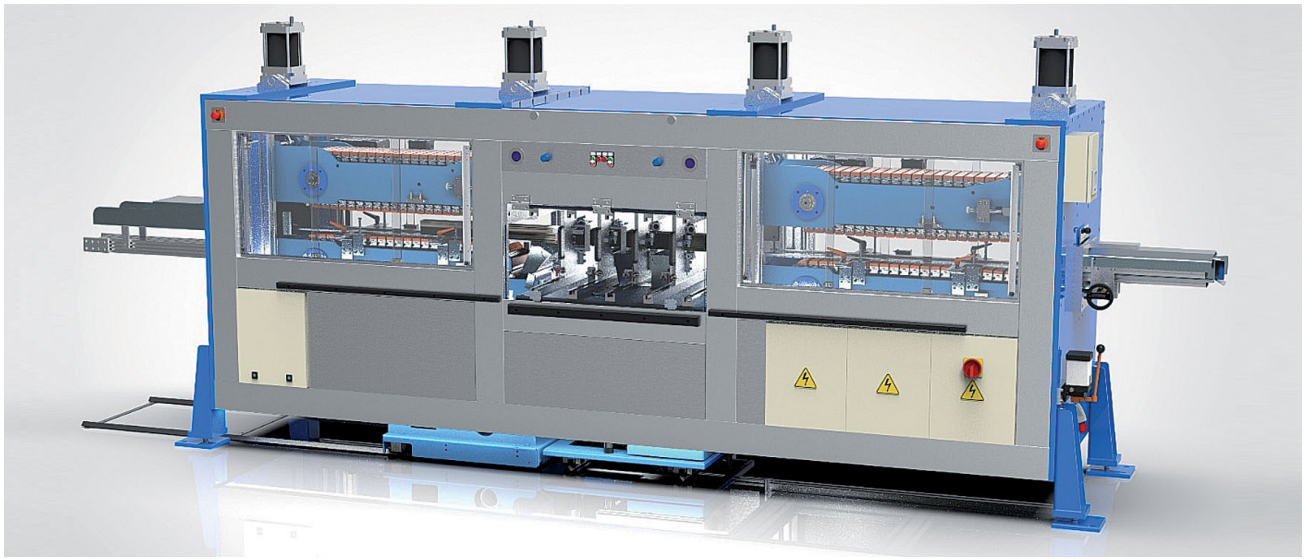


Made in Germany

STEIN BLUE-LINE
for a sustainable future

EQUIPMENT FOR EXTRUSION

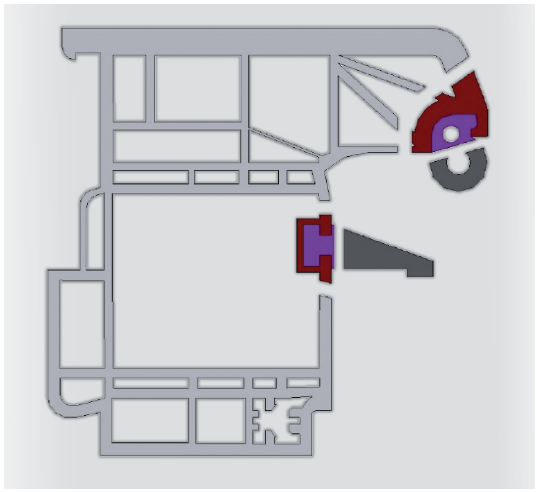
PCL Profile separating machine



When profiles are extruded, start-up profiles occur again and again. They are representing a high material value.
It is very labour intensive to recycle this profiles.

With the **PCL profile separating machine** from Stein Maschinenbau, this process is greatly facilitated and accelerated many times over.

Thanks to its quickly exchangeable cutting units, as well as the two powerful caterpillars, the PCL can cope with any profile and allows you to recycle your profiles in the best possible way. By non-cutting separators, the profile is split into individual Material fractions which are optimally recyclable. Smaller sections are sorted and granulated directly in the machine.



Your advantages

+ High throughput
+ Short changeover times
+ Highest possible Recycling degree
+ Unmixed material separation

We exhibit
2019
16–23 October
Düsseldorf
Germany
Hall 16
Stand F 15

The PCL from Stein Maschinenbau separates YOUR profiles!

STEIN Maschinenbau GmbH & Co. KG

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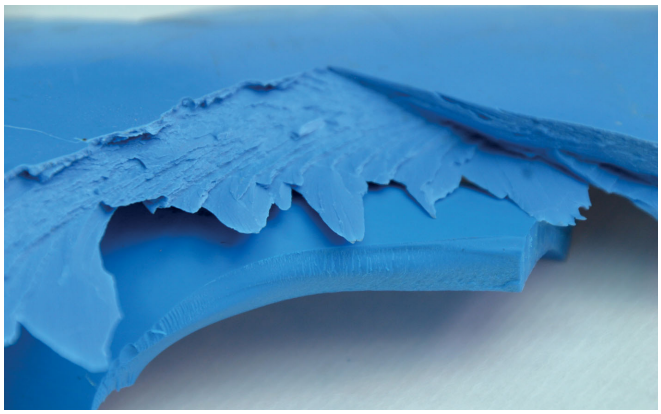
Tel. +49/63 96/92 15-0
Fax +49/63 96/92 15-25
stein@stein-maschinenbau.de
www.stein-maschinenbau.de

24 Stefan Depmer, Head of Technologies and Operations with the company WKT still remembers former days when reliable and effi cient wall thickness measurement was carried out by ultrasonic devices. WARP portable – the iNOEX handheld system based on Terahertz technology offers high-precision wall thickness measurement

Brückner Maschinenbau is working on a means to make films with the highest possible recycling capabilities producible on film stretching lines. For the K 2019 Brückner 48 will introduce two completely new line concepts for the production of BOPE films

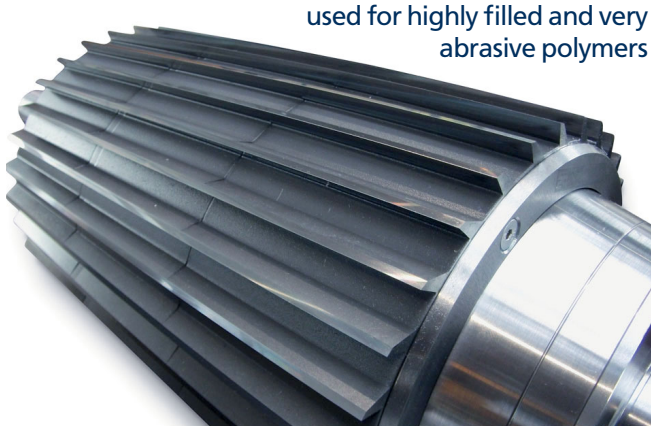
DuPont regularly launches brand new advanced material solutions based on the needs of customers and gaps in the industry. This commitment to customers is a major driver for the company, enabling it tocontinuously develop and 36 introduce a steady stream of new cutting-edge technologies to the polymer market



The environmental impact of a piping system depends on its composition and application 40 thereof. The factors determining the efficiency over the entire life cycle of a pipe are mainly: the type of raw material used, the production process, the product finish and its useful life

BASF will present innovation highlights from its broad range of Colors & Effects® pigments for 45 plastic applications at the K trade fair. The new product launches include two new Lumina® Royal effect pigments, Microlen® Piano Black, and a black and red addition to the Sicopal® product line

At the K trade fair, the latest innovations are presented, and new technologies meet users. 63 This is where Schoenenberger feels at home. Displayed at the K is the so called "KRONOS" – a tungsten carbide-tipped, cutting rotor in a very robust design, which is used for highly filled and very abrasive polymers



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

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www.extrusion-info.com

T-PLAS
International Trade Fair fort he Plastics and Rubber Industries
18. - 21. 09. 2019
Bangkok, Thailand
www.tplas.com

Recycled Packaging for Food Contact
18. - 19. 09. 2019
Brussels / Belgium
https://www.cmtevents.com/aboutevent.aspx?ev=190920&

4th Future of Surfactants Summit North America
18. - 19. 09. 2019
Chicago / USA
www.wplgroup.com/aci/future-of-surfactants-summit-north-america-usa/

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

US Biobased Coationgs Summit 2019
13. - 14. 11. 2019
Dallas, TX / USA
www.wplgroup.com/aci/event/us-biobased-coatings-summit/

Plastics Recyclers
21. - 22. 11. 2019
Brussels / Belgium
www.plasticsrecyclersam.org

PlastEurasia
04. - 07. 12. 2019
Istanbul / Turkey
www.plasteurasia.com

"Engineer of the Year 2019"

■ The winners of the fourth "Motion Control Industry (MCI) Awards 2019" were revealed on May 22nd at a ceremony held at the National Conference Centre also known as "The National Motorcycle Museum", Solihull, GB. Development engineer and proprietor of Kabel.Consult.Ing, Juan Carlos González Villar, was named "Engineer of the Year 2019" for his patented Energy Light drive system / Networked Continuously Variable Transmission(s) 4.0. He reacted this way: "I´m so pleased to have won this important industry award in Great Britain, which has produced brilliant engineers such as Robert Willis and G. J. Abbott. I consider this award to also be a tribute to these pioneers and doyens of mechanical engineering. Without their publications (Patent US2068784 and technical book "Principles of Mechanism"), our patent for the Energy Light drive system would not have been possible."
The Energy Light drive system / Networked Continuously Variable Transmission(s) 4.0 significantly improves the energy efficiency of an application through the use of patented motor technology, cutting-edge process and control methods, and lightweight construction with composite fiber materials. It minimizes drive output during continuous operation, during acceleration, delays, and braking; maximizes corresponding generator output; and standardizes the drive system to become a complex total application. Originally developed for machines that wind / unwind (high-voltage) cables, the principle behind Energy Light drive system / Networked Continuously Variable Transmission(s) 4.0 can be used in numerous other applications as well, including electric vehicles.
Juan Carlos Gonzalez Villar is proprietor of Kabel.Consult.Ing, Germany, a provider of technical consulting, development, and modernization services for the manufacturing industry.

Juan Carlos González Villar of Kabel.Consult.Ing accepts the MCI "Engineer of the Year Award 2019" from Penny Smith, host, and Mark Cattermole of category sponsor Parker Hannifin

Kabel.Consult.Ing
www.kabelconsulting.de

remain movable in life, nothing can bring **you** down. Not only in sports and in your job, but **always** and everywhere. It is the only way to be prepared for anything and be **flexible**. Our development department has designed an **extruder series** which did not previously exist in this form. FLEXTRUSION – that is the name of the most flexible extruder concept ever which adapts to your output. While the basis of the system remains the same, the processing unit **can** be selected freely according to your individual requirements. You can **simply** upgrade if your output increases. This flexibility can really save you money. You think this is **brilliant**? So do we!

How to get it right: If you always **remain** movable in life, nothing can bring **you** down. Not only in sports and in your job, but **always** and everywhere. It is the only way to be prepared for anything and be **flexible**. Our development department has designed an **extruder series** which did not previously exist in this form. FLEXTRUSION – that is the name of the most flexible extruder concept ever which adapts to your output. While the basis of the system remains the same, the processing unit **can** be selected freely according to your individual requirements. You can **simply** upgrade if your output increases. This flexibility can really save you money. You think this is **brilliant**? So do we!

hansweber.de

WEBER

Window profile extrusion

FLEXX TRUSION
PROFILE SERIES

CLASSIC LINE
PROFILE SERIES

DS 9.32 FleXXtrusion®

Classic or FleXXtrusion® –
it's your choice

How much variability do you need?

You can always remain flexible with our FleXXtrusion®series.

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

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

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

Scan code and download data sheets extrudertechnologie.de/en/windowprofile

Advantages

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

2019
16–23 October
Düsseldorf
Germany

**Hall 16,
Booth F06**

Hans Weber Maschinenfabrik GmbH
Bamberger Straße 20 · 96317 Kronach · Germany
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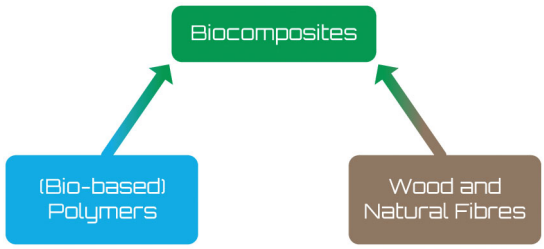
info@hansweber.de · www.hansweber.de

WEBER

8th Biocomposites Conference Cologne

■ **14 – 15 November 2019, Cologne, Germany**

Recently, biocomposites have begun to penetrate several additional markets beyond the main sales market of decking. With the latest advances in injection moulding and 3D printing, both Wood-Plastic Composites (WPC) and Natural Fibre Composites (NFC) are of high interest for a multitude of applications and fruitful new options for product differentiation. The "8th Biocomposites Conference Cologne" offers a comprehensive overview of current developments, product diversity and application areas. With an average of 250 participants and 30 exhibitors, the conference has established itself as the leading international conference in the sector of biocomposites.
The preliminary programme is available online at:
www.biocompositescc.com/programme



As in previous years, the "Biocomposite of the Year 2019" innovation prize will be awarded again this year from nova-institute together with the sponsor Coperion. The focus will be on new developments that entered the market in 2018/19 or will come onto the market in 2019. Current information on the Innovation Award can be found at: www.biocompositescc.com/award-application

nova-Institut GmbH
www.nova-institut.eu
www.biocompositescc.com

Flexible Polyethylene Recycling in Europe

■ **Accelerating the Transition Towards Circular Economy**

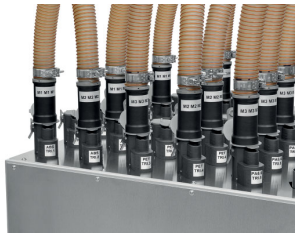
Plastics Recyclers Europe published a paper identifying the prerequisites for increasing recycling of flexible polyethylene into a high-quality raw material while ensuring a sustainable and cost-effective process.
With the converters' demand of around 9 million tonnes (Plastics the facts – Analysis of European plastics production, demand and waste data. Plastics Europe. 2018), LLDPE/LDPE is the second biggest resin processed in the EU and consequently demonstrates a high recycling potential. However, today's recycling rate of this resin is at the level of around 31%. This is caused by the fact that reaching for higher targets and higher quality of the recycled material from this stream is hampered by a number of challenges that need to be overcome in order to reach beyond the low hanging fruit.
"Plastic film waste is still perceived as a demanding and difficult stream to treat, however, we in Europe have proven that even stretch film recycling is possible. Nonetheless, to reach for the additional quantities from post-consumer packaging we need a strong commitment of the value chain to work towards making this material fully sustainable", said Ton Emans, Plastics Recyclers Europe, President.
The main bottlenecks specified in the paper refer to low collection rates & low quality of input materials, lack of design for recycling as well as the continuous development of the recycling technologies. Firstly, harmonized collection and sorting processes at the EU level must be introduced to increase both the quantity and the quality of the collected waste.
Secondly, design of plastic packaging controls to a large extent the degree to which packaging can be recycled, as structures and materials which are incompatible with mechanical recycling cause a number of disruptions in a recycling line. Therefore, specific design for recycling guidelines must be followed when manufacturing a product and when introducing any kind of innovation on the market.
Lastly, although the advancements in recycling and sorting technologies have greatly improved in the past years more investments as well as research & development is needed to continuously enhance the quality of recycled material.
The industry's effort will have to be further strengthened by an adequate legislative framework that will create conditions for further expansion. The Member States and regions will equally have to thoroughly implement the EU legislation. The new legislative measures introduced by the reviewed Waste Package, the Plastics Strategy and the Single Use Directive oblige the industry to take immediate and decisive steps in production and waste management of plastics packaging. The new targets can be achieved only if the main bottlenecks are undertaken and solutions for them elaborated.

RecyClassTM
c/o Plastics Recyclers Europe
www.recyclass.eu
***www.plasticsrecyclers.eu/your-plastic-film-recyclable-test-it**

Plastpol 2019 – A Huge Success

■ Jacek Dobrzyński, owner of Plast Line, the Polish representative of motan-colortronic, is positively surprised: "On the first day we already had a lot of visitors at the stand. Normally, this day is more reserved. During the K year, other fairs usually have a hard time of it."
In addition to the exhibited cross-section of the product portfolio, the new products for K2019 took centre stage. These remained hidden in wooden boxes placed on the stand and encouraged the visitors of Plastpol to visit the K2019 in Düsseldorf. Of course, motan-colortronic was not in Kielce without any announcements. The RFID retrofit kits for the METROCONNECT coupling stations were presented for the first time in Poland.

Satisfied faces: Jacek Dobrzyński (left), Jochen Freier and Julian Sommerey (both motan-colortronic)



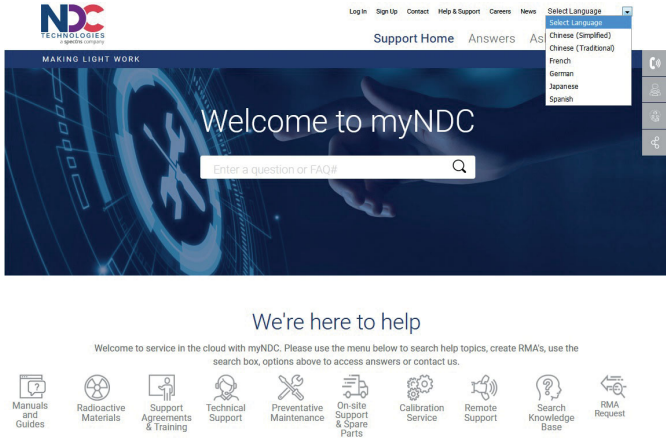
METROCONNECT C: The wireless coded coupling system

The main feature of motan-colortronic's coupling system METROCONNECT U/C is the high-quality, manual coupling station for vacuum operation. It is available as either an uncoded version (METROCONNECT U) or a coded version (METROCONNECT C) with maintenance-free RFID technology. Not only do coded coupling stations protect against coupling mistakes, they are often necessary if material tracing, validation or certification is required. The hose couplings are designed with patented tag positioning that can turn freely and lock.
In order to simplify the decision making process futher, the uncoded version can easily be retrofitted as a coded version at a later date. Older coupling systems from different manufacturers can also be extended with METROCONNECT C for affordable and efficient modernisation.

motan-colortronic gmbh
www.motan-colortronic.de
Plast Line Group
www.plastline.com.pl

Language Support added to Customer Support Portal

■ NDC Technologies, a leading global provider of precision measurement and control solutions, announced that its cloud-based support portal myNDC now offers language support. Languages include French, German, Japanese, Spanish and Chinese.
"NDC is a global organization serving the diverse needs of customers in over 60 countries in many languages", says Mahesh Havildar, VP of Customer Service for NDC Technologies. "Customer intimacy and customer satisfaction is very important to us. Offering multi-lingual support on myNDC enables us to communicate to our customers in their own language. This also allows us to accelerate the way we help our customers by making access to content, features and functions faster, easier and friendlier."
NDC is continually enhancing myNDC to create the most positive customer experience. And, the addition of language support is just one more way NDC is touching customers. myNDC offers 24-7-365 support and enables NDC team members to efficiently create incidents, view a customer's installed base or service history and tap into a comprehensive and growing knowledgebase. Customers have access to a rich database of frequently asked questions, can quickly reach NDC support through several channels and easily generate their own Return Material Authorizations (RMAs) for product repairs. myNDC also offers live chat for immediate support and feedback to customer service requests.



NDC Technologies Inc.
www.ndc.com
https://ndc.custhelp.com

"Think Together"

■ The customer benefit analysis 2018 has shown it: K.D. Feddersen's customers greatly appreciate the distributor's competence in all aspects of plastics engineering – from materials, processing, component and tool design to the final application, i.e. the customer's product.

At the same time, the shortage of skilled workers in the plastics industry is leading to an increasing demand for consulting, training and education on the part of customers. That is why K.D. Feddersen's sales teams – the account managers and application developers – bring the established event series Think Together on-site to their customers' operations. The specialist lectures are designed to meet the needs and wishes of the customers. They also respond very individually to the target group – be it commercial staff, production employees, developers or project managers. The circle of participants is quite small, so that specialised topics and questions can be discussed intensively.

"In this way, we help our customers achieve their goals better, whether through the improved products that they develop and manufacture or by increasing the efficiency and profitability of their processes," says Wolfgang Wieth, Director of Business Development.

„In the first four months of the year, 89 employees of our customers were already trained and provided with technical support in 14 Think Together events of the new form ". The events are currently offered for customers in Germany.

K.D. Feddersen GmbH & Co. KG
www.kdfeddersen.com

Since the quality certifications of the customers require proof of regular employee training, K.D. Feddersen confirms the participation in Think Together by issuing the corresponding personalised certificates

New Representative in West Africa

■ Davis-Standard announced that Engineering Customer Centric Solutions (ENGICCS) Ltd. is the company's new sales representative in West Africa. ENGICCS is a global player in the design, development and distribution of innovative solutions for packaging film, polymer electronics and converting systems. As Davis-Standard's representative, they will be responsible for facilitating direct contact with plastics converters and stakeholders in West Africa to identify converting needs and market plastic packaging solutions throughout the region.

According to Dr. Anye Chifen, Managing Director of ENGICCS: "We look forward to increasing awareness of the Davis-Standard brand through strategic marketing avenues, while also providing more facetime with customers. A key part of our role in this region is to cultivate long-term partnerships and offer value-added solutions. This is an important step in gaining a greater understanding of customer needs and providing outstanding solutions to the industry."

