Circular Economy
See it – feel it – join it

VDMA members @ K 2019
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Please use the bookmarks of the PDF document to go directly to the company profiles.
Environmental protection by recycled plastics

If Procyclen is used instead of primary plastic made from crude oil, 891.6 kg of greenhouse gases are saved per tonne – a 54 per cent reduction in climate-damaging emissions.

*confirmed by a current study by the Fraunhofer Institute UMSICHT as assigned by Interseroh based on data of 2018.

Full-system plastics recycling – Circular economy: We successfully sort packaging materials from the yellow bag

“For Alba, circular economy and sustainability are not buzzwords but part of our daily business. The focus of our recycling activities is market-oriented production and the quality standards of our customers.”

Ingo Blase,
ALBA Recycling GmbH, Operations Manager Walldüren plant

ALBA Recycling GmbH operates five of Germany’s largest sorting plants for lightweight packaging. At these facilities we sort around 33 per cent of this packaging waste collected in Germany.

Our experts for environmental and process engineering have developed special highly automated processes to sort packaging material from the yellow bag into ten recyclable fractions: paper, metals and various types of plastics. This ensures that we can recover more and more recyclable materials from waste and trade them.

K 2019:
OA Hall 16 | booth 16.1 (outdoor area)

Further Information:
ALBA Recycling GmbH · www.alba.info
The PP containers are produced on a hybrid ALL-ROUNDER 1020 H in Packaging version. Eight containers are produced in a cycle time of around four seconds, using 70 percent new PP material and 30 percent recycled PP. The latter is provided by EREMA. The production of these thin-walled containers demonstrates that there is no loss of quality resulting from the addition of the recycled material. This application is an example of a closed circular economy and proves the following: if it is possible to collect plastics in a meaningful and safe way, they can be returned to the value chain. At the trade fair, EREMA recycles the containers as an example showing how PCR material (post-consumer recyclate) is made from packaging.

With the production of a handle for the safety door of ALLROUNDER injection moulding machines, ARBURG showcases the processing of such PCR material. The PCR available on the market is processed by an electric two-component ALLROUNDER 630 A using the ProFoam foaming process, the second material is TPE. Both foamed halves of the handle are mounted in the mould and then partially overmoulded with the soft component. The application illustrates a way to bring PCR material from household waste into the cycle again to produce high-quality, durable functional parts on a standard injection moulding machine.

With "arburgGREENworld", ARBURG combines all aspects and activities relating to a circular economy and the conservation of resources, which is deeply rooted in the corporate philosophy.

Further Information:
ARBURG GmbH + Co KG · www.arburg.com
AZO. Your solution provider for challenging raw materials handling

For 70 years AZO in Osterburken has been the expert for the automation of raw materials in the plastic, chemical, food, and pharmaceutical industry. We provide our customers with support for plant and control engineering and offer economical, sustainable and energy-efficient automation concepts.

AZO has operated for many years in the plastic industry. Main target groups are compounding, PVC Dryblend, PVC paste, additive/masterbach and recycling. Especially in the field of recycling, we observe a stable investment growth in the last years. Compared to the past, in these projects more complex and sophisticated equipment is used to ensure best possible recycling processes for waste materials. If in the past rather low-quality, simple final products were manufactured from recycled materials, today the aim is to achieve almost the quality of virgin material from recyclates. For AZO, this is a business field with good growth prospects.

Together with our customers we develop solutions for material handling in the production of bio-based and degradable materials, in the recycling of post-consumer and industrial waste as well as in the upcycling of recycle materials. The challenges in these areas are often the handling of difficult materials that can be abrasive, cohesive or extremely light as well as having variable material characteristics.

K 2019:
Hall 9 | booth C42

Further Information:
AZO GmbH + Co. KG · www.azo.com
STARextruder covers broad range of PET processing requirements

The ideal processing extruder for PET doesn’t require materials to be predried, 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 the STARextruder to fulfill these requirements and is one of its premier exhibits at the K-Show. In the processing of new materials— and recycled materials in particular—the extruder shines in terms of efficiency, devolatilization performance, and end-product quality.

Since the beginning of the year, the STARextruder has formed one of the key components of the 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 the battenfeld-cincinnati machine engineering expertise. The plant provides the ideal setting for further developments and features a high-speed extruder and a Multi-Touch roll stack alongside the STARextruder.

The three modern units clearly demonstrate that battenfeld-cincinnati is committed to developing and improving its extrusion lines and is constantly adapting to changing requirements in the industry.

K 2019:
Hall 16 | booth B19

Further Information:
battenfeld-cincinnati Germany GmbH
www.battenfeld-cincinnati.com
Anyone wanting to find out about industry trends, innovations and hot topics in the field of extrusion blow molding at K 2019 should visit the Bekum booth.

Bekum is committed to the circular economy and offers a solution for the cost-effective recycling of non-mixed PE or PP plastic scraps. With its own designed and manufactured three-layer spiral mandrel extrusion heads, post-consumer recycled material (PCR) can be embedded between layers of virgin plastic. The proven three-layer Tri-extrusion technology of Bekum reduces the proportion of virgin material up to 70%. The bottle quality remains outstanding due to precise layer uniformity and circumferential bottle thickness distribution. In the daily show presentations, Bekum will demonstrate this three-layer production with multiple cavities on the innovative Concept 808 blow moulding machine with the latest industry design. Focus on the future and pay us a visit in Hall 14 booth C03.
The only reusable, recyclable, home compostable coffee cup ever produced. Use of bio-materials – Integrated Sustainable design.

Wishing to give takeaway drinks an environment-friendly turn, fm Kunststofftechnik GmbH designed and produces now exclusive sustainable “Coffee to go” cups. This new type of cup, totally unique on the market, 100% bio-based, is entirely compostable. The cup is made of S²PC Biomaterial from partner company Golden Compound GmbH. It is mixed with sunflower grain shells. These shells usually belong to waste products in the production of cooking oil. They are used here as valuable resources, which not only contributes to lower carbon footprint of the part, but also improves material properties. Cycle times for instance are reduced (15% shorter in this case compared to the use of conventional material) and shrink marks are avoided. Although fully compostable in the earth, the cup also withstands up to 500 runs in the dishwasher!

Sandwich technology

The Coffee-to-go cups are produced on a twin-shot Billion machine implementing the Sandwich technology. This process allows to have on the same part, a core material different from the skin material. The combination of two different materials offers numerous advantages: it may be material savings by using recycled resins or bio-degradable compounds, thermic isolation, weight reductions etc. In this case, the sunflower grain shells are integrated in the core material which amounts to 50% of the total part. The compound used has also isolating properties, allowing the drink to stay warm longer and preventing user’s fingers to get burned. Sandwich technology is suitable for the production of food/drink containers, as it enables to encapsulate non alimentary material (recycled or bio), which is thus not in contact with the content to be eaten or drunk.

Sandwich technology is an alternative applicable to many types of parts and sectors. Circular economy is now the trigger and it is necessary to go on developing and offer production solutions using recycled and bio materials. Machine intelligence also guarantees process stability by regulating material viscosity variations, reducing thereby the production of waste.

K 2019:
Hall 15 | booth B24

Further Information:
Billion SAS · fm Kunststofftechnik GmbH
www.billion.fr · www.fm-kunststofftechnik.de
Biofibre® presents
new 90% biobased material Biofibre® Lenta
In use as a shoe tree!

Our client nico NORBERT SCHMID GMBH + CO. KG reached out to us to replace a part of their product range by bioplastic based material solutions. In this particular case, a shoe tree. Our client would like to gain access to new market potentials, more specifically to reach environmentally conscious target group.

There are some challenging aspects for the development of a suitable substitute material in order to fully fulfill the required flexibility, strength, durability in that special footwear environment. The resulting material is over 90% biobased recyclable, and colorable.

Biofibre® Lenta is for example suitable to be employed for the following applications: Technical components, furnitures, etc. In other words: a bioplastic substitute for ABS (Acrylnitril-Butadiene-Styrene-Copolymer).

Sustainability is among one of our most important concerns and we, nico NORBERT SCHMID GMBH + CO. KG, are seeking ways to reduce the environmental impact of our activity. A own design and the production of injection molds are major parts in our value chain, as it brings creativity and a certain degree of freedom in the production of shoe trees. Moreover, the production is ensured to comply with the strict defined limits in Germany, to avoid the use of chlorofluorocarbons (CFC) and other pollutants.

In order to offer our customers alternatives, we are expanding our range of sustainable, biologically safe products in the shoe tree field. We succeeded to develop a shoe tree that, in addition to these special properties, is particularly light and suitable for leather as for textile materials. The shoe trees keep fashionable shoes in shape even in small luggage and provide pumps, sneakers or business shoes for the next appointment wrinkle-free and shapely very quickly. They are available with spiral springs in different men’s and women’s shapes and suitable for all sizes.

Further information is available at www.nico-schuhspanner.de

K 2019:
Hall 14 | booth A68

Further Information:
Biofibre GmbH
www.biofibre.de
When using recycled material or returned scrap, it is not only the good will or the economic necessity to do so that counts. Rather, one needs a suitable technique to prepare and process the material.

Bolder automation offers the corresponding automation for extrusion lines. All phases from material conveying, mixture dosing, extruder throughput control to line management have been implemented. The advantage of this concept is the continuous transparency of all process units. This does not only mean the controlling action, but also the availability of all measured values and their significance for optimized control strategies. Systems equipped in this way can not only be operated optimally, but also offer comprehensive diagnostics for early detection of weak points.

It not only enables the reuse of material, but also minimizes rejects of new material through improved process control.

Automation is based on software modules that solve a task without being dependent on mechanical assemblies such as conveyors, feeders or weigh hoppers. By configuration and adaptation such a system can be adapted to the properties of different plant technology. Successful installations at customers prove this.
Recently, the Automatic Belt Melt Filter ABMF 1600 has successfully been offered by BritAS. “The ABMF 1600 ensures more throughput and improved filtration. With the ABMF 1600, we have increased the filter surface by 50% and can thus meet the requirements of our customers”, says Thomas Lehner, CSO / Managing Director BritAS. “It is perfectly suitable for agricultural films, printed films, but also for high paper contaminations.”

**ABMF 1600 – increased output**

An increased filter surface does not only result in an increased total output but also supports customers e. g. at considerably increasing degrees of contamination of their plastic waste caused for example by paper contamination.

**Established and proven technology – optimized inner workings**

The ABMF series has proven itself for decades. For a further improved melt flow, the inner workings of the ABMF 1600 have been optimized. „In addition, the increased motor capacity of the belt take-off and the belt magazine are also new."

The ABMF 1600 is available in the combinations ABMF-1600-12/15/19/25.

**BritAS Recycling-Anlagen GmbH**

BritAS with headquarters in the German city of Hanau develops and manufactures on the one hand lines for the filtration of plastic waste and on the other hand machines for quality control of plastic products. By permanent measurement, the latter guarantee the quality of the pellets during production.

**K 2019:**

**Hall 9 | booth B28**
“The future belongs to plastic when it is used and reused sustainably.
As part of a circular economy plastics’ highly flexible and useful properties
can be combined with the sustainable demands of a modern society.”

Dr. Axel von Wiedersperg, CEO Brückner Group GmbH, Siegsdorf, Germany

Innovations for a Circular Economy
Sustainable films and packaging solutions

The Brückner Group companies’ R&D activities are focused on the three R’s: Reduce, Reuse, Recyle. At K they present latest machine developments in line with a circular economy.

Polyolefin shrink films are the trend for a better sortability and recyclability of bottles and sleeve labels. Brückner Maschinenbau has developed special low density sleeves and dedicated stretching line concepts.

Kiefel’s design for recycling programmes systematically bundles the company’s expertise to rethinking the customers’ products. From material and product composition, up to the optimal requirements for their tools and thermo-forming processes.