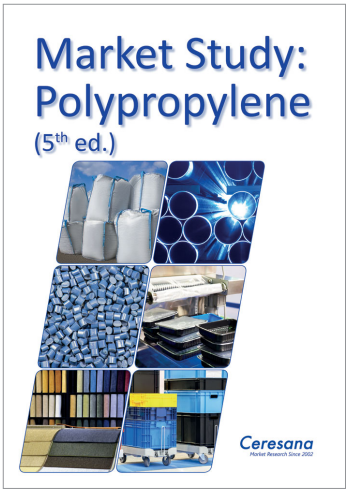
Davis-Standard participated in the Nigeria Plastprintpack + Agro Food Exhibition in late March. The exhibition proved to be a timely opportunity to discuss Davis-Standard's solutions in flexible packaging and to learn more about Nigerian-based manufacturing companies. According to the National Agency for Food and Drug Administration and Control (NAFDAC) in Nigeria, the country's plastic and packaging sector has experienced substantial growth in recent decades from around 50 companies in the 1960's to more than 3,000 manufacturers today. Based on feedback from the show, Davis-Standard looks forward to supporting Nigeria's rapidly growing converting and extrusion markets, specifically in the area of packaging films.

Andy Barnes and Dr. Anye Chifen at Nigeria Plastprintpack Davis-Standard booth

Davis-Standard, LLC
www.davis-standard.com
ENGICCS
www.engiccs.com

Market Study: Polypropylene

■ After polyethylene, polypropylene is the world's most widely produced standard plastic. "PP can be processed using various techniques and is used for the most diverse applications ranging from packaging to household appliances, clothing, and vehicles," Oliver Kutsch, CEO of Ceresana, explains. The market research company analyzed the global market for polypropylene already for the fifth time. The latest report expects revenues for this type of plastic to grow by, on average, 4.9% per year until 2026.



The Study in Brief:

Chapter 1 provides a detailed description and analysis of the global polypropylene market – including forecasts up to 2026: The development of revenues, demand volumes, and production is analyzed for each region. Additionally, the individual application areas of polypropylene are analyzed.

Chapter 2 examines the 27 major countries in more detail: Information is given on demand, revenues, import and export, production and capacities, demand and revenues for the individual application areas, demand per product type (homopolymer, copolymer) and per technology (injection molding, film and sheet extrusion, other extrusion, and other technologies).

Chapter 3 provides useful company profiles of the largest producers of polypropylene – clearly arranged according to contact details, turnover, profit, product range, production sites, capacities, and profile summary. In-depth profiles of 87 produces are given.

Ceresana
https://www.ceresana.com/en/market-studies/plastics/polypropylene/

Commercial-Scale Production of Bio-Based Plastic from Renewable Materials announced

■ Neste, the world's largest producer of renewable diesel from waste and residues, and LyondellBasell, one of the largest plastics, chemicals and refining companies in the world, announced the first parallel production of bio-based polypropylene and bio-based low-density polyethylene at a commercial scale.

The joint project used Neste's renewable hydrocarbons derived from sustainable bio-based raw materials, such as waste and residue oils. The project successfully produced several thousand tonnes of bio-based plastics which are approved for the production of food packaging and being marketed under Circulen and Circulen Plus, the new family of LyondellBasell circular economy product brands.

This achievement is extraordinary in that it combined Neste's unique renewable feedstock and LyondellBasell's technical capabilities. LyondellBasell's cracker flexibility allowed it to introduce a new renewable feedstock at its Wesseling, Germany site, which was converted directly into bio-based polyethylene and bio-based polypropylene. An independent third party tested the polymer products using carbon tracers and confirmed they contained over 30% renewable content.

Neste
neste.com
LyondellBasell
www.LyondellBasell.com

Increased Cooperation for Better Plastics Recycling

■ Borealis and the EREMA Group have signed a Letter of Intent (LOI) for the purpose of deepening their cooperation in the field of mechanical recycling. The shared goal is to advance mechanical recycling technologies in order to accelerate the transition to a circular economy of plastics. The companies also aim to enhance recycling processes in order to satisfy increasing market demand for higher-quality recyclate used in high-end applications.
While the ultimate aim of the stepped-up cooperation is to effect the more rapid transformation to a circular economy, Borealis and EREMA will collaborate most specifically on:
• Developing improved technologies and processes in mechanical recycling by leveraging each company's respective area of expertise: Borealis in polymers, and EREMA in engineering; to this end, there will be joint tests, trial runs and pilot projects
• Using knowledge exchange and best practices to design and implement new and practical technical solutions
• Standardizing and harmonizing input feedstock and recyclate output (pellets) in order to enable the broader use of recycled solutions for individual end-use applications
• Upscaling the mechanical recycling industry
• Working in tandem to acquire more sophisticated market intelligence in order to deliver sufficient quantities of those specific types of materials demanded by customers.

Manfred Hackl, CEO EREMA Group GmbH (left) with Günter Stephan, Head of Mechanical Recycling, Borealis Circular Economy Solutions, Borealis AG (Photo: © Borealis)

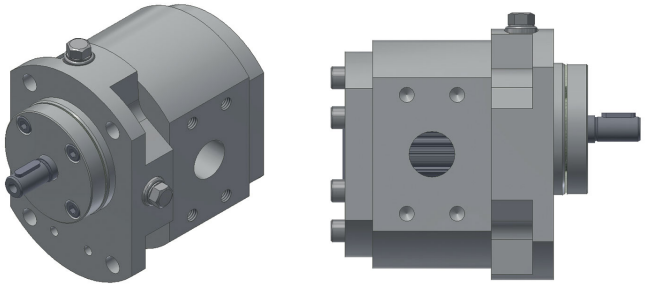
"To make the circular economy of plastics a reality, we as an industry need to take action, innovate, become more customer-centric, and collaborate," says Lucrèce Foufopoulos-De Ridder, Borealis Executive Vice President Polyolefins and Innovation & Technology. "Taking our collaboration with EREMA to the next level is going to yield positive effects that reverberate across the entire value chain and perfectly underlines our EverMinds ambition."

"We are pleased to have signed this agreement – not only because it is a great step forward for both our companies, but because our intensified cooperation is certain to have a catalytic effect in the transformational process to a circular economy," states Manfred Hackl, CEO EREMA Group GmbH.

Borealis AG
www.borealisgroup.com
EREMA Gruppe
www.erema-group.com

New F-Series Gear Pump

■ Maag Industrial will release the new F-Series, the DX "Dosix" with a better dosing accuracy and the FX "Flexinox" the flexible alternative of the existing CX and TX.
"During the development of the series, we have tested several types of "gear shafts" in steels and plastics, Peek and others that give us a chance to have different advantages and flexibility. For this new series, we'll have the chance to use the new Z16 with sixteen teeth for the FX and the Z14 with fourteen teeth for the DX ", says Claudio Bonafede, Managing Director of Maag Italy.
Thanks to their modular design, which facilitates the flexible configuration, and hence adapted even better to the needs of customers and processes. In addition, the modular principle also simplifies cleaning and maintenance work.
The advantage for Maag and the customers is the key components – the gear shaft, bearing and seal remains the same as before. The customers could use the new series and can still use the existing spare parts.



New Maag F Series gear pump

The range of sizes is as follows:

DX 20/5	FX 22/22
DX 20/10	FX 28/28
DX 20/20	FX 36/36
	FX 45/45

Maag Pump Systems AG
https://maag.com/pump/f-series/

FDA Approval for Food Contact Applications obtained

Perstorp's non-phthalate PVC plasticizer, Pevalen™, obtains FDA approval for food contact applications (Photo: Shutterstock)

■ As of end of May, Perstorp has obtained FCN 001967 (Food Contact Notification) from the FDA for the use of Pevalen™ as a plasticizer in polyvinyl chloride (PVC) polymers for use in repeated-use food contact articles.

"The food contact notification will further strengthen the offer to the North American market which we believe will be a major growth region for a product like Pevalen, as it helps flexible PVC producers design products that meet the highest national regulatory requirements, without sacrificing performance or quality", said Jenny Klevås, Product Manager, Perstorp.

Pevalen (pentaerythritol tetravalerate or PETV) is Perstorp's high-performance, true non-phthalate plasticizer. It is the perfect choice for sensitive applications and products in direct human contact. Pevalen has a unique performance not matched by any other general-purpose plasticizer with high plasticizing efficiency in combination with low migration and volatility.

"Global demand for non-phthalate plasticizers is predicted to continue to grow at about 100.000 tons per year", said Markus Jönsson, Vice President Plasticizers, Perstorp. Based on this forecast, Perstorp is substantially expanding the production capacity of Pevalen from 2019 onwards. Perstorp has entered into a long-term production agreement with the Italian company Alcoplast Srl.. The new partnership more than doubles current production capacity, bringing it in total to 50.000 tons per year.

Perstorp Holding AB
www.perstorp.com

'ColorDirection 2020'

■ The theme of Connected Comfort serves as a foundation for the six color tones selected for ColorDirection 2020 – reflecting the convenience, flexibility and personal experiences capturing the connection color creates between products from various markets and the consumers they serve.
As humans, we experience the world through our senses. Milliken profoundly understands the power of color in triggering emotion and defining consumer behavior. Capturing the mood of consumers through effective branding and personalization, as well as understanding how they interact with, and experience, color is an essential marketing exercise for brands and product designers.
The Milliken ColorDirection 2020 report has carefully curated a palette of six new colors aimed at distilling this highly sought-after differentiation potential in product design. The Connected Comfort selection sets out to understand and encapsulate the modern consumer's journey through color associations. These trending colors are: Terra Mundo, FirstLove, Purple Dreaming, Planet Green, Relaxing Blue and Green Dawn.
The Connected Comfort palette, represented by the above six trend colors for 2020, provides a design and marketing roadmap into the sometimes elusive consumer journey.
Liquitint™: Milliken, through its Liquitint colorants, is a global leader in providing brands with the right tools to address these trends and perpetually evolving color needs.
Through its 12 basic colorants, powerful colors and outstanding processability can be achieved with Liquitint polymeric colorants.

Liquitint™, Reactint®, ClearTint™ and Keyplast® Colorants by Milliken (Photo © 2019 Milliken & Company)

ClearTint™: Milliken's ClearTint colorants for transparent polypropylene, clarified with Millad® NX™ 8000, combine the attractiveness of clarity with the superior aesthetics of non-nucleating polymeric colorants. ClearTint is not a pigment or a dye; so colors do not bleed of from the clarified PP – making it compliant with safety requirements for food packaging.
Keyplast®: Keyplast colorants, used in plastics by masterbatch producers, compounders and resin producers offer a vast spectrum of stable and reproducible colors suitable for use with a wide range of resins. The multitude of applications which Keyplast colorants are effectively used in food contact applications, toys, high heat technical applications and the polymers include: PET, PBT, polycarbonate, polystyrene and different types of polyamides.

Milliken
chemical.milliken.com, www.milliken.com

Craig Richardson joins Aftermarket Team

■ Davis-Standard announced that Craig Richardson has been appointed aftermarket sales manager for Thermoforming Systems, LLC (TSL). TSL, a Davis-Standard subsidiary, is the market leader in thermoforming equipment technology for high-volume packaging. Richardson will support TSL product line upgrades, tooling and parts, and provide responsive service to customers worldwide.
"Craig brings over 30 years of global industry experience to his position," said James Naughton, Executive Vice President of TSL. "He has extensive knowledge of thermoforming machinery, tooling and granulation, as well as the thermoforming process, tooling layout and production. We know he will deliver the timely service and expertise customers expect from Davis-Standard's aftermarket team."
Prior to Davis-Standard, Richardson was with Irwin Research & Development as the sales and marketing director. He will be based in Yakima, Washington, and can be reached at crichardson@tslusa.biz.

Craig Richardson

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

Cooperation

■ SIBUR and BASF are collaborating to develop innovative polymer solutions at SIBUR's PolyLab Research and Development Center located in Moscow, Russia. The signing ceremony of the Memorandum of Cooperation took place end of May at SIBUR's newly inaugurated state-of-the-art PolyLab at the Skolkovo Innovation Center to seal the strong commitment from SIBUR and BASF.

Both companies will work together to leverage on the digital technologies in production and R&D, and to develop an innovative range of polymers using the plastic additives offered by BASF. In addition, BASF will support with its technical expertise the development of new technology tests at PolyLab, the main R&D hub of SIBUR NIOST, and SIBUR's production facilities. The companies plan to also jointly develop new high-performance additive solutions, focusing on highly demanding converting conditions for polymers and specifically targeting long term durable goods. They will promote these new solutions at joint technical events to educate SIBUR's customers and industry players.

PolyLab will foster the use of recycled materials and the application of polymers in circular economy. For this purpose, samples of new PE Polyethylene and PP polypropylene grades will be transformed at the Center's pilot manufacturing lines into pipes, medical goods, films, food packaging, canisters and other products. This will provide a deeper insight into polymers' properties and their impact on the end product quality to further improve the materials and boost production efficiency.

BASF
www.basf.com
Sibur
www.sibur.ru/en/

Acquisition

■ The President of Union Officine Meccaniche Spa, Ferdinando Passoni, announced to the market that he has completed the purchase of the majority control of the company Costruzioni Meccaniche Tecom srl of Olgiate Olona (www.tecom-it.com), a company specialized since 1963 in the production of blown extrusion lines for films in polyolefins and compostable biopolymers from 1 to 3 layers, in the sector of bags for freezer / shoppers / garbage, agricultural films, film for shrink packaging and for palletizing, lines recognizable in the market thanks to the GoBio trademark.

The acquisition strengthens the position of the leader Union, which has always been interested in expanding its product portfolio and fields of application in the extrusion market by adding to the already known skills in the field of rigid (flat and hollow sheet) and foam (sheet, boards, pipes and profiles) now also those of the film for flexible packaging.

A special thanks goes to the reference management of the company, Massimo Gazzi and Andrea Colombo who over the decades with dedication and hard work have contributed first to the development and then to the consolidation of Tecom's position in the market.

Precisely this assumption of congenital propensity of the company for the development of new technologies has ignited the interest of Union which sees in Tecom's technology an opportunity to be developed in other application sectors of rigid packaging in which Union's competences represent that added value which is useful and necessary to the achievement of new solutions still unimaginable today.

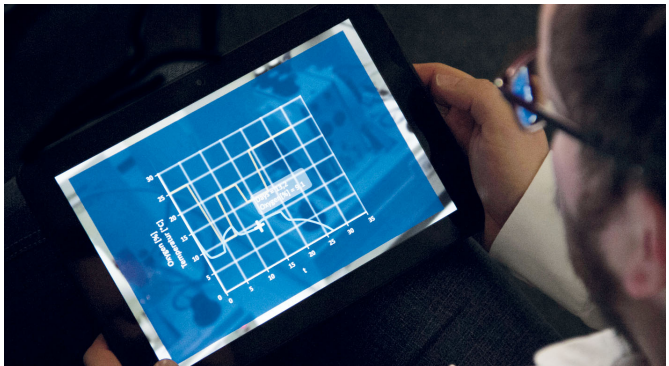
The world of plastics, in fact, as we have known it until now, will probably undergo an epochal transformation which will force the whole chain, starting above all from large chemical groups, to introduce new generation products which meet the requirements of recyclability and dispersion in safety in the environment. For this reason we will all be called to create synergies between different and alternative excellences in order to create new technologies in step with the needs of a changing industry. With this latest acquisition Ferdinando Passoni continues a path of growth which sees his group achieve this goal of synergistic aggregation of different knowledge and technologies, an indispensable condition to better face the current change.

Union Officine Meccaniche S.p.a.
www.unionextrusion.it

All-in-one Service for Recyclable Packaging

■ The all-in-one service offered by the Fraunhofer Institute for Process Engineering and Packaging IVV helps companies meet the challenges associated with the use and development of recyclable packaging materials. The Fraunhofer IVV will be present at the FachPack fair in Nuremberg/Germany from 24-26 September 2019 (Hall 7, Stand 7-440) and will demonstrate how recyclable packaging can be specifically designed to meet the requirements of individual products. Simulation models have been developed by the Fraunhofer IVV for this purpose. They allow changes to packaging materials to be made without the need for complex testing. The Fraunhofer IVV experts also evaluate the mechanical strength and machinability of recyclable packaging materials and appraise the compliance of the materials and sensory properties.

Shelf-life simulations of the Fraunhofer IVV facilitate the changeover to recyclable packaging materials (© Fraunhofer IVV)



The length of time a food product can be kept in specific recyclable packaging can be rapidly and effectively determined at the Fraunhofer IVV. The shelf-life models developed by the institute for this purpose facilitate the switchover to recyclable packaging materials required by the new German Packaging Act. The models obviate the need for time-consuming tests and show the required barrier properties of the packaging materials for a respective food product. Important chemical spoiling processes such as autoxidation, photooxidation, and water absorption/loss can be taken into account. The shelf-life of products in new and more recyclable packaging can hence be reliably predicted for differing packaging scenarios. Further information:

Fraunhofer Institute for Process Engineering and Packaging IVV
www.ivv.fraunhofer.de/en/packaging/modeling-shelf-life.html

New eBook

■ The existential threat to oceans and marine life is a good enough reason to cut plastics waste, profitable new business opportunities are another

TOMRA Sorting Recycling has published a new eBook, which shares transformational ideas for reducing plastic waste throughout the plastics value chain. The free-to-download publication spotlights how wider adoption of a circular economy is not only vital for our environment but can also bring new business opportunities.

TOMRA's latest digital book takes the realistic view that plastic has become irreplaceable in our everyday lives because of its many advantages, but action is needed urgently to prevent an exacerbation of the threat plastic waste is already posing to our oceans and marine life. The crux of the matter, the eBook says, is what we do with the plastic after use, and how plastics re-enter the circular economy. By implementing effective measures in the plastics value chain, we can ensure the long-term health of our economies, communities and environment.

TOMRA's eBook identifies many of the actions that need to be taken to prevent environmental catastrophe. Moreover, it flags-up the necessary actions by all key industry stakeholders in the plastics value chain: chemical and plastics manufacturers, consumer goods companies, retailers, consumers, waste management companies, recycling facilities, and legislators.

Beyond the environmental benefits of recycling waste, the eBook observes how positive economic shifts can also be expected. Economies which use once-and-discard models are embracing new business opportunities through the advanced sorting technologies that purify and deliver high-quality recyclates.

To download your copy of the eBook, please visit https://www.tomra.com/pvc-ebook

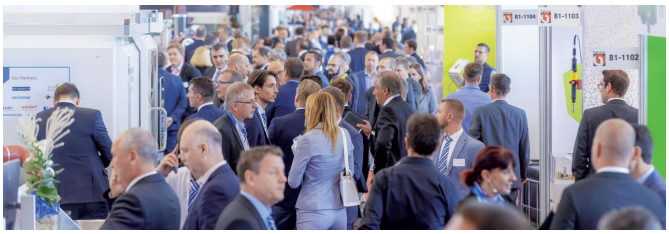
TOMRA Sorting GmbH
www.tomra.com/recycling

Fakuma 2020: Digitalisation, Networking and Sustainability

■ Everybody who's anybody in the field of plastics processing will meet at the 27th Fakuma international trade fair for plastics processing in Friedrichshafen from the 13th through the 17th of October, 2020. The technical event with an emphasis on injection moulding will occupy all available exhibition floor space in the modern exhibition centre on Lake Constance, and will be more international than ever before.

The Fakuma international trade fair for plastics processing is an acknowledged industry and technology barometer. Fakuma continues to expand upon its leading position. 1933 exhibitors from 40 countries travelled to Friedrichshafen in 2018 to participate at Fakuma, and nearly 48,000 expert visitors from 126 countries attended the industry highlight on Lake Constance. Once again in 2020, the trade fair will approach the 2000 mark and occupy all existing exhibition floor space. Trade fair promoters P. E. Schall are announcing further increases in internationalism for the event.

Fakuma visitors are provided with a comprehensive overview of all plastics technologies: whether injection moulding, extrusion, thermoforming or 3D printing is involved, users are able to gather information regarding all processes, machines and tools which are relevant for plastics processing in a targeted fashion.



Circular Economy Getting Underway

Plastics don't have a very good image amongst the general public these days – pollution of the world's oceans with plastic waste is in the news almost every day. The plastics industry has a real reputation problem. Objective clarification and a differentiated discussion are thus necessary in this regard. For example, plastic plays an important role as a packaging material for soft drinks and mineral water, the most relevant beverages for PET bottles on the German market: the one-way deposit has a positive effect, resource recycling is a nearly closed-loop and PET bottles don't contain any plasticisers. Due to its comparatively minimal weight, plastic packaging has a better ecological balance sheet than glass bottles. Sustainability necessitates the use of more and more plastic.

The term circular economy has long since established itself in the plastics industry. The question is no longer "whether or not", but rather simply "how". The fact that the circular economy has also arrived where the production of plastics processing machines is concerned was demonstrated at Fakuma 2018 to a greater extent than ever before – it will advance to become one of the most important issues at the event in 2020 and will be dealt with intensively. In particular because higher recycling quotas and improved efficiency for waste management can only be dealt with at the global level by means of an open dialogue. Plastics processors will only increase their use of recyclates for the production of plastic products if reliable material quality is available in adequate quantities. However, this is only possible if enough recyclable waste plastic is collected. Everyone involved in the value chain will have to work together in order to implement closed-loop systems – including the final consumer. Mutual work on all of the decisive steps within the loop will be required, including production and use of the products, as well as disposal.

P.E. Schall GmbH & Co. KG
www.fakuma-messe.de

First Lightweight, Eye-Catching PET Bottles for Pasteurized Beer in Brazil

■ Amcor has adapted its leading-edge design technology to develop the first polyethylene terephthalate (PET) bottles for pasteurized beer in Brazil. The company designed custom 600 milliliter containers for beverage maker New Age Bebidas, Leme, São Paulo, that feature the beauty of a glass-like, champagne-style base combined with the convenience of lightweight and shatter-resistant PET.

Amcor's design showcases New Age's Salzburg craft beer brand and differentiates it from standard glass bottle designs. It features a crown metal cap, replicating the standard glass bottle. The PET containers are a replacement for glass during the filling and capping process, withstanding the internal pressure and high-heat conditions of the tunnel pasteurization process.