PackSys Global has developed a mono-material tube that ensures optimal recyclability as well as bottle caps connected to the bottle – ensuring that the caps are not lost in the environment.
BST eltromat is a leading supplier of quality assurance systems for web-processing industries and provides solutions for web guiding, web monitoring, 100% inspection, color measurement, color management, register control and automation. BST eltromat has decades of practical experience in these areas. Over 10,000 customers around the world in the printing and paper, foil, rubber and tire industries use its solutions.

Customers benefit from BST eltromat’s high standard of quality assurance, smooth production processes, and first-class service around the world. The company’s product portfolio ranges from individual components and plug-and-play systems for new machines and retrofits, to complete automation and workflow solutions.

At K Show, BST eltromat will be presenting a comprehensive range of innovative and time-proven solutions for quality assurance of products made of plastic and rubber regardless of whether virgin or recycled material is used in production.

For BST eltromat and many of their customers, the quality of the products is not the only thing that matters: they also take sustainable treatment of the world’s resources very seriously. For example, the systems from BST eltromat offer manufacturers of packaging foils all the options they need to secure perfect production quality and thus to ensure optimum functionality of their products while minimizing both the consumption of raw materials and the waste rate.

K 2019:
Hall 4 | booth C34
Bureo’s mission is to protect our ocean by scaling a radically transparent model to eliminate fishing net pollution; utilizing disruptive innovation to catalyze change and create tangible positive impacts.

Discarded fishing nets make up an estimated 10% of plastic pollution in the ocean, and have been identified to be four times more harmful than all the other forms of plastics pollution. 640,000 tonnes of fishing nets enter the ocean each year.

In 2013 Bureo founded Chile’s first fishing net collection and recycling program, providing fishermen access to fishnet waste disposal along the coast of Chile as a means to prevent ocean pollution. Working together with fisheries and local communities, Bureo provides an incentivized program to collect, clean, sort and recycle fishing nets into premium products. Bureo’s recycling program is a tangible solution to prevent this harmful material from entering our oceans, creates employment opportunities for local workers and funding for community programs.

Bureo is working with industry leading companies to incorporate NetPlus™ materials into their supply chains. Collaborating with organizations that are willing to go beyond industry standards, Bureo is working closely with these partners to expand and replicate responsible material solutions, creating a net positive impact on our ocean environment.

**K 2019:**
OA Hall 16 | booth 16.1 (outdoor area)
COPERION Compounding Technology.
Efficient. Sustainable. Responsible.

Coperion technology plays a key role in the global manufacture of high-quality compounds. We have acquired an excellent reputation in markets where such compounds are upcycled from recycled plastics. Today, ambitious recycling companies worldwide are using Coperion’s technology, motivated by the uniformly high quality of the finished product and the high achievable throughput rates.

Extruders and Compounding Machines
Coperion’s ZSK and STS twin screw extruders are the heart of the recycling and upcycling process. With their superior processing properties and high devolatilization performance they are suitable for the processing of new materials and of all types of ground products or recyclates as well as mixing of these materials.

Feeding Equipment
Coperion K-Tron feeders are ideal for accurate feeding of raw ingredients. The feeders ensure a continuous, uniform infeed with a very tight short-term accuracy and repeatability.

Material Handling Equipment
Our material handling systems are designed for the challenges of conveying recycled materials. Our designs can handle a variety of products from flake and powder materials to your finished pelletized products.

Plants and Systems
Our comprehensive engineering expertise enables us to design compounding lines for recycled products that ensure smooth interaction of all process steps – from material handling to feeding, extrusion up to pellet treatment and finished product handling.

K 2019:
Hall 14 | booth B19

Fulfilling highest quality standards together with maximum efficiency with regard to energy and other resources play an important role to us and our technology. For us, this is the key to sustainable compounding, extrusion, feeding, conveying and bulk material handling.

Further Information:
Coperion GmbH · www.coperion.com
Successful loop of window PVC by recycling of post-consumer PVC windows; Up to 88 % CO₂ reduction

Sustainability and environmental pressures are encouraging recycling across all areas of our day-to-day lives. At Dekura, our focus is on the long term and sustainability is one of our core values.

Together we close the PVC loop with the recycling of post-consumer windows. We recreate material to flow back into the life cycle of a new PVC window system.

The use of recycled PVC enables a CO₂ savings of up to 88% in comparison with using new PVC. The use of recyclates in window profile extrusion reduces the Rehau CO₂ emissions by 90,000 tons per annum. The logo Eco Plus stands for the sustainable use of recyclates in the manufacture of PVC window systems.

K 2019:
OA Hall 16 | booth 16.1 (outdoor area)
Cities and towns are very aware of their responsibility to protect the environment and are implementing more and more sustainability initiatives in a wide range of areas. When procuring new waste containers for domestic waste, the key requirement of a European metropolis was to use recycled material from the old containers to make the new ones. SSI SCHAEFER, headquartered in Neunkirchen, Germany, was awarded the contract for the project.

SSI SCHAEFER and ENGEL: European metropolis receives waste containers made of recycled material

The project started in August 2017. SSI SCHAEFER collected 13,000 used containers made of polyethylene, which it then cleaned, processed into regrind and recycled. New containers were produced on large-scale ENGEL duo injection moulding machines made by Austrian injection moulding machine manufacturer and systems solutions provider ENGEL. This involved processing 232 tonnes of recycled material. By the time the project concluded in March 2018, SSI SCHAEFER had delivered 25,000 new waste containers.

The project caught on. SSI SCHAEFER is now delivering more and more waste containers using high recycled content. More than 80 percent recycled material is already possible. And SSI SCHAEFER is working together with its machine manufacturing partner ENGEL to push that share even higher. A crucial part of this is ENGEL’s experience in application technology and comprehensive plasticising expertise. Each of the ENGEL duo machines was designed specifically for recycled material processing.

Just as SSI SCHAEFER, ENGEL is strongly committed to developing a circular economy for the plastics industry and was one of the first companies in the plastics machinery industry to sign the Ellen MacArthur Foundation’s New Plastics Economy Global Commitment.
Like its big brothers (50 and 70 series) the L-WE 30 laboratory roller can also be used in the plastics, chemical, food, pharmaceutical and cosmetics industries.

This laboratory roller extruder offers the development departments of this world an alternative to the already known systems. The L-WE 30 covers power ranges from several hundred grams up to a capacity of approx. 10 kg / h (depending on process and formulation).

The liquid-based temperature control system, also newly developed by ENTEX, ensures efficient and accurate temperature control in different temperature zones. Due to much more accurate temperature control, considerably shorter heating times and significantly lower energy losses as well as the possibility to efficiently cooling, ENTEX uses from the beginning a liquid-based temperature control system instead of electric heating.

The ENTEX planetary roller extruder combines economy and ecology and is therefore the most energy-efficient processing construction kit of the future.

K 2019:
Hall 16| booth A42
Circular Economy – live at the EREMA Circonomic Centre

At K 2019, the EREMA Group will be showcasing its full range of products and services for the plastics recycling process more comprehensively than ever before. For the first time, a total of seven companies and business units – EREMA, POWERFIL, KEYCYCLE, PURE LOOP, 3S, UMAC and PLASMAC – will be representing the EREMA Group at the trade fair.

The EREMA Circonomic Centre will be an absolute highlight for visitors to the outdoor area. “Circonomic is a word we created from circular and economy to express what we want to achieve, namely the integration of recycling know-how into the plastics value chain, so that our industry, the environment and society as a whole, can gain ecological and economic benefits from it”, is how Manfred Hackl describes the objective of the presentations at the Circonomic Centre. How this is possible will be explained to visitors live, directly on site using outstanding cooperation projects as an example.

Live Recycling and lighthouse projects
For this purpose, EREMA will recycle 14 different plastic waste materials into high-quality recycled pellets, some of which will be processed directly at the fair into new end products. These demonstrations are based on more than 30 cooperation projects with customers and partners representing the entire value chain.

“Products made of recyclate” is also the name of an exhibition that will be on display at the Circonomic Centre to provide an overview of the impressive range of products. These lighthouse projects are important for the industry but also in terms of consumer awareness. “Recycling must become a fixed link in the plastics chain. The players in the plastics industry can only achieve this together and EREMA is the central force behind the realisation of the Circular Economy for plastics.” says Manfred Hackl.

K 2019: Hall 9 | booth C05
Circonomic Centre
OA 09.1 (outdoor area)
The goal of efficient production with maximum production capacity and minimal use of materials and energy cannot usually be achieved with the standard axial wall thickness control. The optimization of the radial wall thickness distribution is absolutely necessary. Harald Feuerherm developed the PWDS® / SFDR® system to specifically influence the radial wall thickness distribution. The SFDR® replaces the solid core with a flexibly adjustable device. The advantage of the SFDR® is that a profiling can easily and quickly adapted to the requirements by means of adjusting screws.

The PWDS® system enables the dynamic influencing of the radial wall thickness distribution over the entire parison length. For this purpose, a deformable ring is deformed by actuators according to profile curves. Thanks to a significantly improved wall thickness distribution, PWDS® / SFDR® systems enable significant material savings and cycle time reductions. The savings in article weight that can be achieved with PWDS® / SFDR® systems usually leads to a proportional saving of material in shot weight. Thus, the energy required for the plasticization and the CO2 emissions per blow molded part are proportionally reduced. Today, servo-electric e-PWDS® systems are gaining more and more market share. These are characterized by greater energy efficiency. These e-PWDS® systems are increasingly being used in the production of multilayer hollow packaging bodies whose middle layer is made up of reused recyclat. This makes it even clearer how much the proven PWDS® / SFDR® systems contribute to a eco-friendly and more energy-efficient blow molding.

KW 2019:
Hall 7a | booth D35

Further Information:
Feuerherm GmbH · feuerherm-pwds.de
The merging of sustainability and productivity at GABLER Thermoform

Due to the growing awareness and discussion concerning the worldwide plastic pollution, our industry faces new challenges, especially knowing that a short-term replacement of plastic is not in sight. Therefore, it is the obligation of consumers and manufacturers alike to find sustainable ways of producing, using, and recycling plastic products.

Our thermoforming systems save resources thanks to low energy consumption and the production of "lightweight products". Thanks to the unique GABLER technology, we can produce durable products while saving raw materials due to the processing of extra-thin sheets.

A prime example is the new SWING 3. Thanks to the combination of high cutting forces in the forming area and high-quality tools, recyclable materials can be processed without loss of quality or productivity. At the trade fair, we will present the SWING 3 in action, producing a double-walled drinking cup made of polypropylene. That cup can replace foamed plastic cups, combining temperature resistance and versatile use with a low and environmentally friendly consumption of material. The tools are provided by our long-term partner MARBACH (www.marbach.com).

On top of that, we offer a closed usage cycle within the plant: from efficient extrusion, to the energy-saving thermoforming machine with precise tools, to the pelletizing of the sheet skeleton. We also work towards a close cooperation with recycling companies, to feed the materials back into the recycling process.

We at GABLER are well-equipped to face those thermoforming challenges and can accompany you as a competent and innovative partner on the way to a sustainable future!
In addition to unique technologies, systems and components for plastics processing, Gneuss also offers turnkey engineering for the production of high quality sheet, strapping, fiber and pellets. Since its founding in 1983, Gneuss has positioned itself worldwide as a technology leader for the extrusion of plastics and plastic waste of all kinds.

Among the unique Gneuss technologies are the patented Gneuss Rotary Filtration Systems, which enable fully automatic, process and pressure constant filtration. The RSfgenius melt filter with integrated self-cleaning developed for demanding recycling applications enables high melt quality even with fast material and color changes and, if necessary, with filter finenesses down to 1µm.