"PET bottles offer design advantages over glass while being lighter weight, more easily and safely portable, and unbreakable, and provide the required barrier protection," said Rodolfo Salles, research and development manager for Amcor in Brazil.

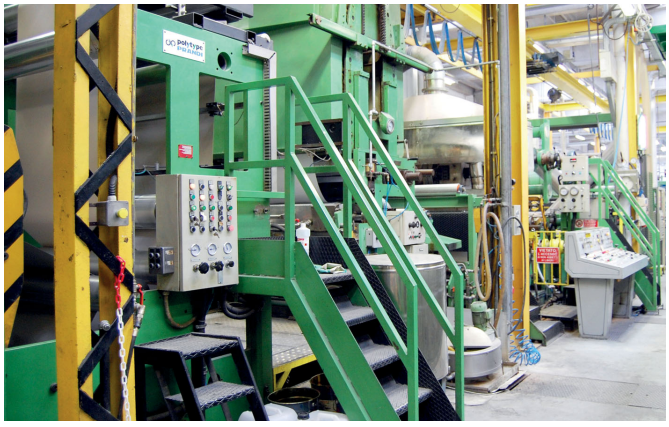
Amcor uses an oxygen scavenger barrier additive to prevent oxygen ingress and egress, providing up to four months of shelf life. The bottle is compatible with existing recycling streams and is 100% recyclable. The lightweight containers also significantly reduce transportation costs, and energy and CO_2 emission reductions along the supply chain.

Amcor
www.amcor.com
Bebidas
www.newagebebidas.com.br

Investment in Control System

■ Europoligrafico (Fibrapak) of Perugia, Italy, recently improved efficiencies and line performance with a new control system from ER-WE-PA™ GmbH, a subsidiary of Davis-Standard, LLC. The new system was installed on an existing ER-WE-PA™ extrusion coating line used for aseptic liquid packaging applications. The control package features Siemens drives and a central S7 PLC with WinCC® visualization screens for managing all aspects of line control including speeds, extruder temperature, automatic die profile control, unwind and winder functions.

Europoligrafico's extrusion coating line with updated controls



"One of the best and most cost-effective ways to improve operation on an existing line is with controls," said Paul Knorsch, aftermarket business development leader at ER-WE-PA™. "The supervisory control and data acquisition (SCADA) of this system simplifies operator functionality while allowing for greater monitoring and regulation of various parameters. We know Europoligrafico (Fibrapak) is already seeing a marked difference in line functionality."

Knorsch noted that Fibrapak is a new venture established between Europoligrafico and GS Pak of China. This allows Europoligrafico (Fibrapak) to become a full-system supplier with capabilities to provide printed, coated and laminated board in addition to filling machines and product handling. GS Pak also has an aseptic coating line from ER-WE-PA™ in their China plant.

Davis-Standard, LLC
www.davis-standard.com/converting_system/extrusion-coating/
Fibrapak
www.fibrapak.com

Mobile and high-precision wall thickness measurement

WARP portable used by Westfälische Kunststofftechnik (WKT)

WARP portable in field use with WKT. Stefan Depmer, Head of Technology and Operations, and Türkayan Güneyik, Operations Manager PE, check the pipe wall thickness during the ongoing production process

Stefan Depmer, Head of Technologies and Operations with the company WKT still remembers former days when reliable and efficient wall thickness measurement was carried out by ultrasonic devices but only at the end of the pipe production process due to different temperature gradients in the pipe wall. A check at such a late stage and the late intervention into the process resulted into a high scrap rate. WARP portable – the iNOEX handheld system based on Terahertz technology offers high-precision wall thickness measurement – the perfect solution for WKT

More than 8 years ago, iNOEX recognized the advantages of this key technology Terahertz at a very early stage and developed it to the now trendsetting measuring technique which is suitable for industrial surroundings. WARP portable is proven evidence of the comprehensive know-how iNOEX possesses in this field, the company is regarded as the inventor of mobile Terahertz.

WARP portable, which has been developed on the basis of a sophisticated chip-based radar technology is designed for the mobile and precise wall thickness measurement of extruded mono layer pipes, large-sized sockets and plastic sheets. Inline and offline random measurement checks can be carried out within seconds and very reliably with this mobile handheld system.

„This innovation has found our approval very quickly", commended Depmer this device. „The battery-powered handheld system with a running time of approx. 8 hours meets exactly our needs in the pipe extrusion process. We are able to gain reliable measuring results directly at the end of the vacuum tank. This early measurement and thus the option to intervene at a very early stage have lead to enormous savings, up to approx. 40 m in the extrusion line, explains Stefan Depmer.

Terahertz measurement is hardly dependent on temperatures, this makes extensive and repeated calibration processes unnecessary. Measuring is based on non-ionizing electromagnetic radiation of very low power which is non-hazardous for humans. No coupling medium is required. WARP portable offers non-destructive and contact-free measurement of wall thicknesses between 5 to 110 mm, with an accuracy of <50 µm.

For Türkayan Güneyik, Operations Manager PE with WKT, the simple and uncomplicated handling are the key benefits. Two positioning aids for different pipe diameters which are included in the delivery make it very easy to position the device correctly on the measuring object. The measurement is triggered at the push of a button. Within seconds the wall thickness and timestamp are available on the display. An internal acceleration sensor provides additional information on the measuring angle of the device towards the pipe. Measuring data and measuring positions provide valuable information for the line operator. Based on this data he is able to carry out a fast manual centering of the extrusion die.

iNOEX WARP portable – Terahertz-based handheld system for high-precision wall thickness measurement

The measuring data logger memorizes up to 100 measurements including timestamp and measuring positions around the pipe circumference. Data can be exported via USB stick or optionally downloaded by WIFI on a local computer. WKT uses this data for measuring data protocols in their data base.

The simple and intuitive operation is carried out via touch display made of smartphone glass. This robust scratch-proof and crack-resistant glass display plus the low weight, the very good light transmission and the sensitivity to touch offer the highest user comfort. The robust splash-proof design of the housing (IP54) offers good protection against water and dust in industrial surroundings.

The Operation Manager of WKT also emphasizes the mobile usability, not only along the ongoing production process and for the different extrusion lines (PE, PVC), but also for final inspection tests or random checks of ready pipes in the warehouse.

WARP portable is also used for monitoring suppliers. All common types of plastic such as PE, HDPE, PP, PA, PVC, are measurable.

This innovative system for simple measurements within seconds has a globally proven track record of successful use with more than 100 systems sold to the market, Westfälische Kunststofftechnik is only one of the players among many satisfied customers.

iNOEX GmbH
Maschweg 70, 49324 Melle, Germany
www.inoex.de

Westfälische Kunststofftechnik
Sprockhövel, Germany
https://wkt-online.de

Thorsten Kühmann is convinced that the plastics industry can offer solutions that help to eliminate the environmental problems caused by plastic waste. The guiding principle is circular economy. The global challenges for circular economy in the plastics industry are economic efficiency, political and regulatory constraints, quality standards and availability of recyclates and especially the establishment of functioning waste collection systems worldwide. VDMA will shine the spotlight on circular economy at the leading K 2019 trade fair in Düsseldorf in October and show how closed loops can work effectively

"Closed loops can solve the littering problem"

Interview with Thorsten Kühmann, Managing Director of VDMA Plastics and Rubber Machinery trade association of VDMA

Why is VDMA putting the spotlight on circular economy in its presentation at K 2019?

Thorsten Kühmann: We are doing this because we have realised that we're facing an image problem when it comes to plastics. Nowadays, plastics usually only attract public attention when causing problems, polluting the environment or being suspected of endangering our health. Images and reports of how plastic waste is littering our oceans and the countryside are ever-present. These are serious problems indeed, and the industry needs to offer solutions. We want to use K 2019 as an opportunity to show what needs to be done to avoid these waste problems and the resulting damage. We will demonstrate that closed loops are a possible solution.

What can visitors see at K 2019?

Kühmann: We're pursuing two goals. At our exhibition pavilion, we will firstly present the entire cycle of circular economy in the plastics industry, from production via the use phase of plastics products to collecting, sorting, recycling and the subsequent return to production. Our second goal is to make our visitors experience circular economy. To achieve this, we will be working with partners from the entire plastics value chain at the trade fair, including raw material suppliers, processors and recyclers, and will demonstrate how a closed loop works. At K 2019, it should become clear that the plastics industry is taking care of the waste problem and that it already has proposals for effective solutions.

What are the biggest challenges in the practical implementation of circular economy?

Kühmann: There are several challenges. It's extremely important to bear in mind that cycles can only function well if they are profitable. Many plastics processors currently use virgin material rather than recycled material, simply because it's cheaper. At the end of the day, the consumer usually goes for the cheaper product in the supermarket. Those who use recycled materials would lose out because their products would be more expensive and thus left on the shelves. In order to increase the use of recycled materials, fixed quotas are needed so that everyone has the same starting conditions. The EU Plastics Directive also provides for quotas like this. Companies therefore need a new business model.

The other challenge is to create reliable quality standards for recycled materials. These don't currently exist which means that those who use recyclates never really know exactly what quality they are getting. This makes the processes less secure: If material quality fluctuates, production cannot be controlled as reliably as with standardised new materials. Recycled materials would be much easier to accept if they were standardised. And finally, there is a problem with quantity. Those who are currently prepared to use recyclates, do not know whether they will actually be able to obtain the quantities they require over a longer period of a few years.

Is everything that is needed for the circular economy feasible from a technological perspective?

Kühmann: There are still matters that need to be clarified. But there are already technological solutions for standard processes such as sorting, shredding and recycling. There will certainly be improvements in that regard. Technology is not the main problem in the plastics recycling industry.

What role does product design play?

Kühmann: Product design must be approached in a different way in the circular economy. Until now, products have followed a design, but it has been all about functionality and ultimately appearance. There has been no obligation or consistent practice for a sound eco-design. In fact, all products, including plastics products, should be checked in terms of their recyclability. At the moment, this is not happening. It's neither a requirement, nor common practice. Of course, it would help if products were designed in a recyclable way in the first place.

Europe is only responsible for a mere fraction of the plastic waste in our oceans. Will consistently focusing on a circular economy here even make any kind of difference?

Kühmann: Awareness of the waste problem in the world's oceans is particularly high in Europe. As a result, the image of plastics is suffering, especially in Germany. It is true that the Helmholtz Centre for Environmental Research has discovered that 90 percent of annual marine pollution is caused by plastics from ten rivers in Asia and Africa, but the problem affects us all. Just think of microplastics in fish. That's why people here are concerned. A circular economy in Europe means setting a good example.

We can show other countries how it works and that it does indeed work. Usually, the main problem is a lack of or inadequate waste management. Without waste management, however, there can be no circular economy. We would like our systems to be adapted throughout the world. Not necessarily to match each other one-for-one, but to be used as guidance. This is why we are showcasing them at K 2019 and why it is good to drive them forward in Europe. The task is extremely complex. It has taken us years to get to where we are now, but other regions don't have so much time. It really is time to act now by learning from those who are already doing it.

Thank you for this interview!

K 2019: FG Halle 16 / 16.1

VDMA
Kunststoff- und Gummimaschinen
Lyoner Str. 18, 60528 Frankfurt/Main, Germany
vdma.org

"Packagings are high-tech, lightweight products"

Interview with Michael Baumeister, Managing Director Technology and Logistics, Brückner Maschinenbau GmbH & Co. KG in Siegsdorf

Foodstuffs are a very sensitive commodity; they are packaged to ensure the required hygiene as well as durability. This also saves resources used in the production of foodstuff, such as water and energy. The engineering company Brückner supports the concept of a recycling economy: plastic packaging should be used where it is of direct benefit, relying on easily recyclable film mono-structures. At European level, Brückner is active in the field of sustainability and recycling of flexible packagings by cooperating with Ceflex together with over 100 enterprises from the plastics value-added chain

How can a company such as Brückner Maschinenbau contribute to circular economy?

Michael Baumeister: We are intensively looking for ways to improve recyclability of plastics products. For example, we address the question of how to produce packages by using easily recyclable mono-structures on the basis of polyolefin that have the properties achieved today with compounds of polyamide, polyester or metallised film which are all difficult to recycle. We practically apply a preliminary stage of circular economy that makes recycling possible for many products in the first place.

Material compounds are often used to make foodstuff more durable. Is this necessary to the degree presently applied?

Baumeister: Packaging films are becoming ever thinner while they retain their protecting function, thus saving more and more raw materials. There are high-tech lightweight products which protect the valuable commodity of food for as long as possible. It is particularly worthy of protection as the production of foodstuffs also uses many scarce resources, such as great amounts of water and energy. Not least because of this, it is necessary to drastically reduce spoilage of food. Packaging and cooling are decisive factors. Compared with the much higher good food the CO_2 footprint of packaging is negligible.

When it comes to cars or planes consumers welcome lightweight construction parts because they reduce fuel consumption. When looking at packaging, consumers usually do not see this benefit. On the other hand, it will have to be verified if consumers accept packages which are not as smooth and transparent as they are now. At present, the appearance of packages has a strong influence on the buying decision.

The EU is forcing circular economy for plastics. The first bans and regulations are in place. How do you feel about this?

Baumeister: It is important that these regulations apply in the same way to everyone operating in the European market. Otherwise competition would be disrupted. With equal conditions for everyone, nobody would have a commercial disadvantage. As positive result of regulation I would expect essentially more intensive research on recycling possibilities, for example, on chemical recycling. As a consequence, there would be much more serious attempts to produce better recyclates. Because we do not want to down-cycle, that means to manufacture products of lower and lower quality – ranging from film via park benches to briquettes for fuel. The issue is about manufacturing high-quality products from recyclates, such as film which can come into contact with food again. This is extremely difficult to achieve with mechanical recycling due to hygiene requirements. Political specifications necessitate more complex processes for sustaining raw materials, a fact that constitutes the same obstacle for everyone.

Why should film be recycled into film at all? The recycling effort is immense. You need a lot of energy. Wouldn't it be better to make injection-moulded parts from film waste?

Baumeister: From a short-term view, it is presently the cheapest option to turn a high-quality foil into something simple after usage, or to burn it instead of heating oil. In the long term, humankind must manage to become independent of crude oil because its resources are limited. At some point we will have to be able to cover our energy demand completely from renewables. Then energy will no longer be the bottleneck and then it will be very sensible to use energy to obtain raw materials for further utilization. By applying energetically complex procedures such as chemical recycling, single-origin plastics could then be provided for high-grade applications. This way you could preserve valuable raw materials. This is the heart of the recycling economy concept: That no material will be lost.

The layers of plastics in the oceans mainly consist of packaging material. Do we have too much of it?

Baumeister: Meanwhile more than half of the population already live in cities. They have to be fed. That's not possible without hygienic packaging. The main function of packaging is to protect higher-value commodities. But it is also obvious that there is some packaging that is not necessary. The plastics industry has realised that packaging waste is a major problem. The Ceflex consortium of companies is already working hard on this problem. Over 100 firms are currently participating, from raw material providers via machinery manufacturers to those who use films to make the packaging. We actively commit ourselves in three to seven working groups dealing with the design of packaging, the required machine technology and communication with the public.

Wouldn't a working circular economy be the end of organic plastics? We wouldn't really need them.

Baumeister: PLA has been in the market for several years. We have developed adequate machine technology and our machines can process the material. But this material is based on corn starch and is still very expensive. On taking a closer look, the obvious advantages – PLA is not based on crude oil, it is made from a renewable resource and is compostable – are no advantage. The Grüner Punkt (green dot) initiative does not classify PLA as recyclable because there are no closed cycles. It cannot be disposed of in the refuse bin because you can't tell it from ordinary plastic film. They cannot be recycled together with other film materials. With regard to its properties, PLA has no comparable barrier or protection function; that's why it does not replace conventional film. We rather see that polyester of other polyethylene types can be made from renewable raw materials or are added to crude-oil based raw materials, the so-called drop-in, i.e. not really crude-oil based, but no longer compostable. As additive, in the same way as E-10, bio-ethanol is added to petrol. In my view circular economy is not the end of bio-plastics, but they will not play an essential role in the foreseeable future.

Thank you for this interview, Mr. Baumeister.

K 2019: Halle 3 / C90

Brückner Maschinenbau GmbH & Co. KG
Königsberger Str. 5–7, 83313 Siegsdorf, DE
www.brueckner-maschinenbau.com

EU project "Circular Plastics Network for Training"


(© Fraunhofer IVV)

The intersector and multidisciplinary research project "Circular Plastics Network for Training" (C-PlaNeT) was approved in May 2019 within the framework of the H2020-MSCA-ITN-2019 Calls for European Joint Doctorates, with funding of almost 4 million euros. In total, 15 doctoral students (in the area of chemistry, process engineering, sociology, and economics) from 8 European universities along with 23 non-university partners (including Plastics Europe, DOW, Adidas) will take on the challenge of considering the complex topic of the circular economy of plastics from a holistic point of view. The Fraunhofer IVV is participating in the project in collaboration with the Chair of Flavor and Smell Research at the Friedrich-Alexander-Universität Erlangen-Nürnberg and the Fraunhofer Institute for Integrated Circuits IIS. The project will begin at the start of 2020

"The analytical measurement and removal of contaminants is the major challenge of recycling", according to Prof. Andrea Büttner, Deputy Institute Director and Head of the Sensory Analytics department at the Fraunhofer IVV. Prof. Büttner also occupies the Chair of Flavor and Smell Research at the Friedrich-Alexander-Universität Erlangen-Nürnberg in the Department of Chemistry and Pharmacy. Miriam Strangl is currently studying for her doctorate there and is involved with the characterization of odors and contaminants in recycled materials. "Our work goes far beyond the development of new processes and the removal of odorants. Odor is often an indicator of other undesired substances in the recycled material", says Strangl who was highly involved in the conception of the C-PlaNeT project. Prof. Büttner goes on to explain "the focus in recycling must not solely be on recovering valuable materials but must increasingly be on removing contaminants. Our task is also to identify hitherto undetected substances. Only then can we design recycling processes for their removal. I am endeavoring to advance knowledge in this area in close cooperation with research organizations and involving various disciplines and to also train young talent for the required interdisciplinary team collaboration". "The modern world we live in is complex and so are the products we use and the waste we produce. Knowledge about molecules and materials is a must to enable us to guarantee the manufacture of high-quality recyclates. It will allow the optimization of the decontamination efficiency of the various process steps."

Solvent-based processes – the key for decontamination in the recycling

The solvent-based CreaSolv® process already developed by the Fraunhofer IVV enables effective separation of plastic composites and contaminated household waste. The technology is suitable for recovering high-purity polymers that have the same quality as virgin polymers. According to Dr. Martin Schlummer, the lead Fraunhofer IVV scientist in the C-PlaNeT consortium: "The challenge is now to adapt the technology for other applications, for example for waste plastic found in the oceans."

Detection of chemical contaminants as a further challenge

In order for recyclates produced from plastic packaging waste to be used as a secondary raw material for high-quality consumer products, it must be ensured that the materials are free of contaminants. There is hence much interest in developing suitable in-process sensors to detect contaminants. Chemical diagnostics in recycling is however still underrepresented. In collaboration with the Fraunhofer IIS as a non-university partner, the consortium also wants to therefore identify possible means for chemical detection. The Fraunhofer IVV, Fraunhofer IIS, and the Friedrich-Alexander-Universität Erlangen-Nürnberg are not only project partners but also partners in the Campus of the Senses initiative (www.campus-der-sinne.fraunhofer.de) and are in an excellent position to detect odorants and tackle these complex challenges.

Fraunhofer Institute for Process Engineering and Packaging IVV
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www.ivv.fraunhofer.de/en/

Mondi Group has developed a fully-recyclable polypropylene construction for thermoforming applications with a 23% reduction in carbon footprint compared to existing packaging

New, recyclable packaging film for fresh and processed food puts Mondi on the MAP (Photo: Mondi)

New, Recyclable Packaging Film for Fresh and Processed Food

Flexible food packaging has traditionally presented brand owners with a choice – either extract the maximum performance parameters or make it fully recyclable. Achieving both goals at once has been almost impossible ... until now.

Mondi has created a recyclable polypropylene film that is ideal for the thermoforming of flexible films for modified atmosphere packaging (MAP) and vacuum packaging, which is known for its ability to extend the shelf life of products such as meat and cheese.

The new, coextruded material includes a top and bottom web, with an internal barrier layer that comprises less than 5 percent of the entire structure, meaning it qualifies as a mono-material construction and is fully recyclable in existing waste streams. The Aachen, German-based Institut cyclos-HTP – the Institute for Recyclability and Product Responsibility – has independently certified that both the top and bottom webs of this construction have the highest qualification "Class AAA" in recyclability.

The previous multi-material construction rendered the previous packages unrecyclable and also resulted in a much higher carbon footprint as confirmed by life cycle analyses.

"We're delighted to report that this innovative new film reduces the package's carbon footprint by 23 percent compared to existing conventional structures," said Günter Leitner, Managing Director of Mondi Styria, the Austrian plant that produces this film.

Thomas Kahl, Project Manager EcoSolutions for Mondi Consumer Packaging, explains: "Mondi's view is that packaging should always be fit-for-purpose – paper where possible, plastic when useful – and sustainable by design. The challenge with this project was to maintain the functionality that is key to such applications, including excellent oxygen and moisture barriers, and high puncture resistance – while also enhancing the package's recyclability. The latter factor was vital as Mondi continues to support the principles of a circular economy."

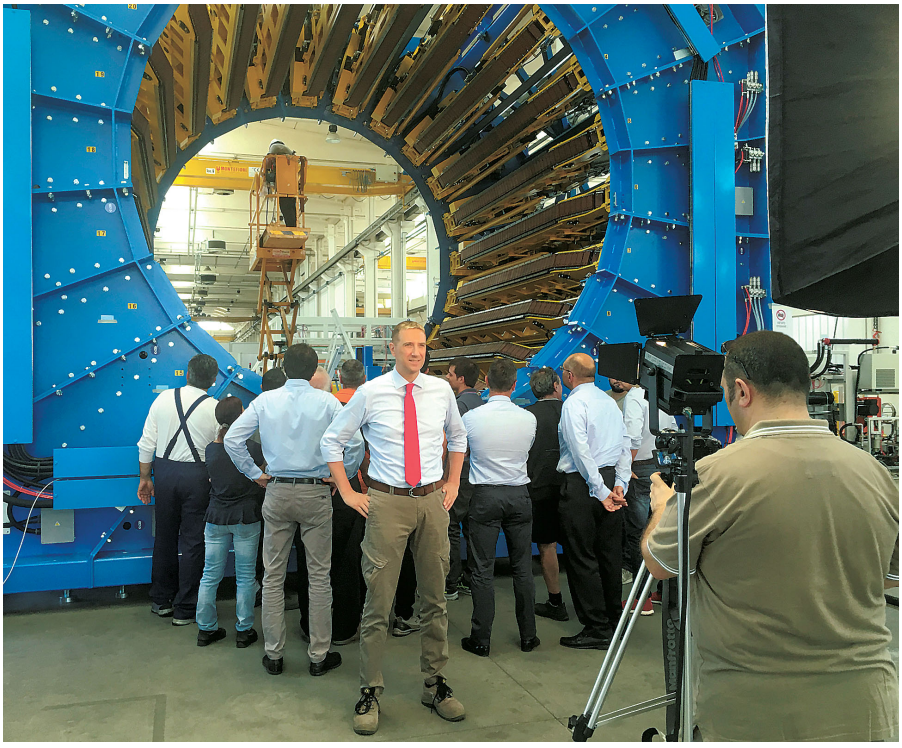
Users also benefit by tapping into Mondi's years of experience in food packaging, with Mondi's plant in Styria offering extensive expertise high-barrier applications for food packaging.

This latest development is fully in line with the design guidelines of major brand owners and retailers who have sustainability in mind. This thermoformable food packaging corresponds to their requirements for redesigning flexible packaging to become more sustainable, while also meeting the challenges laid out in the 'New Plastic Economy' global initiative (www.newplasticseconomy.org) which is striving toward a more circular and sustainable economy.

Mondi Consumer Packaging
Marxergasse 4A, 1030 Wien, Austria
www.mondigroup.com

New Haul-Off for Extrusion Lines of Large Dimension and Thickness HDPE Pipes

The global market of HDPE pipes for the transport of pressurized fluids shows a continuous and growing interest in large-diameter thick-walled pipes, considering that lines for pipes with two-meter (6.56 ft.) diameter and wall thicknesses greater than 140 mm (5.5 in.) are already commonplace today



P3500/24 Plus multi-caterpillar haul-off for pipes up to pipes up to 3.5 m (138 in.)

SICA, thanks to over fifty-year of experience in the development and marketing of downstream machinery for plastic pipe extrusion lines, has produced and installed numerous machines dedicated to the haul-off and cutting of large diameter and thickness HDPE pipes.

The new SICA P3500/24 Plus multi-caterpillar haul-off, capable of hauling pipes up to 3.5 m /(138 in.) diameter, represents the new technical reference in the downstream machinery world for extremely large HDPE pipe extrusion lines. Despite being able to achieve maximum pulling force equal to 900.000 N (≈ 200.890 lbf) using all its 24 caterpillars, it still guarantees reduced energy consumption thanks to the adoption of high-performance mechanical transmissions and requires minimum level of maintenance.

To confront the oily behavior of polyolefins, all rubber pads of the caterpillars are made with new and special compounds. Their specific anti-wear properties combined with high contact friction, allow highly effective gripping action and a surprising increase in the average life of the pads. To avoid malfunctioning on these extraordinary dimensions lines, the new haul-off has been equipped with cutting edge management software and specific devices that constantly check the efficiency state of the machine during the pulling phase. Examples of these devices are: redundant encoders for precise speed monitoring, and digital pressure sensors for continuous monitoring of working pressures and caterpillar tensioning force. Moreover, the independent control of each caterpillar makes this machine extremely versatile despite its considerable size and allowing a particularly wide range of processable diameters (from DN2000 to DN3500). Robust pipe supports with electric handling both on entry in and exit from the haul-off complete the standard equipment, making the management of the pipes simplified and safe, despite the sizes and extreme weights.

Ultimately, SICA's proposal for haul-offs for HDPE lines is complete, and combines maximum performance and minimum energy consumption, ease of use and process versatility, operational safety and environmental awareness, all of which are indispensable today.

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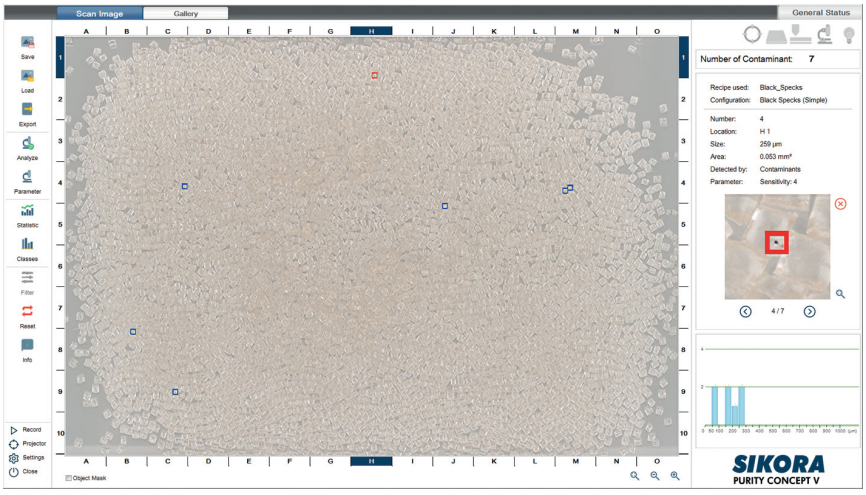


Picture1: Color camera image of pellets on monitor: Detected contaminants are marked and selected pellets are highlighted in color and zoomed in

Combination of Light Table and Automatic Sample Testing for Offline Inspection and Analysis

of the Smallest Contamination in Plastic Material

Quality standards in the plastics processing industry present great challenges for plastic manufacturers as well as the processing industry. Inspection and analyzing of raw material before it enters the production process is thus industrial standard. In order to ensure the highest quality of the material and of the final product, plastic manufacturers use online inspection and sorting systems. They inspect the material, detect contaminants, colored anomalies and inhomogeneities in the ongoing production process and automatically sort out contaminated material. Furthermore, systems for sample testing or incoming goods inspection and analysis of plastic material are used. This offline inspection and analysis provides material manufacturers and processors with key information on contamination, the causes of contaminants as well as on their own production processes and is, therefore, essential in future-oriented production lines

Increasing quality requirements in the plastics industry

Plastics, as they are used in the medical sector or in aerospace and automotive industries, require the highest quality standards as well as a reliable control and processing of raw materials. Contamination may occur during the different process steps for the production of plastic products. During pellet extrusion, for example, cracking in the form of black specks can occur in the material due to temperature peaks. If they enter the further production process, the absolute purity of the final product is no longer guaranteed – sometimes with severe consequences. At the production of medical tubes, contaminants in the raw material lead to a full loss of production. Before production may start again, the whole production line has to be cleaned.

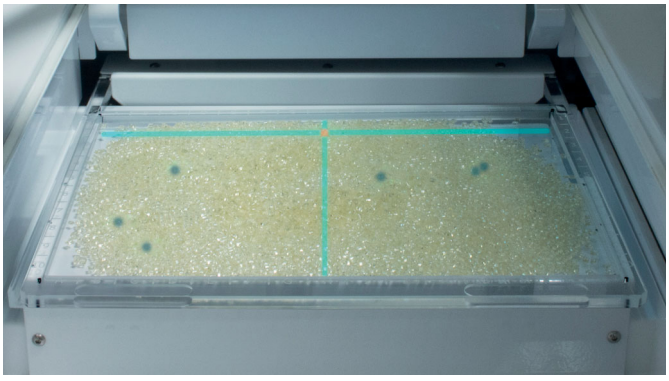
Conventional technologies for offline inspection and analysis of plastic material

On the market established technologies for sample testing inspection and analysis of plastic material are subsequently described. A distinction is made between manual light tables and automated optical inspection systems.

Manual light tables are commonly used in the industry for a visual sample testing and incoming goods inspection of plastic material. The material to be inspected is illuminated on a table and manually inspected for contamination by an operator. This time-consuming method depends on the respective auditor. The respective form on the day, experience and amount of time the operator is investing in the inspection of the material are just a few factors that influence the quality of the test result, hence, only a limited repeatability is given. Reflective and highly transparent pellets further complicate the manual visual inspection. Further limits are detectable sizes of contamination for the human eye as well as their classification into size classes.
Alternative optical inspection devices available on the market feed the test material through a hopper and a channel into the inspection area. Thereby, pictures of the material are taken successively. Distinct allocations of contamination to the graphic material as well as a follow-up inspection are not possible.

Optical sample testing with automatic light table system and evaluation

The combination of visual light table and an automatic sample testing is an innovative technology. The operator places the test material on a sample tray. The automatic light table transports the tray with the material through the inspection area, which is equipped with a CMOS line scan color camera. The inspection takes place automatically and within seconds: A projector marks contaminated material directly on the sample tray. Simultaneously, it is displayed and marked on the monitor including information on size and area of the contamination (picture 1). By analyzing the images, contamination like black specks starting from 50 µm (2 mil) and discolorations are automatically detected, visualized and analyzed in transparent as well as colored or diffuse material. As an alternative to optical technology, a system with X-ray technology is available for the detection of metallic contamination inside as well as on the surface of nontransparent, colored and transparent plastic materials. Individual contaminated pellets can be selected and zoomed in. At the same time, they are optically visualized on the sample tray by cross hairs (picture 2). A clear allocation of the contamination and follow-up inspection are always possible and permit new insights regarding the production process.

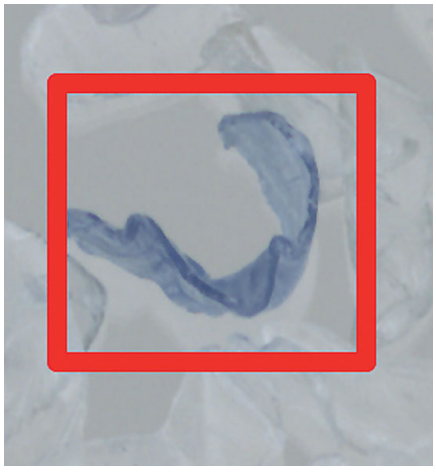


Picture 2: Sample tray with pellet sample: Detected contamination is highlighted in color. Pellets that are selected on the monitor are visualized on the sample tray by cross hairs

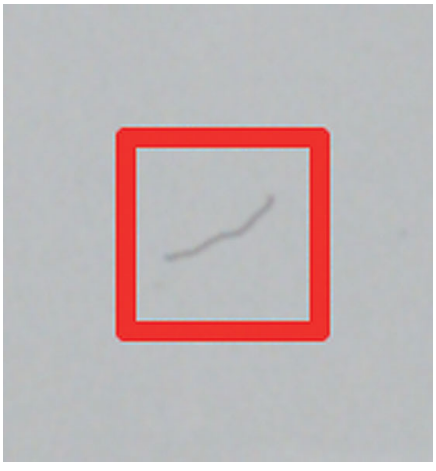
Statistical evaluation and storage of the measuring values

The presented optical inspection and analysis system contains a specially developed analysis software for the detection, visualization and evaluation of contamination. The software includes an image gallery of detected contamination as well as statistics regarding their size, area and number. Furthermore, previously recorded image material can be imported for follow-up analysis. The inspection and analysis system can be integrated into the company network via a LAN interface in order to export and process collected data. The data provides the users with comprehensive information about the process and the material quality. For example, by establishing a central and con-

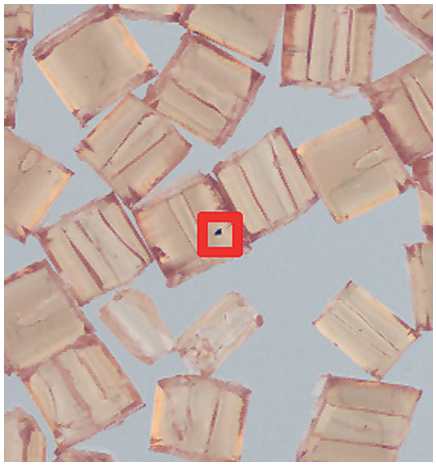
Picture 3: Examples of detected contamination by optical technology: Discoloration in flakes



Picture 4: Examples of detected contamination by optical technology: Foreign body in film



Picture 5: Examples of detected contamination by optical technology: Black speck in pellet



Picture 6: Automated light table system for offline inspection and analysis of plastic material

stantly updating database, conclusions regarding sources and causes of contamination are possible. On this basis, existing processes in the company or at suppliers can be optimized to ensure a comprehensive quality control.

Application areas of the automatic light table

The described automatic light table offers a broad range of applications. Flakes, micro granulates, films as well as extruded and injection molded parts with a sample height of up to 5 mm (.2") can be inspected on the sample tray, that has a width of 295 x 210 mm (11.6 x 8.3") (pictures 3 to 5). For instance, approximately 100 g (.22 lb) pellets can be inspected and analyzed per run. This corresponds to up to 3,300 pellets with a size of 4 x 4 x 4 mm (.16 x .16 x .16"). In addition to the possibility of analysis for determining root causes and process control in classical laboratory, the system is suitable for incoming goods inspection due to its quick automatic analysis within seconds as well as for outgoing goods in order to compare the quality with the customer requirements.

Conclusion

Quality requirements in the production and processing of plastics are continuously increasing whilst the complexity of the production processes is rising simultaneously. In addition to a permanent online monitoring of the production process by inspection and sorting systems, periodic offline sample testing of the plastic material is required in order to ensure a consistent quality from the raw material to the final product. Up to now, manual light tables as well as automated visual inspection devices with no allocation of the contamination and no follow-up inspection for quality assurance, are used as standard in the plastics industry. An innovative optical technology combines the advantages of the manual visual inspection with an automated material sample control. The automatic light table system automatically detects and visualizes contamination from 50 µm (2 mil) and evaluates them statistically. The contamination is clearly allocated and a follow-up inspection is possible at any time. The system is more precise, faster, more reproducible and reliable than the human eye at a light table. Therefore, it largely contributes to quality control and an efficient process optimization.

SIKORA AG
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www.sikora.net

DuPont, a global innovation leader, regularly launches brand new advanced material solutions based on the needs of customers and gaps in the industry. This commitment to customers is a major driver for the company, enabling it to continuously develop and introduce a steady stream of new cutting-edge technologies to the polymer market.

Brand New Solutions to Meet Customer Needs

Christophe Paulo, marketing manager, DuPont, spoke about a new-generation silicone-based masterbatch for film processing improvements and new pelletized grades for pellet extrusion modeling.

Mr. Paulo, please tell us more about DuPont's innovative solution for packaging application.

This year, DuPont Transportation & Industrial, a global business unit of DuPont had several, brand new launches for the polymer market to fill some of the gaps they are seeing in the plastics industry. One product introduction, new DOW CORNING™ AMB-12235 masterbatch combining anti-block and slip for polyethylene (PE) blown film, took place at Chinaplas 2019 in Guangzhou.

Based on actual customer needs, DuPont is focused on expanding its solution offering for packaging applications, to enhance processing and final product transformation, like printing on the film, for instance. When customers asked us for a simpler way to optimize PE film processing, we developed this innovative, high-performance, combined masterbatch. To achieve the best level of slip performance for the film one needs to combine the anti-blocking and slip properties which is very challenging. We have been working to develop a product with an appropriate combination of the two properties to guarantee long term slip and anti-blocking characteristics at the same time. As a result, DuPont formulated DOW CORNING™ AMB-12235 masterbatch ensuring compatibility between the anti-block and slip properties. It provides the best ratio of active ingredients and helps film makers avoid spending time and effort to calculate the right combination and amount of each additive by trial and error.

DOW CORNING™ AMB-12235 masterbatch, which is approved for food contact in Europe, the United States and China, is the latest addition to the new DuPont portfolio of silicone-based solutions that extend properties, enhance processing and reinforce materials. This brand new additive helps lower the COF of blown film to reduce its resistance to sliding over itself or manufacturing rollers. The improved slip performance – which is stable overtime and under high temperatures – contributes to increased production speed, uninterrupted throughput and uniform film quality.

Unlike organic slip additives, DOW-CORNING™ AMB-12235 masterbatch

will not migrate to the surface of the film's inner skin layer, which can affect downstream operations. This is most important in cases of long film storage and shipping. Also, it helps reduce film blocking that can cause damage – all at cost-effective low loadings. Additionally, testing has shown that this solution preserves key mechanical properties of the film. As a result, our customers especially benefit on post processing. They can apply all kinds of post treatment on the film, including printing and metallization.

One more important advantage our customers get is simplifying production and logistics. Thanks to the combined approach, less additive feeders are needed, thus freeing up space and reducing infrastructure complexity. Beyond the production line, customers can save storage space, facilitate supply chain management and streamline material handling.

This new technology advancement demonstrates our strong commitment to the success of the packaging industry by supplying innovative, silicone-based solutions that help customers achieve seamless throughput, high productivity and consistent quality. DOW CORNING™ AMB-12235 masterbatch is a brand new solution marketed globally. Meanwhile its launch at Chinaplas correlates with our expectations to meet the growing demand in the Asian Pacific market.

Please, tell us about DuPont's solutions for the additive manufacturing sector.

At the RAPID + TCT 2019 event in Detroit, Mich., we had another premiere that showcased new additions to our growing 3D printing materials portfolio. 3D printing technologies create new application options that can be used in our daily lives. At DuPont, we are translating our proven material innovations for use in 3D printing processing. Our duty as a material expert and global supplier is to first listen closely to our customers' needs. Then we provide them with the right solution to enable them to switch seamlessly from prototyping to small-series, pre-series and mass production.

At RAPID + TCT 2019 we launched six new Zytel® polyamide and Hytrel® thermoplastic polyester elastomer (TPC-ET) pellets and two new Hytrel® filaments. DuPont's new pelletized materials for pellet extrusion modeling were developed to help increase 3D manufacturing agility and cost effectiveness. By delivering our products as pellets as well as filaments, we give our customers the flexibility to use the same material across different processes. For instance, they can create prototypes with fused layer modeling and final parts with pellet extrusion modeling – or even injection molding for very high volumes– while maintaining consistent properties.

The new pellets and filaments offer a range of hardnesses, fiber reinforcement options and colors. When speaking about polyamide grades, for instance, DuPont offers 20% carbon fiber-reinforced and 30-50% glass fiber-reinforced polyamide. In terms of mechanical properties these grades are equivalent to the materials the market used to work with. At the same time, they fit any processing method and our customers really appreciate that. Actually, we do believe that with the acceleration of technology improvements within the next 5 years about 10% of any plastic transformation will be done by 3D printing.

DuPont
www.DuPont.com

Committed to Film Quality

Measurement and control instrumentation made by Kündig Control Systems (KCS) – a member of Hch. Kündig & Cie. AG Group since 1972 – is used continuously around the world to guarantee best possible film quality

KCS is striving to maintain this target achievement despite stricter quality demands and annual increases in extrusion volumes. To do so, KCS is constantly improving measurement accuracy of existing sensors and is making use of newly available technologies to develop new sensor types and measuring methods.

At the last K Fair, the company presented its new K-500 capacitive thickness sensor for online thickness measurement on blown film lines. The K-500 has an extremely low-wear and gap-free surface based on a patent-protected sintered ceramic cover through which the film is measured. Over the past three years, this type of sensor has become the standard gauge in the global marketplace for contact, high-precision thickness measurement.

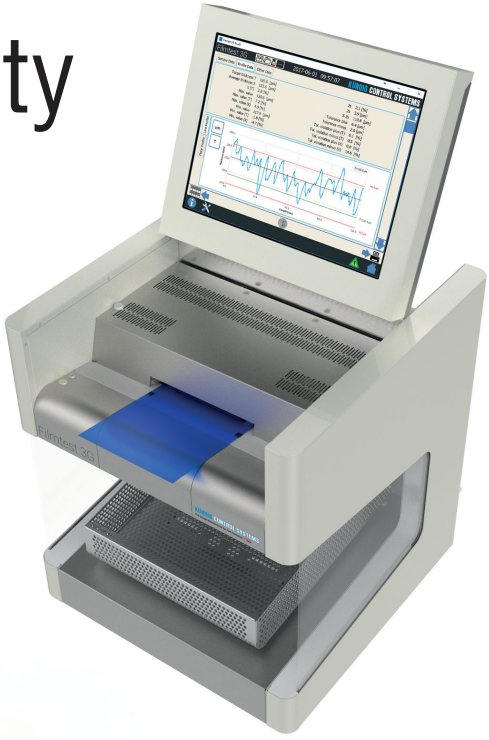
Since the beginning of 2018, KCS has been selling its third-generation version of the KNC-600 Linear Scanner. One of the uses of this travelling, non-contact, capacitive thickness gauge is for inline longitudinal stretching (inline MDO) on blown film lines.

KCS will, of course, also be presenting its latest sensor development at this year's K Fair. Until then, however, the company is only revealing the advertising slogan – "Lowering the Barriers."

This year, in keeping with tradition, an offline thickness gauge for process optimisation and quality control will again be on demonstration at the KCS booth. Visitors to the booth can bring their own film samples for measurement using the Filmtest 3G.