The MRS extruder, based on the conventional single-screw extruder with a special multiple screw section, provides a powerful system for degassing and decontaminating highly contaminated polymers, in particular PET, PA and other hydrophilic polymers. Even with a simple vacuum, a large number of decontaminations can be carried out with low, controlled viscosity degradation. The MRS technology effectively removes volatile impurities, oils and odours. Heavily contaminated food packaging made from mixed household waste, which in addition to PET also contains PP, PE, etc., is also decontaminated and reprocessed.

Expensive pre-treatments are not necessary when processing polyester materials. The MRS system has various approvals from local food authorities for the processing of 100% bottle flakes and post-consumer waste.

Innovative and efficient Polymer Recycling with Gneuss Technologies

K 2019:
Hall 9 | booth A38

Further Information:
Gneuß Kunststofftechnik GmbH · www.gneuss.com
Less is more: Standard machines with Technology to the point

Worldwide, standard plastics with a theoretically high recycling rate are predominantly used in over 80% of standard applications. Haitian International’s success strategy is to produce injection molding machines for such standard applications and to continuously optimise them with regard to standard components.

Our “Technology to the Point” supports the resource and energy-saving use of raw materials to produce recyclable plastic parts. At the same time, we have worked intensively to make electrical technologies affordable, because responsible mechanical engineering undoubtedly requires energy-efficient concepts. Electrical solutions under the Zhafir brand are now among the top 3 worldwide in sales; they are per se energy efficient and sustainable. Haitian also concentrates on the essentials.

Thanks to our servo hydraulic drives, energy and water saving concepts have been implemented in our production methods since 2008 and standardized since 2013. The entire production process is based on lean production and sophisticated components, with the advantage of longevity. In addition, Haitian’s global network comes into its own.

Interdisciplinary R&D teams in China and Germany, modern application centres and close contacts to material manufacturers, moldmakers and automation partners make it possible to advise our customers at an early stage on resource savings and recyclable materials.

At Haitian International Germany in Ebermannsdorf, at the sales and service partners worldwide and at the K Fair 2019.

K 2019:
Hall 15 | booth A57

Further Information:
Haitian International Germany GmbH
www.haitiangermany.de
HERBOLD Meckesheim – Machinery Specialist for Plastic Recycling

HERBOLD Meckesheim GmbH is a leading recycling specialist for the plastics industry. The company’s machinery helps reduce and reuse plastic waste. HERBOLD’s machines are in operation all over the world.

Our machines treat the ‘clean’ waste from the plastics processing industry, as well as used, mixed and contaminated plastics. The machines are used for pulverising plastic granulates and waste, as well as in countless other applications in waste treatment, raw materials recovery and material preparation for a range of industrial processes. Customer specific material is tested in own technical laboratory for optimized machinery concepts.

The worldwide fast service for the installation and maintenance of the systems ensures a smooth process and avoids standstill of the machines.

Today, HERBOLD is managed in the fourth generation by Karlheinz and Werner Herbold.

More than two thirds of the production is exported all over the world. Around 160 employees in Meckesheim, along with employees of the company’s international agents, take care of the custom-made machines in accordance with customers’ stated requirements, from the planning stage via commissioning and until the end of the machines’ operational life.

www.herbold.com

K 2019:
Hall 9 | booth B42
Hosokawa Alpine, a leading manufacturer in the film extrusion sector, is working together with partners from the entire value-added chain on single-material solutions that display excellent packaging qualities as well as recyclability.

Full PE packaging solutions, i.e. films made of polyethylene compounds, can be recycled after use and returned to the production cycle. This results in applications in which the recycling material can be used again for new packaging purposes.

Hosokawa Alpine has been dealing with monoaxial stretching for more than 20 years and has recently been working intensively on these products.

The tried and trusted MDO (Machine Direction Orientation) technology from Hosokawa Alpine is a crucial component in manufacturing high-performance single-material compounds made of polyethylenes.

The latest MDO04 can be modularly configured and the number of rollers can be selected from 8-12, which makes it possible to address a wide variety of customer requirements. Films with a layflat width of up to 3 m and a speed of up to 300 m/min. can be produced. A revised release of the patented profile control system makes it possible to fulfil the highest quality demands for printing and laminating.

Full PE solutions based on Hosokawa Alpine’s proven and established MDO technology.

Recycling of film made from full PE solutions is considerably easier and more efficient than with plastic packaging made of composites where PE is for example combined with PET, EVOH or polyamide.

K 2019:
Hall 16 | booth D06
ILLIG Maschinenbau, Heilbronn/Germany, is leading the way once again by unveiling its innovative IML-T® Cardboard, a plastic-cardboard combination packaging, designed with recycling in mind. ILLIG engineers preserved what was good, fine-tuned the existing technology and added new improvements. This innovative application can be produced on ILLIG IML-T® machines. The advantage of the newly designed packaging, developed specifically for the new circular-thinking market demands, is the ability to easily separate the plastic from the cardboard. This enables simplified recycling.

The packaging consists of a very thin-walled plastic interior (less material consumption) with an outer layer of cardboard, which increases the stability of the packaging and thus guarantees a high top-load strength. The pack can be sealed and the cardboard decorated with brilliant marketing labels on five sides or even six sides with two-sided labeling on the bottom. The application is an absolute novelty, which will impact the market for decorated thermoformed packaging, especially in the premium products segment. IML-T® Cardboard is ideal for applications such as meat trays (MAP), vegetable trays, ice cream containers and frozen TV dinners, as well as packaging for delicatessen, dairy products, margarine, cream cheese, spreads, jams, jellies, cereals, pet food and non-food products. The application spruces up the product at the PoS – to the benefit of the environment, the package contents and the consumer.

K 2019:
Hall 3 | booth A52

Visit ILLIG at Hall 3A52

Further Information:
Illig Maschinenbau GmbH & Co. KG · Illig-group.com
Alfred Kärcher SE & Co. KG has switched over its spray lance production for high-pressure cleaners to a particularly high-quality recycling polyamide in July this year. This is a decisive step for Kärcher towards its own sustainability goal to noticeably increase the use of recycled plastic in the production.