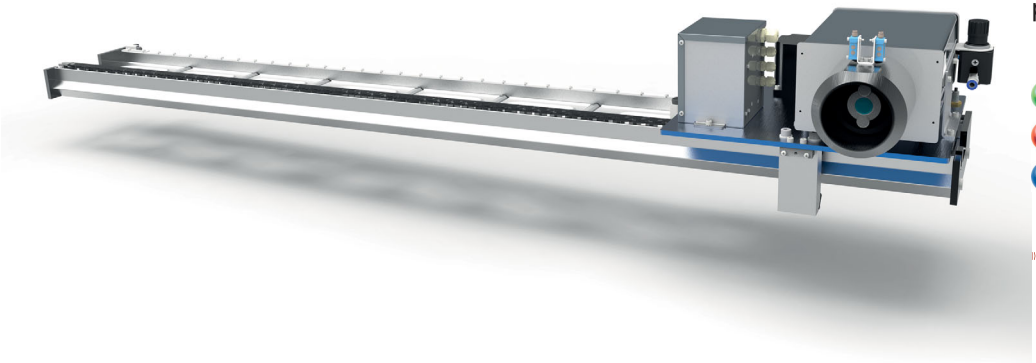
"Committed to film quality" also means that KCS offers its product users the best possible customer service. Since 2015, the internet platform GaugeCloud® has been online and is still being steadily expanded to this day. It gives customers access to literature, technical drawings, lists of available spare parts and much more information about their KCS products regardless of our business hours. Customers can, moreover, engage with three chat groups – Spares/Repair, Support and Retrofit – to communicate specifically with the relevant team of specialists. KCS technicians can use remote access to troubleshoot any problems that arise and can upload new software versions via the Internet . In the very latest products, this process even works for modules based on microprocessors.

The KCS team is looking forward to welcoming long-standing and potential new customers to its booth at K 2019, to presenting its pioneering new products, and to showing the options for upgrading older KCS products.



Filmtest 3G

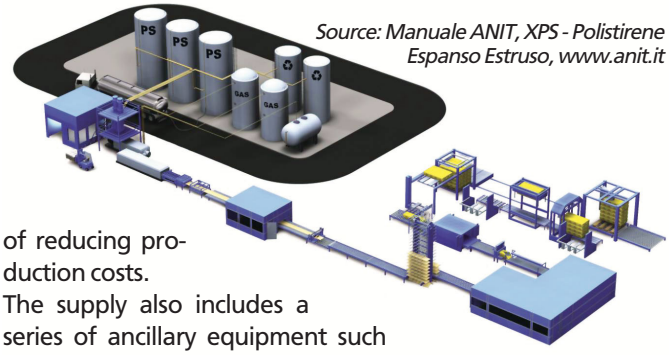
KNC-600 Linear Scanner 3G



K 2019: Hall 10, Booth C81

HCH. KÜNDIG & CIE. AG
Joweid Zentrum 11, 8630 Rüti ZH, Switzerland
www.gauge.ch

Cooperation

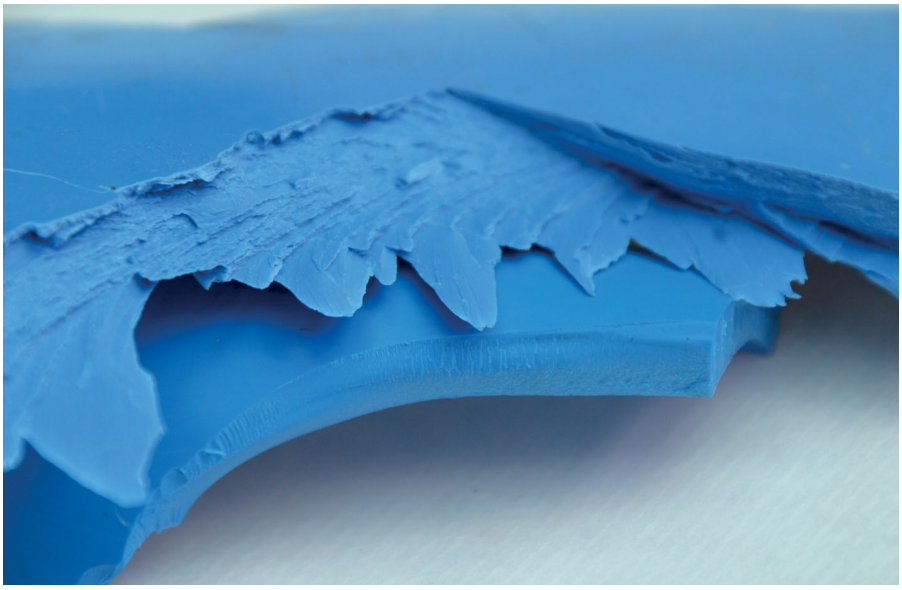


Source: Manuale ANIT, XPS - Polistirene Espanso Estruso, www.anit.it

Union Officine Meccaniche announced that an important contract for the supply of a tandem-type extrusion line (primary twin screw extruder – secondary single screw extruder) for the production of XPS insulation panels has been positively concluded with Synthos Dwory 2 Sp. z o.o. (Poland).
This contract is particularly important for Union Officine Meccaniche because Synthos is the main petrochemical company which produces styrene and its derivatives and it is also the main XPS panels producer in Poland and in the Czech Republic. The technological reasons which led the customer to prefer Union over the international competitors are even more important.
This latest technological evolution, developed over the years for extruders used in the FOAM segment, allows the production of XPS panels in compliance with the standards required by the UNI EN 13164 rules with the use of percentages of EPS waste never known before. This technology, in fact, combines the essence of the modern engineering based on the satisfaction of energy saving and environmental needs (possibility of reusing waste from post-consumer collection) with the need of reducing production costs.
The supply also includes a series of ancillary equipment such as a recycling and granulation line, able to maintain a high quality MFI necessary to guarantee a final product in compliance with UNI EN 13164 specification and a line for the suction and treatment of the dust due to the milling and smoothing of the panel.
The new XPS lines of Union are having an important market success. After having conquered the second most important XPS panel manufacturer in Europe in 2018, the company can now count Synthos among the most important challenges won in this market segment. Union is sure that this challenge will be followed by other challenges among the ones already at an advanced discussion stage.

Union Officine Meccaniche s.p.a.
Via 1° Maggio 12/14 – 20028 S.Vittore Olona (MI) – Italy
www.unionextrusion.it

The environmental impact of a piping system depends on its composition and application thereof. The factors determining the efficiency over the entire life cycle of a pipe are mainly: the type of raw material used, the production process, the product finish and its useful life



Picture 1

PVC-O Pipes and Fittings –

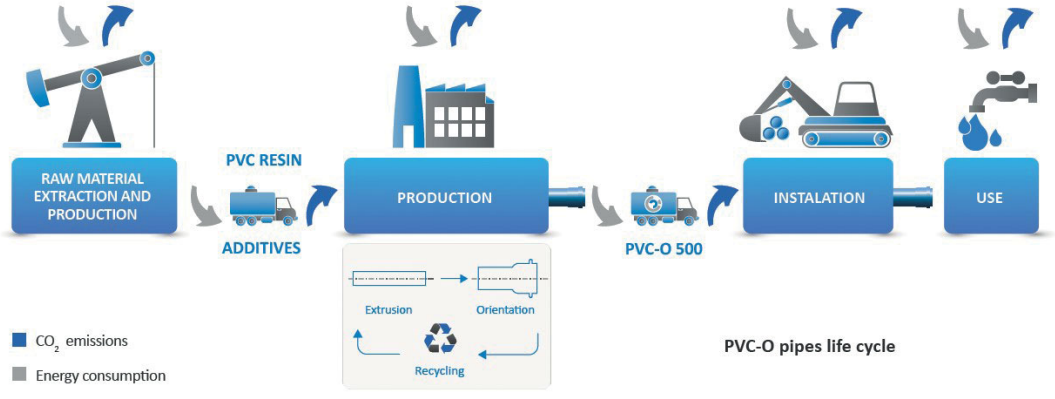
The Most Environmentally Friendly Solution for Water Transportation

PVC-O pipes lifecycle

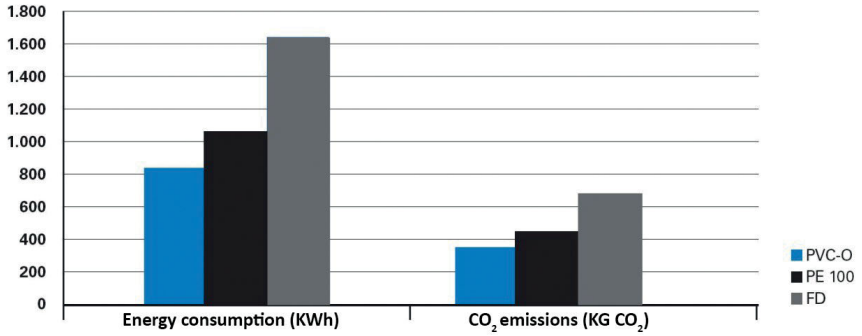
PVC-O pipes are presented as the most ecological solution due to their better contribution to the correct sustainable development of the planet, as it has been demonstrated by different worldwide studies, among which we can highlight: "Estimación del consumo energético y de la emisión de CO_2 asociado a la producción, uso y disposición final de tuberías de PVC, PEHD, PP, Fundición y Hormigón" (University Politectnic of Catalunya) and the study "PVC-O Environmental Product Declaration" TEPPFA (The European Plastics Pipes and Fittings Association).

Oriented PVC presents environmental advantages in all phases of its life cycle (Picture 2):

Picture 2



Efficiency in natural resources:
Oil: Only 43% of the PVC composition depends on oil, so higher efficiency is obtained against polyolefin pipes that derive 100% from it.
Raw material: Oriented PVC (PVC-O) pipes are manufactured with a conventional extrusion process and subsequent molecular orientation, which significantly improves the mechanical properties of the product while keeping intact its chemical properties. Thus, with less raw material, pipes with better performance are obtained.
Energy: lower energy consumption in:
1. Raw material extraction.
2. The manufacture process of the pipe. The innovative manufacturing process requires much less energy than is necessary for the production of pipelines from other materials, and even than other PVC-O production processes.
3. Use on the networks. In the service life of a pipe system, the parameter that most contributes to energy consumption is the pumping energy. Considering a period of 50 years of life, according to various international studies, PVC-O pipes have a lower energy consumption.



Picture 3. Chart of energy consumed and CO_2 emissions throughout the life cycle of a pipe system
Source: Estimation of energy consumption and CO_2 emission associated with the production, use and final disposal of PVC, PEHD, PP, Foundry and Concrete pipes (University Politecnic Catalunya)

Efficiency in Waste Management
PVC is a 100% recyclable material that can be reused for the manufacture of other plastic applications with lower technical requirements. In this way, the con-

Environmental impacts	Absolute	
Climate change	8.3E+01	kg CO2e
Ozone depletion	5.3E-06	kg CFC-11e
Ecotoxicity – aquatic, fresh water	1.8E+02	CTUe
Human toxicity – cancer effects	4.8E-06	CTUe
Human toxicity - non-cancer effects	8.6E-06	CTUh
Particulate matter / Respiratory inorganics	1.3E-02	kg PM2.5e
Ionising radiation – human health effects	5.3E+00	kg U235e
Photochemical ozone formation	4.1E-01	kg NMVOC
Acidification	4.1E-01	mol H+e
Eutrophication - terrestrial	1.0E+00	mol Ne
Eutrophication – aquatic, fresh water	1.6E-03	kg Pe
Eutrophication – aquatic, sea water	9.5E-02	kg Ne
Resource depletion – water	1.9E-01	m^3 SWU
Resource depletion – mineral, fossil	3.8E-03	kg Sbe
Land transformation	1.6E+02	kg Cdef

Class 500 TOM® PVC-O pipes environmental footprint according to Recommendation 179/2013/EC

Picture 4

sumption of raw materials and also the volume of waste generated is reduced.

Optimization of the Hydrological Resources

PVC-O is chemically inert against products present in nature and remains unchanged. This, together with the effective design of its socket, prevents leakage of the piped water and contamination of the fluid circulating inside, thus maintaining the total quality of the water.

Long Useful Life

Thanks to the excellent mechanical properties, these pipes are very resistant, thus significantly minimizing breakages during handling and installation on site, and also remaining unchanged for years, reducing the substitution of damaged or deteriorated pipes in the network, thereby saving economic resources. This resistance is particularly noticeable at low temperatures, where other materials are very fragile.

Better Contribution to the Sustainability

Lower carbon footprint. Due to the lower emissions of CO_2 into the atmosphere, various international studies show that throughout their long live cycle they have lower energy consumption, minimizing the impact on the planet's climate change. (Picture 2)

Other environmental contributions:

Optimization of the transport. Thanks to the lower weight of the pipes, we can transport more quantity, so we will save fuel and minimize CO_2 emissions.

Cost efficiency in installation. Due to their lower weight, they are lighter and can be easier handled than pipes made from other materials. Thus, the handling and connection of the pipes can be done manually up to DN315 mm, thus reducing the use of machinery and the CO_2 emissions into the atmosphere.

European Guidelines to preserve the environment

PVC-O pipes are ahead of the rest of the pipelines in the market with the study of the environmental impact according to the European Commission. This analysis is not limited to calculating the impact on climate change due to greenhouse gas emissions (Carbon Footprint), but analyses its behaviour against 14 environmental impacts that are grouped according to the condition of the different means:

- **Air and atmosphere:** climate change, acidification, depletion of the ozone layer and formation of fotochemical ozone.
- **Water:** resource depletion (water), fresh water ecotoxicity and water eutrophication.
- **Soil:** resource depletion (minerals), land eutrophication and the use of the ground.
- **Human health:** respiratory inorganic elements, ionizing radiation, effects on human health (carcinogenics) and effects on the human health (no carcinogenics).

Results study environmental footprint

The calculation has been carried out through a thorough study of all the processes of the product life cycle over all the phases of the product, from the extraction of raw materials to the final disposal of pipes, through manufacturing, distribution and use.

The results obtained are in picture 4.

Thanks to the molecular orientation, PVC-O pipes present advantages applicable to both the quality of the product and its mechanical properties, as well as to an increased installation performance and the minimization of energy costs during operation, achieving in this way very high cost efficiency in the implementation of water networks.

It should also be noted that PVC-O pipes are the most environmentally friendly solution, presenting a significantly lower environmental footprint than other alternative products. This is due both to the energy efficiency achieved during manufacture and use, and to the reduced emission of CO_2 into the atmosphere throughout its life cycle, thus making a smaller contribution to the global greenhouse effect and climate change.

They offer a better behaviour of respect for the environment, presenting an environmental footprint inferior to other materials, improving the contribution to the correct sustainable development of the planet, and optimizing the consumption of natural resources.

Molecor, Spain
http://molecor.com/en/

Novel Tinuvin® NOR® Light and Heat Stabilizer for High end Agricultural Plastics

BASF, the global leader in the field of high-quality and innovative antioxidants and light stabilizers world-wide, expands its NOR® technology to help farmers continuously produce in a sustainable way

With an increasingly demanding growing population, modern farming faces many challenges including how to balance the need for greater yields of fruits and vegetables, whilst simultaneously meeting the ever-stringent environmental protection requirements of organic food production.

By using the energy from the sun in a world with less arable land and increasing water scarcity, Plasticulture – the use of plastic materials in agricultural applications, contributes significantly to producing more and better food all year. Prominent examples of Plasticulture's high efficiency to use natural resources in a sustainable manner include: greenhouse covers which keep uniform temperature and humidity for continued food production; mulch films and irrigation pipes which reduce water consumption; and silage films which store livestock food in a cost-effective way.

"The development of Tinuvin® NOR® 356 is the result of BASF's extensive competency in light and thermal stabilization combined with our deep knowledge of agricultural market requirements," said Volker Bach, head of BASF's Global Competence Center Plastics Additives, BASF. "Our organic farming customers can benefit from higher yields produced in a sustainable way."

Tinuvin® NOR® 356 protects and extends the lifetime of agricultural films that are exposed to very high levels of UV radiation, heat and crop treatments such as elemental sulfur, and the compounds approved in certified organic farming to prevent plants diseases and fertilize the soil.

Strong commitment to the agriculture industry

When exposed to the sun's intense radiation and agrochemicals, a series of complex chain reactions cause the agriculture plastics to begin degradation and finally, become brittle. When added to the polymer, the Tinuvin® NOR® light stabilizers neutralize the complex chain reactions and disrupt the reaction cascade. This protects the agricultural films, in particular greenhouse covers, and extends their durability. Standard light stabilization solutions are not effective under these challenging conditions due to their limited resistance to agrochemicals, elemental sulfur and disinfection products.

(Foto: Courtesy of Clisol)

The improved film protection and lifetime extension under NOR®-stabilized greenhouse covers increase productivity, improve crop quality and reduce plastic waste for farmers which makes them more competitive.

To serve the increasing demand for organic farming, BASF has continued to invest in the NOR® technology by creating this new generation NOR® and expanding production capacity. In addition to the increased NOR capacity, BASF continues to invest at all key light stabilizers production sites in Pontecchio Marconi (Italy), Lampertheim (Germany), McIntosh (USA) and Puebla (Mexico).

K 2019: Hall 5, Booth C21 – D21

BASF SE
67056 Ludwigshafen, Germany
www.basf.com, www.plasticadditives.basf.com

(Photo: Messe Düsseldorf, Constanze Tillmann)

K 2019 Düsseldorf:

New Technologies as Drivers of Innovation for a Productive and Responsible Today, Tomorrow and Future

K 2019, known as "The World's No. 1 Trade Fair for Plastics and Rubber" and scheduled to take place in Düsseldorf from 16 to 23 October 2019, is fully booked. Over 3000 exhibitors from more than 60 countries have registered to participate. K will occupy the entire Düsseldorf/Germany exhibition grounds with some 175,000 m² of net exhibition space, and more than 200,000 trade visitors from all over the world are expected come to the event.

K is the performance barometer for the entire industry and its global marketplace for innovations. For eight days, the "Who's Who" of the entire plastics and rubber world will meet here to demonstrate the industry's capabilities, discuss current trends and set the course for the future.

K 2019 underscores its special position not only through its popularity with the global industry but also by addressing the current challenges of our era and especially of its sector, first and foremost in regard to "plastics for sustainable development" and the "circular economy". These not only will be among the hot topics touched on at the exhibitors' stands at the upcoming K but will also be covered comprehensively in the supporting programme.

For example, the special exhibition "Plastics Shape the Future" also sees itself as a podium for solutions and answers to current social trends and discussions. Crucial topics will be discussed in detail, including packaging waste, marine litter and climate change on the one hand and resource conservation, energy efficiency and recycling on the other. "Plastics Shape the Future" not only will offer an international information and networking platform but will also provide for greater involvement of policymakers and socially relevant groups in the form of keynote speeches and speed talks.

The Science Campus of K 2019 stands for the dialogue between science and industry, with sustainability and recycling management also being examined intensively.

Messe Düsseldorf GmbH
www.k-online.com

New Colors & Effects® Pigments meet Emerging Industry Requirements

BASF will present innovation highlights from its broad range of Colors & Effects® pigments for plastic applications at the K trade fair in October. The new product launches include two new Lumina® Royal effect pigments, Microlen® Piano Black, and a black and red addition to the Sicopal® product line, which are especially recommended for recycling materials and demanding applications. Featuring these latest innovations as well as other key pigment chemistries, BASF's Colors and Effects brand will reveal a Color Collection inspired by Pantone®. Comprised of three palettes with seven colors each, the collection will highlight current consumer trends and address how pigments can meet the plastic industry's versatile colorant requirements with safe, reliable and brilliant performance.

"With our pipeline of current and future pigment innovations, we have set a special focus on meeting emerging industry requirements." says Christof Kujat, New Business Development Manager, Pigments for Plastics. "Our research and development covers the broad plastics industry, from packaging and consumer goods to automotive and fibers. We require unmatched pigment performance in order to achieve high safety standards as well as chemistries that enable durable chemical performance and coloristic brilliance."

By unveiling two new pigments in the Lumina Royal family, the Colors & Effects brand broadens the brilliant color space. Lumina Royal Russet enables new vibrant, high-chroma red shades and provides greater formulation flexibility, while Lumina Royal Amber promises strong sparkle for attractive bronze, orange, golden and red effect shades. Both effect pigments meet with broad, global food compliance standards, taking on a dual function by performing safely and brilliantly. Stepping outside of the world of chromatic pigments, BASF introduces a new black pigment to meet the industry's requirement for a consistently deeper and darker shade. With Microlen Piano Black, customers can expect unmatched jetness, outstanding dispersion for excellent mechanical properties. Microlen Piano Black enables the deepest and most enduring black for high-end plastic design.

With Sicopal Red K 3050 FK, the industry will have a new pigment chemistry available that extends the durable red color space. Due to its high temperature and chemical stability, the pigment performance stands up to the most demanding applications, including engineering plastics. Building on the Sicopal Black technology, a new member of the pigment family is announced, optimized for use in recycling materials. With best in class near-infrared (NIR) reflective properties, it solves the current industry need for recyclable black plastics that can pass through infrared sorting at materials recycling facilities.

Sicopal® Black makes beautiful black recyclable (Photo: BASF 2019)

K 2019: Hall 5, Booth C41

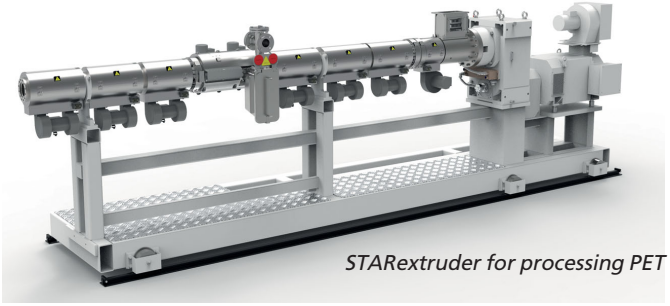
BASF Colors & Effects GmbH
www.colors-effects.basf.com

STARextruder covers Broad Range of PET Processing Requirements

The ideal processing extruder for PET doesn't require materials to be pre-dried, can be easily and flexibly adjusted to different incoming materials and end products, and hardly requires any maintenance. Simple operation and control are also indispensable. battenfeld-cincinnati has now developed a new solution to fulfill these exacting requirements: The STARextruder 120 is set to be one of the premier exhibits at this year's world-leading trade fair. In the processing of new materials – and recycled materials in particular – the extruder shines in terms of efficiency, devolatilization performance, and end-product quality.

battenfeld-cincinnati boasts one of the broadest product ranges on the machine engineering market. The extrusion specialist offers both individual components as well as perfectly coordinated overall systems for the manufacture of pipes, profiles, granulates, sheets, and boards, with each solution precisely tailored to the customer's individual applications. The development of the STARextruder series marks a significant expansion of the PET processing product range. Set to make its debut at the K trade fair, the STARextruder is ideally suited for processing up to 1,000 kg/h of PET, with a screw diameter of 120 mm. The entire STARextruder series comprises four extruder sizes covering a broad range of outputs from 600 kg/h through 1,800 kg/h.

A single-screw extruder with a degassing zone made up of a planetary roller unit forms the basis of the STARextruder. In this zone, the melted material is rolled out into very thin layers and an enormous surface area is created. This helps generate the perfect conditions for high degassing and devolatilization performance – a crucial factor for ensuring maximum product quality when processing PET and other materials. A further advantage is the large degassing opening on the side of the extruder, which is both accessible and easy to clean. Both new materials and recycled materials (ideally those which have been preconditioned) can be processed, as confirmed by an FDA letter of no objection. The EFSA criteria applicable in Europe can also be fulfilled. As demonstrated in numerous test series, the new extruder range also offers outstanding opportunities for processing other materials for which a high level of degassing performance is required.



STARextruder for processing PET

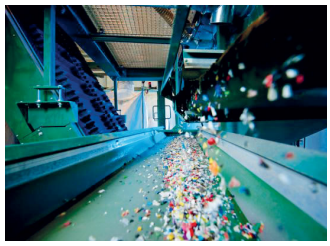
Since the beginning of the year, the STARextruder has formed one of the key components of our new lab line, which is enabling battenfeld-cincinnati to provide its customers with a particularly special service. "Sheet manufacturers can produce new or optimized formulas and material combinations under production conditions and become more familiar with our machine engineering expertise," explains CTO Dr. Henning Stieglitz, who is inviting interested manufacturers to get in touch. Against the backdrop of Germany's new packaging law and the concepts of resource efficiency and 'design for recycling', the plant provides the ideal setting for further developments and features a high-speed extruder and a Multi-Touch roll stack alongside the STARextruder.

View into the new lab line

K 2019: Hall 16, Booth B19

battenfeld-cincinnati
www.battenfeld-cincinnati.com

New Recycling Technology and Improved Recyclate



Recyclates from mtm save approximately 30% of CO_2 emissions compared to virgin materials (Photo: ©mtm plastics)

Borealis announced the introduction of a new plastics recycling technology, Borcycle™. This evolving technology will be used to produce high-quality compounds made of recycled polyolefins (rPO) such as the newly-launched Borcycle™ MF1981SY, an rPO with over 80% recycled content intended for use in visible appliance parts. Borealis also announced a series of significant material improvements to existing recyclates in the established Purpolen™ brand portfolio. These market launches and product improvements are important technology advancements and thus accelerate the transformation to a circular economy of plastics. Borealis and its wholly-owned subsidiary, mtm plastics, will showcase the new Borcycle technology and recyclate innovations at the K 2019.

Borealis is leading the industry by applying its Visioneering Philosophy™ to the development and implementation of novel polyolefins-based solutions that enable plastics reuse, recycling, and recovery, and by designing for circularity. These wide-ranging activities are gathered under the symbolic roof of EverMinds™, the Borealis platform dedicated to promoting a more circular mind-set in the industry. By capitalising on its profound expertise in virgin polyolefins and collaborating with value chain partners, Borealis keeps discovering new opportunities for business growth within the circular economy.

The new technology, Borcycle, transforms polyolefin-based waste streams into recycle material such as pellets. As a transformative technology, it complements the existing Borealis virgin polyolefins portfolio with a range of pioneering, circular solutions. It unites state-of-the-art technology with the profound Borealis polymer expertise gained over decades.

As a scalable and modular technology, Borcycle has been developed to meet growing market demand for high-quality recycle. Leading appliance brand owners, for one, have pledged to increase the amount of recycled plastics in their goods. Yet until recently, producers have not been able to rely on a consistent supply of high-quality recycle. The Borcycle technology will help address this challenge. Compounds made using the Borcycle technology deliver high performance, add value and offer versatility. Producers and brand owners in a range of industries will profit from the availability of high-quality recycle that helps them meet environmental and regulatory challenges.

"Advancing technology is crucial if our aim is to implement value-creating solutions in the circular sphere," claims Maurits van Tol, Borealis Senior Vice President, Innovation, Technology & Circular Economy Solutions. „'Building tomorrow together' means innovating, collaborating, focussing on the customer, and above all – taking action. The launch of our new recycling technology Borcycle is tangible proof of our commitment to achieving plastics circularity."

K 2019: Hall 6, Booth A43

Borealis AG
www.borealisgroup.com

Battery Separator Film Production Line

New Line Concept for Single-Origin Packaging Solutions

Brückner Maschinenbau is working on a means to make films with the highest possible recycling capabilities producible on film stretching lines. The focus is on mono-material film with superior mechanical and optical properties, which will be able to substitute previous multi-layer films made from different materials. These are ideal for the use in new, single-origin packaging and guarantee good sortibility in waste separation and optimal recycling.

Combination of BOPE and BOPP production:
For the K 2019 Brückner will introduce two completely new line concepts for the production of BOPE films (biaxially oriented polyethylene). Film producers can chose between a working width of 6.6 m and an output of 3 t/h, or a working width of 8.7 m and an output of 5 t/h. These are 5 layer concepts for an extended range of films.
The new lines also have the flexibility to produce BOPP films: Specialities such as UHB films and coated films for high-barrier uses alongside conventional packaging film. As the demand for innovative BOPE films is only now starting to develop, film producers will be able to react swiftly and flexibly to market trends.

New inline coater:
Even if recycling stands at the forefront of a circular economy, new mono-material structures must fulfil the highest demands and must not be inferior to previous packaging films.
This is why Brückner has developed a new inline coater for all BOPP and BOPE lines, installed in the line before the transversal stretching, it makes the production of extremely thin functional layers within the nano-range possible.
Due to the extreme thinness, the layers don't disrupt the sorting and recycling, but cater, for example, for an improved adherence during metallising and excellent barriers in combination with the equally thin but effective aluminium oxide coating.

The focus remains on raw material and energy saving:
Despite all developments for the rapidly developing circular economy, Brückner Maschinenbau is keeping to its own ambitious objectives for a decreasing raw material usage and an increasingly minimal energy consumption during film production. Despite all legitimate demands about recycling and reusability, the challenge of climate change and the reduction of the carbon footprint throughout the entire packaging production chain must not be forgotten. In the fight against climate change, we will still need plastic packaging that is produced in a resource-saving way.

Speciality film lines:
Alongside stretching lines for the production of packaging films, machines for speciality films are becoming more important in Brückner's portfolio. The company will be presenting various innovations for the K 2019:

- New high-temperature concept for BOPP capacitor film – this is interesting, for example, for the use in electrical components installed near motors
- Lines for the production of stone paper based on BOPP or BOPE with a calcium carbonate proportion of over 60%: not only with good printability and waterproof, but also environmentally friendly in production
- Biaxially oriented polyester films (BOPET) for optical applications. Brückner's enew, patent pending Relax System ensures homogenous film properties and thus high film quality and better processability
- BOPI (biaxially oriented polyimide) is perfect for flexible optical applications, e.g. flexible displays.

High performance stretching lines

The stretching ovens and systems need to be suitable for very high temperatures of up to 400°C, is in Brückner's new line concepts.

Battery separator films: New technologies for growing markets:

In the field of battery separator film for lithium-ion batteries, Brückner Maschinenbau has made a good name for itself in the market with leading film manufacturers thanks to its successfully running lines. At the K they will be presenting:

- Optimised simultaneous LISIM technology
- For less edge trim and thus higher film gain
- For more flexibility in the stretching profile adjustment during operation: improved mechanical properties such as puncture resistance and optimised pore distribution for a longer lifespan
- Newly developed and patented relax chain for improved film properties in regard to battery safety
- 5.5 m line width – globally unique for higher efficiency
- Continued development of its own patented production process, the EVAPORE process, offering a more environmentally friendly alternative for the production of membrane films

K 2019: Hall 3, Booth C90

Brückner Maschinenbau GmbH & Co. KG
www.brueckner.com

‘Symphony of Collaboration’

As action to tackle the challenge of plastic pollution gains momentum, including a new international framework signed by G20 ministers to address marine plastic waste, specialty chemical company Clariant announces proactive steps to foster partnerships and create a more sustainable plastics industry through a “Symphony of Collaboration”. Whilst plastic has been described as the ‘success story of the 20th century’, its sustainability is increasingly under the spotlight. Every year, about 200-million tons are disposed of in landfills and about eight-million tons leak into our oceans. Responding to consumer-led concern around this waste, Clariant’s “Symphony of Collaboration” recognizes that regulators, industry and society have a responsibility to work more closely to drive design for, and innovation in, the reduction, reuse and recycling of plastics.

At K 2019, Clariant will shine a light on collaborative sustainability projects and the products behind them, supporting the development of solutions that will be adopted in the market. This includes the launch of a major new company-wide initiative specifically focused on plastics’ recycling. It aims to change the current take-make-dispose consumer attitude, moving towards a circular economy for post-consumer and post-industrial plastic through three key elements: the development of product and system solutions for recycling; partnerships with players across the recycling ecosystem to draw on different perspectives and develop new solutions; achieving a vast and diverse understanding of the challenges by sharing knowledge across different recycling technologies and the value chain of recycling.

To be unveiled at K 2019: collaborative sustainability projects and the products behind them (Photo: Clariant)

Already, one important partnership has delivered some breakthrough results. Together with the Finnish oil refining company, Neste, which is passionate about giving fat residues and discarded cooking oils a second life, Clariant has been exploring opportunities to use renewable hydrocarbons, derived from this waste. More will be revealed at K, including new products for plastic applications based on mass-balance certification for usage of renewable polyolefins.

With a partner for Near Infrared (NIR) scanners, Clariant developed new colorants for the black coloration of plastics that can be identified by NIR sorting devices. This new range of black colorants can be used for various polymers (e.g. Polyolefins, PET, PA) and applications such as packaging and E&E. This offers brand owners and masterbatch producers new opportunities.

In line with making recycling a viable option, Clariant announced a support boost for effective mono-material consumer solutions. A key priority here is ensuring the attractiveness of virgin PET for packaging. At K 2019, Clariant will launch its new masterbatch for PET destined for the food and beverage market. The patented oxygen scavenger is based on a new molecule that goes beyond existing solutions for PET in protecting content shelf life and taste. It’s proving a real success in initial customer trials, offering the potential to address a number of challenges for packaging producers in one solution.

In a further drive for collaboration, Clariant is also taking its EcoTain® label, currently awarded to a portfolio of more than 200 products that show outstanding sustainability advantages, to the next level. EcoTain is being expanded to include EcoTain Partnerships that will foster collaboration between at least three partners in the value chain to create concrete sustainability and business impacts, and advance environmental protection and the circular economy. At K 2019, Clariant will issue an open invitation to companies to come together and collaborate specifically on one particularly challenging aspect of recycling.

K 2019: Hall 8a, Booth J11

Clariant
www.clariant.com/K2019

Dr Frank Stieler (CEO of KraussMaffei) uses the new repositioning to set the course for the further integration of Injection Molding Machinery, Extrusion Technology, Reaction Process Machinery and Digital Service Solutions

Pioneering Plastics

Munich-based mechanical engineering group KraussMaffei is reinventing itself. KraussMaffei, the world's only provider of ready-to-use system solutions for injection molding, extrusion and reaction process technology (IMM, EXT, RPM), is now consolidating all business divisions and its previous brands KraussMaffei, KraussMaffei Berstorff and Netstal within a single, unified brand: KraussMaffei.

This repositioning is in line with the "Compass" corporate strategy, which has already brought about fundamental changes with the launch of the Digital & Service Solutions (DSS) business unit. For Frank Stieler, CEO of KraussMaffei, bringing the brands together is a reflection of the company's identity: "KraussMaffei is a technological pioneer in the plastics industry, which supplies its customers across all industries with innovative and customised solutions – in line with our new motto: Pioneering Plastics."

As part of the repositioning, all subsidiaries and locations will operate under the name "KraussMaffei" from now on. Netstal-Maschinen AG (Näfels/Switzerland) will be known as "KraussMaffei High Performance AG". Its high-performance injection molding machinery will be integrated into the KraussMaffei portfolio under the established Netstal product brand, which means the Netstal name will still appear on the machinery itself. The KraussMaffei Berstorff brand which was used for Extrusion technology will be integrated in "KraussMaffei". KraussMaffei Berstorff GmbH (Hanover/Germany) will now be known as "KraussMaffei Extrusion GmbH". Visual evidence of the restructuring can be seen in a new corporate design throughout the company, which will be rolled out to a wider audience during K 2019.

The common appearance supports the further integration of the Injection Molding, Extrusion and Reaction Process Machinery divisions, which already work hand in hand for many applications. This means that customers can select the solution that best suits them from the whole technology portfolio via their respective contact person. The areas of Automation and Digitalisation, the latter now represented by the DSS division, have long been developing innovative solutions across technologies.

The new "Pioneering Plastics" claim represents the pioneering spirit that has shaped the company and its locations and brands since it was founded in 1838. At a time when the public is commenting negatively on plastics, KraussMaffei has deliberately formulated this claim as a key performance promise. This is also the reason why KraussMaffei is committed to making a contribution to the development of a circular economy with new products and services. As a pioneer in the recycling, upcycling and recompounding of plastics, KraussMaffei has invested over three decades in the research and development of recycling, enabling its customers to enter a circular plastics economy.

Guests can see this in action at the K trade fair, where a polypropylene bucket will be recycled into a car's B-pillar. The Extrusion Technology and Injection Molding Machinery divisions will also be working together here. Polymore, the new B2B online marketplace for the purchase and sale of compounds, masterbatches, recycled material and post-industrial waste in Europe, is another example of sustainability.

K 2019: Hall 15, Booth C24 – C27

KraussMaffei Technologies GmbH
www.kraussmaffei.com

HYTAC® Syntactic Foam Plug-Assist Materials will be on Display

CMT Materials, the leading provider of plug-assist materials for the thermoforming industry, will showcase its range of HYTAC® syntactic foams at the upcoming K 2019 exhibition. CMT Materials will highlight the latest innovative plug-assist materials – HYTAC C1R and HYTAC XTL – which have recently enjoyed strong market acceptance.

"We continue to see strong growth for copolymer and thermoplastic plug materials as the global plastics packaging market continues to evolve and grow throughout the world," said Terry Woldorf, Managing Director for CMT Materials.

Data-driven studies on the economic impact of plug material selection show that consistency and repeatability can be achieved in thermoforming, according to CMT. In particular, HYTAC plug assists play a key role by helping processors manage wall thickness variation, reduce starting gauge, and improve cycle times.

Woldorf noted that the increased growth is largely focused in food packaging applications in Europe and Asia, with material shifts away from PS to PP and new, multilayer films. "These more complex polymers require more sophisticated plug assists beyond our traditional customer favorites," said Woldorf. "In some cases, there is a requirement for higher friction, in others it's easier release, and in still others it is for our new thermoplastic syntactic that offers two times the toughness of B1X and a new cellular structure that yields a smoother surface for an unbreakable plug that doesn't scratch soft plastics."

The main driving trends are growing popularity in ready-to-eat meals, changing consumer habits, and growing disposable income in emerging Asian economies. North American processors also show continued growth in sectors such as large bakery items, tamper-evident clamshells, and medical device packages. "The pace of product and package design is speeding up, with custom formers moving from prototype to production sometimes in less than four weeks."

At the K show, the company will feature HYTAC XTL plug assist which was developed to offer an improved surface quality after machining when compared to the company's HYTAC B1X. It is the industry's first and only material to combine the machined surface quality of an epoxy syntactic with the durability and dust-free machining of thermoplastic syntactic foam. This is particularly important when working with sticky or transparent plastics due to the challenge of polishing thermoplastic syntactic materials. A significant side benefit of the formulation is increased toughness, allowing for very fine plug details.

HYTAC XTL's excellent surface characteristics optimize material distribution with most plastics. The plug assist material also offers low thermal conductivity, low coefficient of thermal expansion, and is highly effective where edge definition and detail are required. HYTAC XTL is recommended for use with PP, PET, PE, APET, CPET, HIPS, OPS, PETG, PLA, PS, PVC, and RPET.

CMT Materials will also feature HYTAC C1R, a copolymer plug assist formulated with a friction enhancer to carry plastic deep into a cavity or specialty detail. C1R is easily machined and polished to a mirror-like finish for scratch-free forming. This new copolymer plug assist has been optimized for both the machine shop and the thermoforming process.

HYTAC C1R also provides three to four times the toughness of epoxy-based syntactic foam, superb machinability, superior edge definition and detail, low thermal conductivity, and excellent material distribution.

HYTAC C1R is recommended for use with APET, CPET, HIPS, PETG, PLA, PP, PVC, and RPET.

HYTAC syntactic foam is used by the majority of toolmakers and thermoforming processors around the world. Thin-gauge thermoformed parts such as drinking cups, coffee capsules, fruit trays, barrier trays, horticultural parts, and many more are formed with plug-assisted pre-stretching. HYTAC plugs are designed with specific material properties to optimize plastic parts and provide low thermal conductivity, low specific heat, and low coefficient of thermal expansion (CTE). CMT offers a full range of materials allowing designers and operators to create high-quality plugs for a variety of polymers and their required geometries.

K 2019: Hall 3, Booth G83

CMT Materials
www.cmtmaterials.com

Systems Expertise enhanced

Alaaddin Aydin, VP Maag Germany / Managing Director

The Maag Group, comprising Maag Pump Systems, Automatik, Gala Industries, Reduction Engineering Scheer and, since 2018, Ettlinger Kunststoffmaschinen, is enhancing its systems expertise by focusing on Centers of Excellence. For the first time in its history, all the Maag Group's companies will be showing together at the K-Show, featuring all their system solutions together on their joint booth A04 in hall 9. Maag will also be represented in hall 16 in the VDMA's Circular Economy Pavilion.

The experience within the Maag Group extends across virgin polymer production, compounding, extrusion, mechanical end-of-life recycling of plastic products, and highly engineered industrial pump applications.

Since its founding, the Maag Group has been committed to a joint approach embodied in the slogan "Building Better Solutions. Together". In fulfilling that promise, Maag today concentrates on melt pump and filtration technology, Automatik on strand pelletizing technology, and Gala on underwater pelletizer and dryer technology. The Group's pulverizers are manufactured at the Center of Excellence in Kent, Ohio, USA. The Ettlinger product range now also offers high-performance filters for post-consumer recycling as well as solution packages downstream of the extruder. "The Maag Group's global distribution network provides customers with the technology that best meets their commercial and technical needs", says Alaaddin Aydin, VP Maag Germany / Managing Director. "Multiple solution options are usually available depending on requirements. Maag's Centers of Excellence in Oberglatt, Switzerland, Grossostheim and Xanten in Germany, Eagle Rock, Virginia, and Kent, Ohio in the USA, as well as Maag Italy and the subsidiary in Shanghai, China, offer the engineering expertise to combine global know-how in custom systems." Maags portfolio extends from small machines and systems for throughputs up to 100 kg/h to machine and plant components capable of handling more than 100 t/h (centrifugal dryers, polymer pumps and custom solutions in industrial applications).

At K 2019, trade visitors to the Maag stand will be served by an international team from all over the world, presenting new and upgraded machinery in pump, filtration, pelletization and pulverizing technology.

K 2019: Hall 9, Booth A04

Maag Gruppe
www.maag.com

Efficiency and Quality in Plastic Recycling

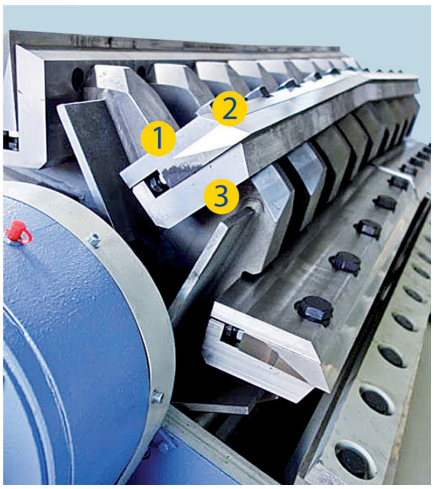
The machine and plant manufacturer from Meckesheim, Germany will be presenting tried and tested process solutions for the treatment of plastic waste in Düsseldorf in addition to its wide range of machines. "Size reducing, washing, separating and drying, and agglomeration are our main processes. Our customers value our wide range of machine options and the ability to obtain custom plant designs from a single source. With our focus on the circular economy, we are fully in line with the current spirit of the times and with one of the main topics of the K 2019 trade fair," says Werner Herbold, one of the two general managers.

Pre-shredding is an essential process step when the feed material is too bulky to process or when it has to be coarsely broken up before sorting, visual inspection, or testing. We use shredders, granulators, guillotines, and hammer mills for pre-crushing. For example, the New EWS 60/210 Shredder: The demand for high-performance shredders that can process entire bales is increasing, especially when used in washing lines. Herbold will present the EWS 60/210 for the first time at the K 2019 trade fair. This shredder was developed for dry operation as well as for wet operation and will impress you with its maintenance-friendly design in addition to its high capacity. The machine is designed to be very robust and durable. In many plants, the crusher is the first stage in the process. In this stage, foreign bodies are often impossible to avoid. For this reason, the company has taken some of the special features of this stage into account during its development that cannot be found in any other machines on the market. "We focus on making a perfect wear-protected rotor that, in addition to custom knife configurations, is equipped in particular with bolted armor plating and a special grinding chamber seal," stated Daniel Zeiler, Head of Sales.