High-pressure cleaner spray lances made from airbags

More than one million spray lances manufactured
Kärcher, the world’s leading provider of cleaning technology, is one of the first companies to use the so-called Technyl® 4earth® technology by the manufacturer Solvay in its series production for the consumer market. “Kärcher consistently pursues its sustainability goals. Currently, we focus on using up less material and on recycling plastic if possible,” says Daniel Manocchio, Manager of Material Technology at Kärcher.

No loss with the new recycling plastic
The polyamide used is reinforced by 30 percent glass fiber because the spray lances of the Kärcher high-pressure cleaners have to withstand extraordinary high pressure. “For the first time, we succeeded in using a recycled material that in fact has no loss in its profile of characteristics compared with the original material,” says Daniel Manocchio, Manager of Material Technology at Kärcher.

Reduction of CO₂ emissions
The recyclate used is reclaimed from fabric of recycled airbags and leftover material from their production. This ensures consistent quality of material as well as security of supply. Furthermore, CO₂ emissions, water consumption and the use of non-renewable energy can be reduced significantly. The production plant for manufacturing the spray lances at the Oberes Bühlertal plant was switched over to the new recycling polyamide. Kärcher is considering the use of this recycled material in other areas of its product portfolio.

K 2019:
OA Hall 16 | booth 16.1 (outdoor area)
Sustainability of packaging materials: KAMPF and CCL Label at K 2019

Sustainable management is becoming increasingly important not only ethically and socially but also economically for manufacturers of packaging materials: More and more consumers are demanding sustainable packaging solutions.

KAMPF, the market leader for slitter rewinders and winders from Wiehl near Cologne, will not only present the latest generation of slitter rewinders at K 2019, but will also present a sustainable application from the beverage packaging segment together with its customer CCL Label.

CCL Label has developed the three product lines EcoStream for optimum bottle-to-bottle recycling of PET bottles, EcoSource from up to 94% renewable raw materials and the biodegradable EcoSolve labels.

The materials presented here are exemplary for the trend of many packaging manufacturers to produce films as well as finished products from them sustainably and to optimize them for recycling processes.

In order to ensure the smooth processing of new materials, KAMPF supports with its expertise in slitting and winding technology both with tests in the KAMPF laboratory as well as during production on site.

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

CCL Label · www.ccllabel.com

Further Information:

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

K 2019:
Hall 3 | booth A92
Kautex Maschinenbau, Braskem and Erema are combining their know-how to demonstrate how a functioning and resource-optimized recycling loop can be implemented.

An all-electric KBB60 blow molding machine will demonstrate the production of a sustainable three-layer bottle containing PCR in live production. The materials processed are supplied by the renowned manufacturer Braskem. To reduce the consumption of raw material, a mixture of polyethylene I’m green™ and PCR is foamed in the middle layer. Kautex and the Brazilian plastics material manufacturer selected the raw materials, to achieve a significantly improved carbon footprint as an additional benefit. What’s more, the bottle has a neutral odor despite the use of PCR. To complete the production cycle, Erema will finally demonstrate live how these bottles are processed into recycled granulate, which can then be used again for the production of new plastic products. The location of this recycling demonstration will be the Erema “Circonomic Centre” in the outside area where the circular economy will be brought to life for the trade show visitors.

Further Information:
Kautex Maschinenbau GmbH
www.kautex-group.com
Plastic is a valuable resource
Each year approximately 100 billion USD of plastic packaging material value is lost from the economy. It is not only essential to consider used plastic as resource rather than waste from a sustainability perspective, but also from an economic viewpoint.

Design for recycling
Kiefel’s Design for Recycling programme systematically bundles the company’s expertise to rethink the customers’ products. Every detail of the product is re-assessed and rethought together with the customers. The customers are supported in all steps of their product development cycle: From material and product composition, up to the optimal requirements for their tools and thermoforming process.

Sustainable solutions
Kiefel Packaging has re-engineered the egg tray to facilitate the use recycled post-consumer PET. The design demands were obvious: Uncompromised functionality and mechanical strength of the tray. Meticulous analysis and re-engineering of the material, tray and processing have led to a tray which is of similar quality to the ones available in virgin PS or PET.

The use of Kiefel’s new premium flatbed tooling in combination with the trendsetting new generation flatbed KMD thermoformers (presented in Kiefel’s Booth Hall 3, E 90) significantly streamlined development.

Next to a transition to PCR material, Kiefel Packaging offers the expertise and support for more drastic material changes: For instance, a switch to paper, pulp or plant-based materials like PHA or PEF.

K 2019:
Hall 3 | booth E90

Further Information:
Kiefel GmbH · www.kiefel.com
From a bucket to A-pillar

Expertise from three business segments

Under the heading Circular Economy, KraussMaffei is interlinking the expertise of its Extrusion, Injection Moulding and Digital & Service Solutions divisions - because the entire cycle can be tracked digitally, e.g. to record melting temperature, pressure or screw speed during extrusion.

**ZE 28 BluePower**

A multi-talent for development work and small batch production. With the extensive modular range of barrel sections and screw components, the ZE 28 BluePower laboratory extruder is a future-oriented machine. It also provides a significantly larger processing window for small batch production with the screw diameter of 28 mm, its diameter ratio Da/Di of 1.65 and high performance of 42 kW with a screw speed of up to 1200 rpm.

**PX series (250 - 3.200 kN)**

The PX series is the answer to your requests for more flexibility while increasing productivity. You can assemble your PX precisely to your production requirements from a wide selection of components based on a modular design.

**GX series**

Use to your advantage the first-class hydromechanical dual platen concept of the GX Series in conjunction with the single-piston injection system. Thanks to the modular design, the compact dual platen clamping unit can be individually configured with all available injection units.

K 2019:

Hall 15 | booth D24/C27/C24/B27
IR-CLEAN® for PET Applications in Direct Food Contact Packaging

Decontamination is a basic requirement for use of PET recycling materials in applications processing food packaging.