The time-consuming hardfacing of rotors is therefore unnecessary. The two-sided belt drive is low-maintenance, and to safeguard against foreign bodies, there is a clutch that prevents damage to the machine when uncrushable feed material is encountered. The maintenance concept is tailored to ensure optimal accessibility based on ergonomic considerations.

The first machines are already successfully in use at customers in Europe, and the official product launch will take place at the K 2019 trade fair.

Modern film washing lines with hot washing



F series rotor with replaceable wear protection
1. Knife pressure strip
2. Rotor knife
3. Replaceable wear part

The new DWS two-shaft shredder: A new two-shaft shredder with the stator positioned in the middle will be presented as a new innovation at the fair. Due to the large surface area of the rotor, the machine has a very good feed performance and is suitable for materials that can only be fed in doses using conventional shredders such as big bags or high-volume containers.

Size reduction: Herbold granulators grind all plastic waste materials, regardless of whether it's generated from injection molding, blow molding, deep drawing, rotomolding, flat sheet or blown film extrusion, and calendering processes or waste generated during the manufacture of pipes, profiles, sheets, or other plastic products. For example, SB granulators with force feeding: The Herbold SB series granulators with force feeding have been used successfully worldwide for many years. "We have consciously redesigned this series of machines to enable complete horizontal charging," stated Karlheinz Herbold, who is responsible for the technology as the Executive Director. The feed material is not fed into the grinding chamber from the top through the force of gravity as in the case of standard granulators, but by even feeding the material into the grinding cham-

ber horizontally at the height of the rotor using screw conveyors. To accomplish this, the machine housing and feed system were completely redesigned to meet all requirements in terms of size-reduction performance as well as ease of access for maintenance purposes. When dealing with difficult applications, there are only a few providers on the market for size reduction technology who are able to offer an appropriate machine. The key to the solution is the rotor design of the SMS granulator.

The rotor, which is manufactured from a single forged piece, guarantees stability. Welding seams cannot break because they do not exist. The knives of this rotor cannot shift because they are bolted to a massive backstop. This design also makes cleaning easier since there are no "dead spots" in which grinding residue can deposit.

Washing, separating, and drying: In recent years, Herbold has invested a lot in the area of washing lines. In addition to their own technical department, the company has assembled a motivated team of process technicians and project engineers. They are therefore able now to offer the customers complete high-performance solutions. The success of a design that operates well is only based in part on the machines. The treatment of process water also plays a decisive role, especially for washing lines. Herbold also offers solutions covering this area as well now.

"We focus on providing our customers with comprehensive consulting," stated Achim Ebel, Division Manager for washing lines. "For this reason, we look closely at the planned input quantities and compositions, but at the same time keep an eye on the desired applications for the washed end products. We do not offer washing lines off the shelf – designing a solution that meets the particular requirements is a more intensive individual process performed together with the customer. We seek close contact to our customers, talk openly with them about our experiences, and allow the results to flow into development. For this reason, numerous developments are from practical applications and for practical applications, and our systems are always improving and becoming more efficient. Due to this agility, our customers always receive designs that are the state of the art in technology."

Herbold offers tried and tested solutions for the following applications in particular: Post-industrial and post-consumer films, Post-consumer hard plastics, PET bottles, PET trays, Big bags and other monofilaments, Tetra packs and pulp waste.

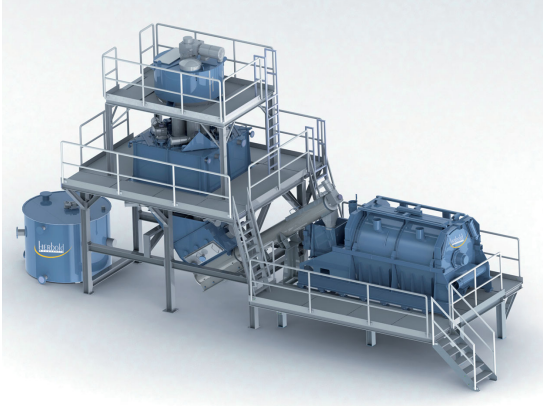
The following new developments from the washing line product area will be presented.

VWE 700 prewashing unit: An important component in a Herbold film washing line is the multistage prewashing unit, which captures coarse foreign bodies and reduces the mineral fraction, both to protect the subsequent machines. The remainder is also gently prewashed. The type of prewashing developed by Herbold Meckesheim has been a proven technology for a long time already that has convinced our customers.

The company has optimized this process step even further by increasing the throughput performance for films, optimizing the flow of water, and integrating a baffle plate thickener into the unit to clean the process water. Therefore contaminants are directly removed on the unit.

Hot washing: Increasing quality requirements in the plastic recycling industry also require optimized cleaning stages when building a plastics recycling plant. An important step in plastics recycling is the hot washing step, which has been a major step in the PET bottle recycling process. Herbold Meckesheim has advanced this step of the process for PO films and can offer optimized temperatures and appropriate dwell times, and can provide optimal cleaning results and end material quality through the use of suitable additives.

Mechanical drying: The dryers from Herbold Meckesheim already meet the highest quality requirements in terms of higher drying efficiency and performance, better accessibility, wear-protected parts, and automatic cleaning systems. Nowadays, we have also implemented the principles of multistage vertical drying in our horizontal dryers. This improves the product output rate and the lifespans of the wear parts.



Hot washing, now also for films

Furthermore, the thermal drying process was optimized.

Thermal drying: The two-stage thermal dryer is completely new. The flow through the coils was optimized and the heating temperature was improved in terms of energy consumption. This design is used especially in the recycling of increasingly thinner films. It is used to reach low residual moisture contents and ensure the material can be processed afterwards with as little energy as possible.

Label remover: Herbold has made numerous minor improvements, and therefore introduced a new and improved generation to the market. Based on a proven basic principle, the HERBOLD HLR label removers are now much more variable. This applies to the removal process as well as to the integrated separation using a classifier.

2019 16–23 October Düsseldorf Germany

Hall 09 Booth 9B 42

Herbold Meckesheim GmbH
www.herbold.com

“Brückner ONE”: New and Unique Digital Services for Film Production

Brückner Servtec introduces the new “Brückner ONE” digital solutions for film production. The entire Brückner ONE system is unique in the BO-industry: it is a one-stop solution providing a digital platform supporting all matters of the line and its operation. It brings field-proven service products to a new, digital level, and enhances them with additional features. This is the perfect base for transparent, faster and more efficient service in the future. It helps to maximize the availability of film stretching lines and to minimize maintenance and downtime costs.

Brückner ONE service products open the future for intelligent film production and grant customers comprehensive support for the digital transformation. They feature a Secured Remote Access to the line for highest data security. At the K2019, Brückner Servtec will present enhanced digital service solutions with modules for service requests, spare parts inquiries, communication and line documentation:

For quick and flexible troubleshooting, the Brückner ONE Support module offers an advanced support handling system for technical service requests regarding electrical, mechanical and process support. It is also available as an app for mobile devices. The customer submits a service request and tracks its status online. Communication between the Brückner service centers and the customer takes place within the Brückner ONE Support module. The customer benefits from easy access to the entire support organization at their fingertips. This increases the line’s performance, e.g. with higher availability.

The Brückner ONE Parts module allows a rapid and simple identification and inquiry of film stretching line spare parts. Necessary spare parts are easily determined in the online spare parts catalogue with its drawing, description or number, sent to the online basket and forwarded as an inquiry to Brückner. Once all line components are labelled with, e.g. QR codes, the customer can comfortably scan the parts for perfect and easy identification. Consequently, the requested spare part is much faster at the line and again increases uptime and production availability.

As well as the offered communication tools within the afore mentioned modules, Brückner ONE Com allows the most flexible interaction between the Brückner service team and the customer: it is a module for quick and easy communication using state-of-the-art tools such as chat, video and whiteboarding. The customer can also use the app version of the module for intuitive communication with mobile devices. It supports the usage of smart glasses or other video devices. Brückner ONE Com performs from the initial start-up of the line all along the lifecycle, builds up easily accessible case histories and is the one-for-all communication platform.

The Brückner ONE Docu provides a paperless and simple-to-use online technical line documentation. Thus, the customer has all relevant information at their fingertips when performing services along the production line. Furthermore, Brückner ONE Docu allows the addition of short video sequences and so to demonstrate service procedures right where it is needed.

The new Brückner ONE modules feature highest data transparency and security.The customer decides which data can be retrieved from whom and when, and remains the owner of the data at all times. The necessary hardware, including a firewall, is installed at the customer’s production line to facilitate the data transfers.

Brückner ONE products are available from Brückner Maschinenbau and Brückner Servtec. They cover the whole lifecycle of a film stretching line with profitable production and efficient service. The digital service products of Brückner ONE are part of Brückner Servtec’s well-known service packages. They help to utilize the full potential of the production operation with a transparent, more efficient and user-friendly service environment.

State-of-the-art film production

K 2019: Hall 3, Booth C90

Brückner Servtec GmbH
www.brueckner.com

Bernd Reifenhäuser, CEO and Ulrich Reifenhäuser, CSO

Sustainable Solutions for Plastics Production

Reduce, reuse, recycle, replace: Reifenhäuser Group will be focusing on these four principles at K 2019 when it presents innovative extrusion technologies for taking plastic as a material into a sustainable future. "We are facing up to our responsibility as part of the turnaround in how we use and deal with plastics," commented the Group's CSO, Ulrich Reifenhäuser, on the occasion of the K preview. Plastic is an ideal material for a lot of applications. But it can't always be recycled. "This is why we have tackled the key parameters, and have further developed our extrusion technologies to improve and develop plastic products that are perfect solutions for circular economy.

Sustainable, digital, and innovative: Reifenhäuser will be presenting new ways of producing plastic sustainably at K 2019. In doing so, the 'Extrusioneers' are far exceeding the standard portfolio for a machinery manufacturer. When developing its products, Reifenhäuser thinks about recyclability from the very outset, for example through efficient processes that go easy on resources and reduce the use of plastic, machines that produce without generating waste, and innovative solutions for recycling plastic waste. "Our comprehensive knowledge base within the Reifenhäuser Group enables us to provide a wide range of solutions that meet the requirements of sustainability and competitiveness. All of the technologies that we are showcasing at K 2019 are based on the four following principles: reduce, reuse, recycle, and replace," explained Ulrich Reifenhäuser. "As plastic was the material of the last century and retains its dominance in this century, we, as a part of the plastics industry, have a dominating task to perform, namely: to solve the problem of recyclability."

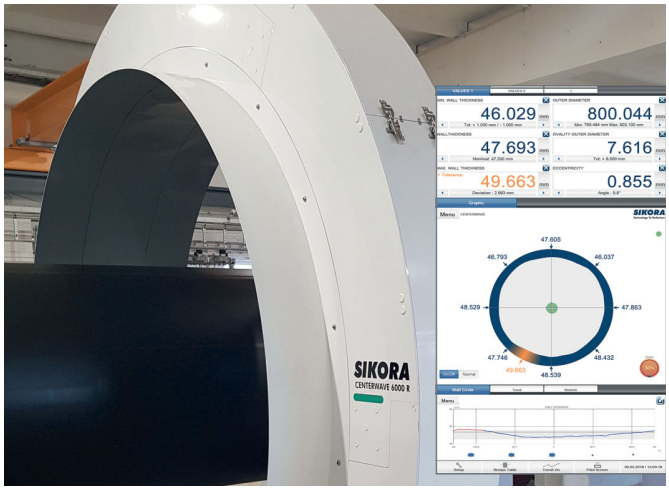
The family-run company has strategically focused its business on three areas: extrusion lines, components, and digital solutions. Structured as a powerful network of highly specialized business units, Reifenhäuser connects its expertise from all areas of the business and is therefore well placed to drive forward developments and innovations. As Ulrich Reifenhäuser remarked: "At K 2019, our customers will meet the 'Extrusioneers', a committed team dedicated to advancing technical issues and generating cutting-edge solutions for improving processes and increasing production efficiency."

Innovative highlights at the trade fair stand and the in-house fair: Reifenhäuser will be demonstrating their expertise live at the in-house fair in Troisdorf, Germany. The seven digitally controlled lines can be inspected on October 17, 21 and 22.

K 2019: Hall 17, Booth C22

Reifenhäuser Group
www.reifenhauser.com

Numerous Premieres at the Booth



The CENTERWAVE 6000 measures big pipes by millimeter wave technology

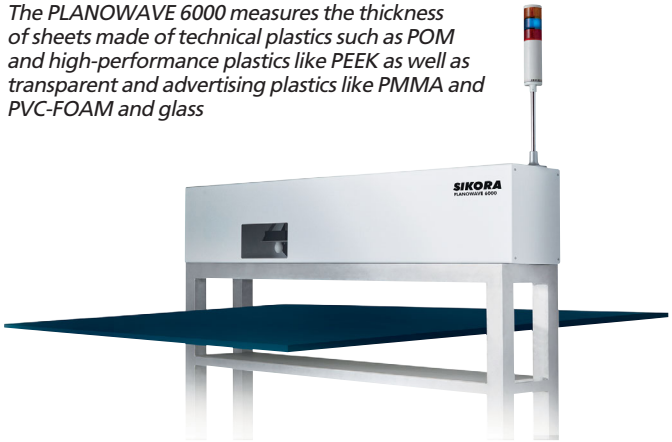
At K 2019, SIKORA presents a broad portfolio of innovative systems for quality control and process optimization for hose and tube, sheets as well as plastics industries. Visitors have the possibility to bring along plastic pellets for a live and on the spot inspection and analysis with the laboratory testing system PURITY CONCEPT V. In the "Innovation Corner", visitors are cordially invited to contribute their ideas regarding measuring technology for hose and tube as well as plastics applications. The appearance of the company from Bremen at K promises pure innovation.

World premiere of the CENTERWAVE 6000 for dimension measurement of hose and tubes of up to 1,600 mm diameter: With the world premiere of the CENTERWAVE 6000/1600, SIKORA presents a measuring system of a new dimension. The system was developed especially for quality control of plastic tubes and pipes during extrusion. Due to its design, the system offers a precise measurement of tubes with a diameter from 630 to 1,600 mm. The CENTERWAVE 6000 is based on innovative millimeter wave technology and measures continuously and completely over 360 degrees of the circumference of the pipe the wall thickness, the diameter, the ovality, the inner profile and the sagging. "The CENTERWAVE 6000 does not only impress because of its dimensions," says Christian Schalich, Head of Sales Business Unit Hose & Tube at SIKORA, "but foremost due to its benefits resulting from the technology for the extrusion process." Nominal dimensions are quickly reached, start-up scrap is avoided, the highest quality guaranteed and processes are optimally controlled. Furthermore, the system does not require any coupling media, it measures precisely and independently to external influences, such as temperature or plastics material, and does not require calibration. "Furthermore, the device determines automatically the exact refractive index", says Schalich. It defines the intensity and how fast radiation travels through the material and is therefore decisive for the measuring accuracy. Manual input of modifications of the production conditions is not required. "The operator benefits from a system that, integrated in the line, delivers reliable and reproducible measurement values directly after start-up", adds Schalich.

Thickness measurement in the sheet extrusion with the PLANOWAVE 6000: SIKORA's PLANOWAVE 6000 is a non-contact measuring system that is used for non-destructive thickness measurement during the extrusion of plastic sheets. The system measures sheets made from engineering plastics like POM and high-performance plastics like PEEK. The PLANOWAVE 6000 is also suitable for the measurement of transparent and synthetic plastics like PMMA and PVC-FOAM as well as for glass. The measuring method is based on millimeter wave technology for the highest measuring accuracy independent of material and temperature of the sheets. A calibration on the material is also not needed. The PLANOWAVE 6000 can be integrated directly into the production line at the hot or cold position. The visualization of the measuring values is done in real time at the monitor of the processor system ECO-CONTROL 6000. Besides a numerical display of the measuring values at any number of measuring points over the width of the sheet, the operator also receives a graphical display with extensive trend and statistical functions.

Premiere: Optical laboratory testing system PURITY CONCEPT V with color detection: With the K premiere of the PURITY CONCEPT V, SIKORA presents an optical laboratory testing system for plastic material. The system is an automated light table where plastic pellets, placed onto a sample tray, are being moved through the inspection area. Within seconds, the material is inspected by a color camera. A projector optically marks all contaminated pellets directly on the sample tray. By evaluating the images, contamination, like black specks, from

The PLANOWAVE 6000 measures the thickness of sheets made of technical plastics such as POM and high-performance plastics like PEEK as well as transparent and advertising plastics like PMMA and PVC-FOAM and glass



a size of 50 µm on the surface of transparent, diffuse and colored material are automatically detected, visualized and statistically evaluated. A clear allocation of the contamination and follow-up inspection are possible at any time. Another feature of the optical laboratory testing system is the automatic detection of color deviations of the pellets.

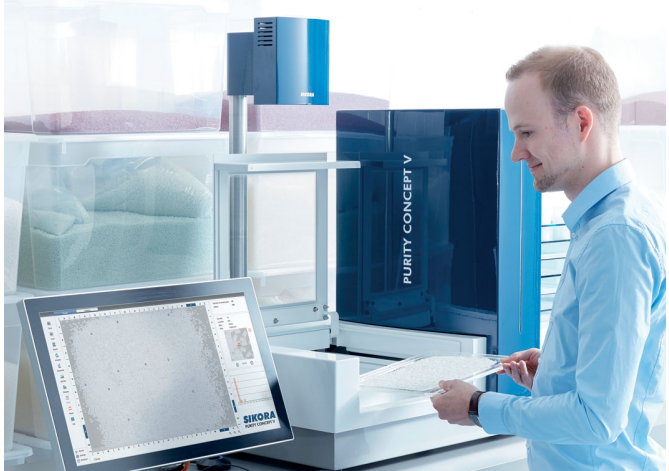
Live material tests with the PURITY CONCEPT V: "Making technology come alive" is the central subject of the SIKORA booth at K. Within a laboratory environment, live material tests are being offered with the PURITY CONCEPT V. Customers have already been invited before the start of the exhibition to send in pellet samples free of charge, which will be inspected and analysed with the PURITY CONCEPT V directly at the booth. Alternatively, visitors can bring a small number of pellets directly to the booth for inspection and evaluation. "Real pellet tests are the best way to proof that a system works and give information on the advantages that one can achieve", says Hilger Groß, Business Development und Area Sales Manager for the area plastics at SIKORA. "Our customers can personally convince themselves of the precision, speed and easy handling of the system," explains Groß.

Laboratory testing system PURITY CONCEPT X with X-ray technology for detection of metallic contamination: Furthermore, SIKORA presents the X-ray based laboratory device PURITY CONCEPT X for the inspection of metal inclusions in colored pellets that would be invisible with optical systems. The automated operating principal of the SIKORA PURITY CONCEPT X, that had already been presented in 2016, is nowadays the basis of the SIKORA laboratory testing systems. Due to the applied X-ray technology, it also provides the possibility to detect contamination on the surface as well as inside pellets. "The PURITY CONCEPT X is especially predestined for sample inspection of black and colored material. Amongst others, we can see application possibilities for semiconductor material which is used for the insulation of HV cables. Metallic contamination in pellets, for example, resulting from metal abrasion in the extruder, are reliably detected and comprehensively analysed", explains Hilger Groß.

Optical online inspection and sorting with the PURITY SCANNER ADVANCED – also as "Twin Pack" for a greater material throughput: A further highlight at the SIKORA booth is the PURITY SCANNER ADVANCED for optical online inspection and sorting of plastic material. The system combines X-ray technology with up to four black and white and/or color cameras. This combination ensures the detection of metallic contamination inside the pellet, color deviations as well as black specks on its surface. Contaminated pellets are detected and automatically sorted out. Thanks to powerful processor systems and an intelligent software, the PURITY SCANNER ADVANCED is a reliable device for quality assurance. The Professional Data Analysis Management (PDAM) provides a statistical evaluation of detected contamination, sorted by size and frequency, during production as well as an image gallery of the pellets that have been detected by the optical camera as well as the X-ray camera. "Quality requirements with regard to material purity are increasing. Online inspection and sorting is therefore gaining further significance. The PURITY SCANNER ADVANCED is in his class the most efficient sorting system available on the market", says Hilger Groß. For a high material throughput, the sorting system is available as a "Twin Pack" solution, which will be presented for the first time at K. The system is especially predestined for the optical sorting and applications, where the focus is on higher throughputs. The Twin Pack reaches throughputs of up to two tons per hour.

Interactive exchange in the "Innovation Corner" – customer ideas for a measurement technology of the future: Turning ideas into innovations and product developments that achieve the highest quality, process optimization and cost effectiveness in the hose and tube, sheets as well as plastics industries is SIKORA's claim. The company emphasises this at K with the "Innovation Corner". Customers are invited to personally discuss with SIKORA experts from Research and Development in a creative atmosphere their ideas, requests and technical requirements on the systems for quality control for the future of measuring technology.