This is an easy task to fulfil with the IR-CLEAN® made by KREYENBORG from Senden, Germany. A Letter of Non-Objection issued by the FDA and the proof of compliance with the basic values imposed by EFSA confirm the high decontamination performance ensured by this unique rotary drum.

This is how it works: PET post-consumer bottle flakes are poured into the rotary drum through a volumetric dosing system. Inside the drum, an in-welded helix ensures a continuous, homogenous material flow at a pre-defined residence time. At the same time, the mixing elements in the helix coils ensure the mixture of the material and the permanent surface exchange, indispensable for an effective decontamination result. An infrared module positioned above the material heats it up quickly and effectively, so that not only inner moisture, but also all volatile contaminants will escape and are withdrawn without using any kind of vacuum system.

The IR-CLEAN® can be used as a ‘stand-alone-solution’ for material preparation in the same way as combined with extrusion lines, and is perfectly suited to work as a retrofit for existing lines. Apart from the high degassing and decontamination performance, the key advantages of the IR-CLEAN® lie in its efficiency with low investment costs.

K 2019:
Hall 9 | booth A55

Further Information:
Kreyenborg GmbH & Co. KG
www.kreyenborg.com
Can plastic packaging be sustainable? Indeed, it can if it is produced in a resource-saving manner and is kept in a closed loop. Both is possible with the technology and services provided by Krones. From a material-saving packaging design through to low-energy container production and the recycling of used plastic materials: Krones offers PET bottles and other packaging an opportunity to have a sustainable, environmentally friendly existence – not only once, but over and over again.

From the preform to the recycled container: Complete-line competence at Krones
- Krones relies on high-performance, high-tech injection moulding tools for preform production.
- With the Contiform 3 Pro and Contiform 3 Speed, Krones offers ecologically efficient solutions with a broad output range.
- The Contipure AseptBloc aseptic filling system fills lightweight containers to the highest quality. In combination with the innovative Flip Lid cap system, Krones technologies save both on energy and on materials.
- A sustainable beverage factory with a closed PET loop? A vision which Krones is now coming astonishingly close to with its MetaPure recycling systems.

All you need for PET: the closed PET cycle under one roof

K 2019:
OA Hall 15 | booth 15.1
(outdoor area)
New Kurtz technology increases processing proportion of recycled material to 70%

In recent years, the development of particle foam processing has taken a major leap forward. Kurtz has jumped on this trend with its brand new “wave technology”. Using conventional technology, moulded EPS parts can be produced today in a steam-operated manufacturing process with a usual recycling rate of up to 25%.

The unique Kurtz RF technology provides a closed material cycle for the valuable use of EPS. Already now, a proportion of recycled EPS in the moulded part of 70% can be achieved. Clear goal: 100% share of recycled material. How can this be achieved? Through safe core welding.

With the Kurtz RF technology, material beads are welded from the inside to the outside. Welding temperatures of up to 250 degrees are possible. This means that higher temperature-resistant particle foams such as ePET (recycled soft drink plastic bottles) can be processed.

For comparison: steam-operated moulding machines can operate at temperatures of up to 160 degrees. Fossil fuels are no longer used due to the electrical operation of the Kurtz WAVE FOAMER RF. The plant operator can plan with energy savings of up to 90%.

Further advantages: A simple infrastructure allows production in close proximity to the end customer. Short transport distances for the products produced on Kurtz machines enable enormous time savings and help to reduce emissions.

Visit Kurtz in Hall 13 and see one of the live demonstrations of the new RF technology that take place several times a day!

K 2019:
Hall 13 | booth B27

Further Information:
Kurtz Holding GmbH & Co. Beteiligungs KG
www.kurtzersa.de
How can a manufacturer of decorative coatings effectively support the circulation systems for plastics? With decorative surface finishes that are proven not to impact the recyclability of plastics!

KURZ has produced an extensive study on this. In elaborate tests, plastics with recycled content derived from decorated and undecorated plastic parts were compared. Firstly, plastics with different levels of recycled content were tested. Then previously recycled plastic was recycled again several times.

The clear result: recyclable plastics with the extremely thin KURZ coatings remain recyclable under different test conditions. This applies for both tested decoration processes: IMD (In-Mold Decoration) and the IMD Varioform technique developed by KURZ, where decoration, forming, back-injection, and punching take place directly in the injection mold. With the IMD Varioform technique, the carrier film of the coating remains on the component. When choosing the carrier materials, KURZ takes care that the grade purity in the plastic component is retained.

The study is presented in detail in the VDMA pavilion at K 2019. You can experience the results from a successful recycling system live at the Engel trade fair booth. Here, recycled plastic that had a KURZ decorative finish is processed to create a high-quality decorated component via the IMD Varioform process. This plastic component can be recycled again – and looks as good as new thanks to the KURZ design.

K 2019:
Hall 5 | booth A19

Further Information:
LEONHARD KURZ Stiftung & Co. KG · www.kurz.de
Circular economy at its best. Fifteen kilometers from Vilnius, Lithuania, the company Somlita produces film for packaging, agriculture and construction ranging from 20 – 400 µm. Thanks to Lindner’s modern and highly effective shredding, washing and sorting technology, this film is now made of 100 % recycled post-consumer and industrial waste – of such high quality that is nearly impossible to distinguish it from film made of virgin material. That’s how to make the most of waste.

“We were looking for the best technology. With Lindner’s equipment we can flexibly process dirty, labelled post-consumer or agricultural plastics to obtain the perfect material for our film.”

Gintaras Gavelis, Director of Somlita

K 2019:
Hall 9 | booth D78/E75
OA Hall 15 | booth 15.2 (outdoor area)
Wherever it makes ecological and economic sense, recycling companies convert industrial or post-consumer plastic waste back into high-quality recyclates, thus providing a closed loop for material recycling. This process requires a large amount of know-how and systems that have been specifically developed or optimized for this task. The MAAG Group has both. It uses them to support its customers in reaching ambitious goals for conserving resources.