The PURITY CONCEPT V is used for optical sample testing of plastic granulate. It detects among others black specks



The X-ray based PURITY CONCEPT X detects offline among others metallic contamination inside of the granulate

K 2019: Hall 10, Booth H21

SIKORA AG
www.sikora.net

The ASPI 200 is suitable for both suction blowing (3D) and conventional blow molding (2D)

3D-Blow molding machine and Multi-layer technology at the K

At this year's K, ST BlowMoulding addresses with two innovative technologies companies from the industrial packaging sector as well as the manufacturers of 3D suction blow molding parts and conventional technical blow molding parts. The company will be presenting the ECT 880 CoEx3 blow molding machines, which can produce 3-layer plastic drums up to 220 liters. "The machine, realized in cooperation with the companies AST Kunststoffverarbeitung GmbH and Willy Müller GmbH, is predestined for the production of L-ring barrels. "We are looking forward to present this as an exhibit in Düsseldorf," explains Jörn Schütte, Regional Sales Manager at ST BlowMoulding. Another highlight will be the new suction blow machine ASPI 200, which enables three-dimensional and two-dimensional shaping. The machine is designed for the processing of polyolefin and techno polymers. It combines a clear reduction in the proportion of mold parting and thus a mass reduction of the plastic used with savings in the plasticizing energy necessary for processing. As a special feature, ST BlowMoulding and Dr. Reinold Hagen Foundation in Bonn, a well-known training and service provider for German and international customers and institutions, offer a daily shuttle bus from the exhibition center to the Foundation, where the machine is installed, as part of their newly agreed long-term partnership. During the approximately two-hour stay in Bonn, the ASPI 200 can be visited in the Foundation's technical center. Registrations are possible under: sales@st-blowmoulding.com. In addition, a short-term registration at the booths of ST BlowMoulding and the Hagen Foundation (Hall 6, Booth D76) will be possible as well.

K 2019: Hall 14, Booth B04

ST BlowMoulding SA
www.st-blowmoulding.com

RAYEX® S, UMAC, PROFIELMASTER PMM 150, ODAC® TRIO.

Pipe, Tube and Hose always Measured Fast and Precisely

Plastic and Rubber extrusion of pipe, tube and hose require high-tech measurement technologies in order to optimize material consumption and increase production efficiency. With ZUMBACH's ultrasonic WALL-MASTER and RAYEX® x-ray systems, which measure wall thickness, eccentricity, diameter and ovality, the optimal technology can be selected for every application and specific requirement.

In addition of gaining control over the production process and product quality, full data acquisition and production transparency is supporting customers on their journey to Industry 4.0.

Complementary devices like ODAC® Laser diameter gauges, KW Lump-Neckdown detectors and Non-contact Length measurement systems are increasing the process control even more and providing full transparency of the entire production process, also for complex multi-layer products.

Super Fast and Accurate Measurement of Diameter and Ovality as well as Flaw Detection: Up to 9000 calibrated measurements per second with ZUMBACH's ODAC® Laser Diameter Gauge are propelling this unit to the next level. A permanent and precise diameter and ovality measurement in combination with flaw detection, all in one unit, makes the ODAC® the ultimate solution for tube and hose extrusion lines.

Tailored to the application, a selection of 1-, 2- or 3-axis ODAC® Laser Diameter Gauges are available. In combination with powerful USYS display and control systems, which offer statistics, process control, data archiving and more, the most suitable solution can be selected.

Full Profile and Shape Measurement with Modern Light Section Measurement Technology: Full cross-section measurement of plastic and rubber profiles directly in the production line.

The state of the art PROFILEMASTER systems from Zumbach represent an accurate and economical solution for measuring and monitoring dimensions or even the complete cross-section of profiles and pipes made out of plastic or rubber - throughout the entire manufacturing process.

All relevant dimensions such as diameter, width, height, angle and radii are permanently measured plus statistics and process information recorded for traceability reasons.

OPC UA – Easy and Transparent data management: ZUMBACH products offer OPC UA, a universal communication protocol used for industrial automation and the protocol of choice for Industry 4.0 integration and data exchange with relevant systems and process control software solutions.

K 2019: Hall10, Booth E41

ZUMBACH Electronic AG
www.zumbach.com

New X-Ray Pellet Scanner

OCS will be presenting its entire product portfolio at the K Trade Fair in Düsseldorf. As a solution provider for the polymer and petrochemical industries, OCS celebrates the Trade Fair premiere of the new X-Ray Pellet Scanner XP7, which impresses with its X-Ray technology and new design.
The participants of the K-Show can inform themselves about the entire product range, starting with QM measuring systems, system integration up to turnkey laboratories at the OCS booth. The new X-Ray Pellet Scanner XP7 combines the high-quality mechanical engineering with state-of-the-art X-Ray technology in an appealing design. It was specially designed for the special requirements of polymer plants and the processing industry.

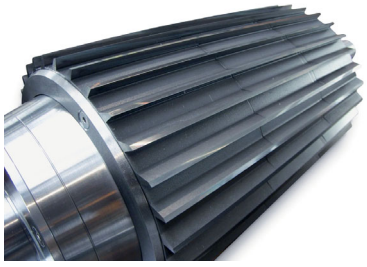
The New X-Ray Pellet Scanner XP7
The polymer industry strives for 100 % pure raw material. Metal contaminants in pellets and films are a serious problem – especially in the manufacture of high-voltage cables or for medical applications. The XP7 opens up new ways to detect metal defects, resulting in improved polymer and product quality. The innovative X-Ray technology in the XP7's measurement system continuously records pellet stream images. Due to the different absorption of the X-rays in the metal and in the polymer, the embedded metal particles can be captured with a resolution of 50 µm. Contaminated granulates are sorted out by a multi-track air nozzle discharge system. The new XP7 has a high-speed throughput of up to 600 kg/h, depending on pellet properties. In terms of safety, the XP7 meets all safety requirements according to DIN 54113 and can be used as a full protective device.

On-Line Laboratory Solutions
Trend-setting technologies can also be seen in other ways at the OCS booth. With VR glasses, visitors can experience tailor-made laboratory solutions virtually on site. Directly inserted in production plants, customer-specific measuring systems take quality control and assurance to a new level and to optimise the production process.
For any further information:

OCS Optical Control Systems GmbH
www.ocsgmbh.com

K 2019: Hall 10, Booth E21

New Innovations require New Technologies



Which other fair is better for presenting new technologies than the "K" in Düsseldorf. Where the latest innovations are presented, and where new technologies meet users. This is where Schoenenberger feels at home. The premium manufacturer for cutting rotors and recycling knives shows as a family-owned company in the 2nd generation with its booth H41 in Hall 10.

More than 50 years of experience in the production of cutting tools characterize the Schoenenberger PREMIUM products. These products a significant contribution to the fact that the processing and finishing of complex plastic alloys can be implemented and economically produced.

The high-quality materials from which the cutting tools are made with precision convince through quality, long lifetime and an excellent price performance ratio paired with a competent service.

Displayed at the "K" is the so called "KRONOS" – a tungsten carbide-tipped, cutting rotor in a very robust design, which is used for highly filled and very abrasive polymers.

The technology is based on the clamping principle in which the carbide blades (knives) are connected to the rotor body in a form-fitting manner and without additional fastening tools, such as screws.

The rotor body is covered with an extremely wear-resistant coating.

The recycling knives, which are also equipped with tungsten carbide and available for all common cutting mills, convince by their extraordinary lifetime compared to a steel knife. This design extended the production times significantly and reduces set-up times.

In addition there are further cutting rotors, cutting blades and feed rollers for the strand granulators are shown.

K 2019: Hall 10, Booth E21

H. Schönenberger GmbH
www.schoenenberger-messer.de

New Rotary Filtration System SFneos, Second Generation Multiple Screw Extruder MRS and More

Gneuss Filtration Technology will exhibit several different models of their patented Rotary Filtration Systems. These continuous filtration systems are characterized by a filter disk on which the screen cavities are located in a ring pattern. Screens can be changed on the part of the filter disk that is not active in the melt channel, while the production process continues to run without any interruptions or disturbances.

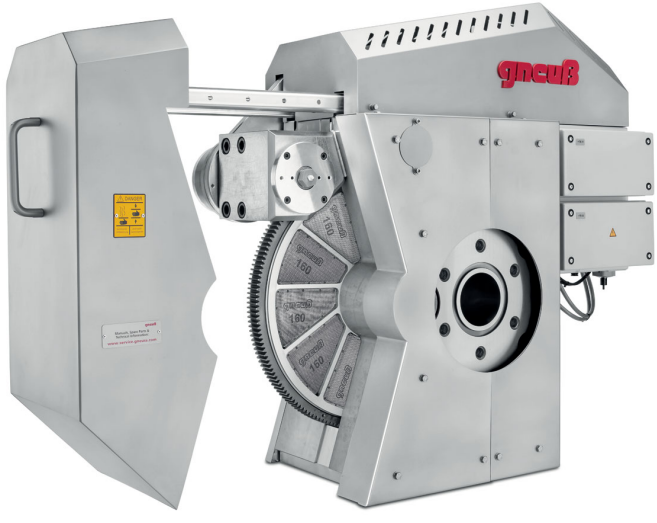
The new model **SFneos** was developed to combine the charactertistics of several older models into one simple and cost-efiicient solution, offering the following advantages:

- Constant pressure guaranteed – even during screen changes
- Suitable for most types of polymers and viscosities
- Compact design thanks to an enlarged active screen area (up to 2370 cm^2)
- Simple and safe handling and operation with several screens accessible for screen changes
- Very cost effective thanks to its improved design

The SFneos is the ideal filtration system for applications that benefit from a continuous, pressure and process constant screen changer, but that don't require back-flushing. The SFneos 90 on display has an active screen area of 260 cm^2 .

Gneuss' top model, the **RSFgenius**, operates with an integrated self cleaning system for very demanding applications and highest quality requirements. Screens can be automatically re-used up to 400 times and filtration finenesses below 10 microns/1200 mesh are available. There will be different sizes on display, including an RSFgenius 330, which will be the biggest filter on the Gneuss booth this year. It offers an active filtration area of 2150 cm^2 and will be shipped to an end customer in Southern Europe after the show.

Patented Rotary Filtration System SFneos



Last but by no means least, Gneuss will exhibit two **KF** screen changers, a KF 75 with an active screen area of 44 cm2 and a KF 110 with an active screen area of 95 cm^2 .

The KF 110 will be installed in a blown film line at Brazilian machinery manufacturer Carnevalli's booth (hall 16, booth C70). The KF series of continuous filtration systems is designed specifically for applications with frequent material type, grade or color changes as well as for high pressure applications like blown film.

Gneuss also offers a new semi-continuous model, the **CSFprimus**. This model is used as a pre-filer, safety filter or in applications with little contamination and is characterized by a very large active screen area for its small footprint.

Gneuss Extrusion Technology will show a complete Gneuss Processing Unit (GPU) including a second generation **Multi Rotation System** MRS110 extruder, a fully automatic melt filtration system RSFgenius 90 and a new style **online viscometer VIS**, for the processing of 600 kg/h of undried and uncrystallized polyester (PET).

The Gneuss Processing Unit (GPU) has been available for more than a decade now and has proven itself for the reprocessing of highly contaminated materials without pre-drying, especially bulky PET waste such as post-consumer bottle flakes and industrial waste from fiber and film manufacture as well as polystyrene, nylon and other hydrophil polymers. A Gneuss Processing Unit consists of a Gneuss MRS extruder with its unmatched devolatilization and decontamination performance in combination with a highly-efficient Gneuss Rotary Filtration System and an online viscometer VIS for intelligent dynamic viscosity control.

The MRS extruder itself has been improved considerably over the last decade and at the K show the **second generation design** will be on display. The enhanced drive design is more robust to handle even more demanding recycling environments. Thanks to several changes in the MRS drum and screw design the already unmatched IV retention has been further improved, while continuing to forgo pre-drying. The MRS extruder permits the processing of PET without pre-drying by using a simple water ring vacuum system to process the material directly to high quality end products such as packaging sheet, strapping tape or filaments. This is achieved by means of its unique and patented processing section. Based on a conventional single screw extruder, the Multi Rotation Section is a

drum containing eight satellite single screws, driven by a ring gear and pinion transmission. The "barrels" cut into the drum are approximately 30 % open and provide optimum exposure of the melt.

Thanks to this design, the devolatilizing performance is approx. 50 times greater than that of a conventional vented single screw extruder – and this at a vacuum of only 25 to 40 mbar. While other dryerless technologies are promoting at least partial pre-drying in the meantime, the MRS extruder can process R-PET with up to 1 % moisture content. By avoiding the need for a deep vacuum system and pre-drying, the MRS is an economically efficient alternative to conventional technologies. Further arguments in its favor besides energy savings are the simple and rugged design, small footprint, its ease of operation and low maintenance, processing flexibility and last but not least its excellent melt quality and homogeneity. A Letter of Non Objection (LNO) from the FDA, EFSA conformity and several local approvals in Latin America confirm the decontamination efficiency of this technology.

One area this has been especially successful is in PET sheet extrusion. The line at the K will be delivered to a customer in Brazil after the show to process R-PET into a packaging sheet.

In parallel, with Gneuss' headquarters only about 200 km from the show, a complete PET sheet extrusion line with a Gneuss GPU will be running in Gneuss' technical center open to visitors.

Additionally, the previously exhibited polyreactor **JUMP** will be operating in Gneuss' technical center for an online demonstration. The JUMP can lift the IV value of a PET melt up to 0,95 dl/g. The reactor is installed directly downstream of a Gneuss Processing Unit and the polymer passes over several slow turning elements which create a polymer film, the surface of which is constantly renewed. The reactor vessel is kept under vacuum, through which volatile substances are reliably removed. By regulating the residence time in the reactor, the vacuum, the fill level and the speed of rotation of the agitating devices, the polycondensation reaction can be altered to achieve the required product properties. The JUMP is a compact, quick and efficient alternative to conventional SSP (solid state) systems and enables direct reintroduction of the polymer into the production process without the need to remelt the PET.

A number of Gneuss Processing Units in one of Gneuss production halls

Gneuss IO-Link pressure transducer

The days of analogue measurement value transmission in polymer technology are numbered. With the requirements for flexibility, availability and safety of the machines and systems becoming more and more stringent, there is a need for new, digital solutions.

IO-Link is a worldwide standardised technology for digital linking of sensors and actuators. Communication takes place over a point-to-point connection and is thus not a field bus. IO-Link is manufacturer-independent and is becoming more and more widespread in industrial automation engineering. Most renowned controller manufacturers offer IO-Link masters, which are either directly fitted as an assembly in the controller or installed in the field and connected via a bus system.

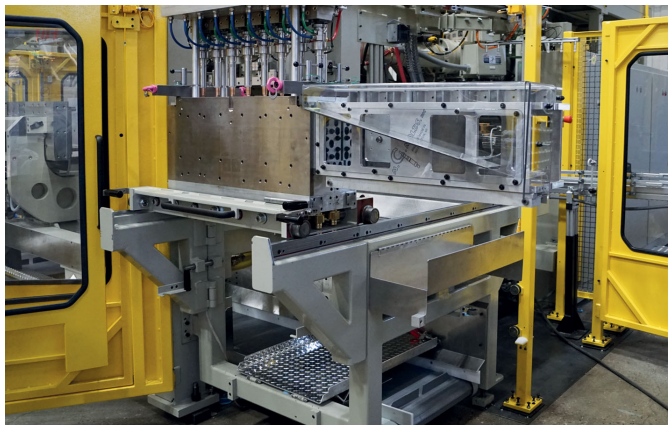
The traditional melt pressure sensor with an analogue output knows significantly more than just the process pressure. The signal preparation on its inside has been digitised long ago, and as a result, it is in a position to provide valuable information that simplifies maintenance, increases safety and improves availability. Preventive maintenance and condition monitoring can minimise downtimes and optimise process safety. The melt pressure sensor could make a substantial contribution in this regard, if it could divulge its knowledge. But unfortunately, its communications facilities are limited to one direction and one measurement value.

The Gneuss IO-Link sensor offers the possibility to access all those information. Its proven sensor technology, in combination with intelligent, digital communication not only offers monitoring of the electronics temperature, but also records the operating hours in different load ranges. Thus, the user can make out, during ongoing operation, when the electronics head is subject to high heat radiation due to its installation location, or the sensor is continuously working at the upper limit of its measurement range.

In addition, Gneuss' Measurement Technology division will present its complete line of pressure transducers and transmitters, temperature sensors and accessories.

K 2019: Hall 9, Booth A38

Gneuss Kunststofftechnik GmbH
gneuss.com



Only 15 Minutes for a Mould Change with magnetic quick mould change system

Innovative and Future-oriented Machine Design

Whoever wants to be informed about industry trends, innovations and hot topics at K 2019 won't pass Bekum by. Bekum is heralding the future of blow moulding with the "Concept 808" machine study.

New Design and Improved Functionality:
At first glance, all observers will note the modern design of the machine's cladding. The design is eye-catching with its aesthetics, modern colors and shape and is characterized by still more functionality and improved ergonomics. Among the practical extras are, for example, the large-scale safety gates and integrated variable color LED signal lights that indicate operating status and simplify required maintenance.

Only 15 Minutes for a Mould Change:
One of the excellent features is the optional magnetic quick mould change system. With this, mould changeover is accomplished in 15 minutes per clamping unit – without tools or a special mould cart. Particularly Noteworthy is the simple and easy to operate magnetic blow pin quick change system. Moulds and blow pins are always changed from the front side of the machine.

High-output and Energy-efficient Extrusion Package:
A well-tuned high-output extrusion system essentially ensures product quality. The new generation of high-output extruders of the future packaging machine line distinguish themselves through processability, high maximum throughput, and excellent melt homogeneity. Bekum places particular importance on energy efficiency when developing extruders. Extruders are the main consumers of energy in any extrusion blow moulding machine. Bekum extruders use energy efficient motors and drives, which are important to achieve high energy efficiency. (Class 10 as called out in EUROMAP 46.1).
Bekum extrusion heads in either mono- or multi-layer technology are designed to achieve precise flow guidance, short color change times and uniform wall thickness throughout the article for all extrusion blow moldable plastics.

Bekum Control 8.0 – New Operator Panel with New Visualization:
The modern machine design of the future machine series will be enhanced via a portrait-oriented, generously dimensioned 24 inch operator panel and a new, intuitive touchscreen called Bekum Control 8.0. Visualization of throughput values and energy consumption on the multi-touch operation panel is provided as well as the display of power, water, air consumption, and the pressures of all supplies process utilities.
Remote on-line service, as emphasized by Industry 4.0, has been available from Bekum for many years. With permission of the owner, Bekum service technicians can log in to machine controls and carry out function tests and perform software updates.

Circular Economy – Regrind Processing on the Show Machine:
Bekum is engaged in the circular economy and, with its Bekum 3-layer heads, offers a solution for costs-effective recycling of single-origin PE of PP plastic scrap. Thanks to Bekum's tri-extrusion technology, recycled material (PCR) can be embedded between layers of virgin plastic materials. The use of PCR in the middle layer can also permit a cost-reduction in the manufacture of containers. Bekum is presenting the Concept 808 show machine with a multi-cavity three-layer application.

K 2019: Hall 14, Booth C03

BEKUM Maschinenfabriken GmbH
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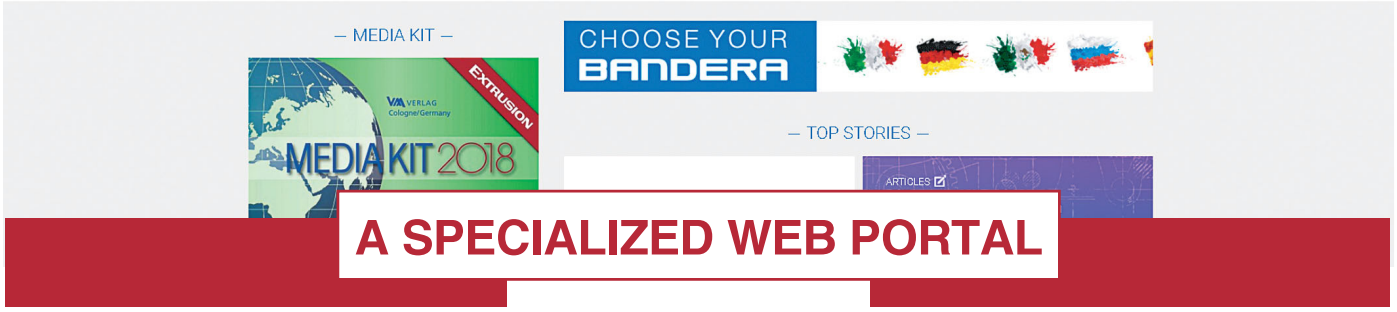

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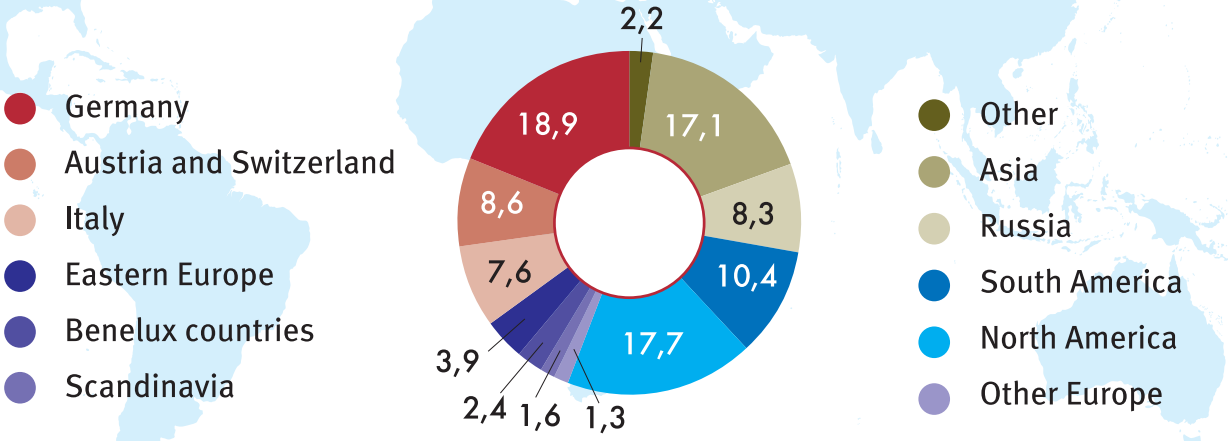

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