Food packaging is an example of an area in which systems from MAAG can be deployed. Here, large quantities of plastics are processed into products that protect goods against premature spoilage. After they have been in use and become waste, the remains of the packaging first undergo collection, sorting, cleaning and size reduction before finally being remelted in an extruder.

At the end of this final step are ERF high-performance melt filters from Ettlinger. The central element of these filters is a rotating screen with millions of tiny holes through which the melt it pressed. Contaminants – even when present in high concentrations – are retained on the outer surface of the screen and continuously scraped off, enabling these self-cleaning filters to reliably perform their specified tasks in a trouble-free and thus highly cost-effective manner over long periods of time.

The melt, having been perfectly cleaned in this way, is then forced through a final perforated plate on its way to becoming a recyclate. This is where pelletizing systems from MAAG are deployed, now gently doing their work either underwater or in air, directly downstream of the perforated plate or a certain distance away, depending on their specific tasks and designs. They ensure that the melt is turned into small, spherical pellets or short strands of a predetermined shape, both of which are perfectly suited to further processing – for example, for the extrusion of new films with excellent performance characteristics.

K 2019:
Hall 9 | booth A04

Further Information:
Maag Group  ·  www.maag.com
The most valuable energy is that which has never been used.

The experience of statistical offices and other institutions shows that energy saving and thus cost reduction potentials regularly remain untapped. This is a common theme in all industrial sectors. The plastics industry is no exception. Many measures with which the potentials can be made visible or even already implemented require only small investments in relation to the savings achieved and entail little effort. Suitable measurement and control technology can drastically increase the energy efficiency of production plants. At the same time, this means increased productivity with mostly improved, reproducible quality and optimized raw material costs. A welcome side effect for the manufacturer is the additional cost reduction. Mahlo has developed the Qualiscan QMS quality measuring system to measure, record and control critical process parameters such as moisture, layer thickness, basis weight, coating application, material composition, etc. The various sensors and measuring frames of the modular system can be used in virtually all industries that produce web-shaped products – and help manufacturers save costs and energy.

If, for example, only 5g more material is applied per square meter than specified in the target value for a coating of PVC, this has an effect on a large number of factors. On the one hand, raw materials are wasted that are not even needed for the functionality of the product or even have a negative impact on it. The larger application quantity also extends the drying time of the product, which consumes additional energy. In the worst case, the product is completely unusable and must be disposed of - a burden on the environment and the manufacturer. Post-production again costs raw materials, energy and money. A vicious circle that can be broken with Mahlo’s process control solutions. The automatic basis weight control significantly limits the spreading width of the basis weight and thus guarantees a more uniform end product. This not only increases quality, but also protects the environment and thus contributes to more sustainable production.

K 2019:
Hall 10 | booth G21

Further Information:
Mahlo GmbH + Co. KG · mahlo.com
Circular economy is the motto of this year’s K-Show, which sets the rhythm for innovation within the plastics industry every three years. In the spirit of our slogan “think materials management”, it is our job to consider the consequences of this direction for materials handling and to contribute towards conserving resources.

Motan-colortronic: materials management meets circular economy

The data from motan dryers, dosing and mixing systems or from crystallization is already available and are then used within further processes. In the future, additional data will be added, such as information about the composition of materials, their residual moisture, recipes, material characteristics and the production data of the processing machines. One basic prerequisite for recycling is sound knowledge of contents and ingredients.

This is where the second important current topic, Industry 4.0, can help provide answers. Using technology, we can mark every produced part with its DNA for its entire life cycle. In this respect, Industry 4.0 is an important tool and building block for making circular economy successful. The requirement here is consistent and constant communication throughout the entire process chain.

motan already offers all its units with an OPC-UA interface in order to guarantee documentation of the material flow via an exchange of data. With the new line “Simple Solutions”, motan is expanding its material loader line with the new product line METRO SG and the gravimetric material loader METROFLOW that can be used in circular economy. Using these modular building blocks and the right conveying station, system solutions for material conveying can be configured – whether for virgin material or regrind.

K 2019:
Hall 9 | booth C64
We do manufacture a complete range of size reduction technology (Shredder, Polystyrene Shredder, Bale-Breaker, Screw Shredder, Guillotines, Grinders, Granulators, Pipe-Granulators, Profile-Granulators, Hammer-Mills, Fine-Grinders, Pulverizer, complete Washing Lines reclaim of plastics scrap, size reduction – washing – drying systems for recycling of contaminated plastics, friction washer, mechanical dryers, thermal dryers, as well as the separation technology for mixed plastics and material handling systems.

We can provide you also with peripheral devices, like Conveyor belts for material feeding or also for the forwarding of the pre-comminuted material Pre-Wash Screws, suction units, cyclones, fines separators, etc.

We also welcome our customers to see the performance of the NEUE HERBOLD in our test plant. There we can carry out sample milling and/or sample preparation of customer-specific materials on our machines.

We offer you individual machines, engineered lines to your needs in terms of production and performance. We also offer upgrading of your existing equipment.

We do support our customers with qualified service, maintenance and repair of existing machines as well as fast spare parts supply. This includes also overhauling of machines and systems even these from the competition.

K 2019:
Hall 9 | booth D37
Nordson BKG® HiCon™ V-Type 3G removes heavy contaminants

Nordson’s BKG® HiCon™ V-Type 3G screen changer uses a hydraulically powered backflush system to automatically remove contaminant while maintaining extrusion throughput and keeping flow and pressure constant.

All of the filtration area of the combined four screen cavities is available for production while filling of the displacement-piston cylinder takes place. Two outlets for backflushed material are located on the bottom of the unit, with discharge automatically controlled by the movement of the screen-bearing pistons.

In the HiCon V-Type 3G screen changer, melt flow from the extruder is split at the entry side and guided to the four screen cavities, two of which are located on each piston. Each pair of cavities is positioned so that they can filter their respective melt streams, until the piston removes one of the cavities from the process to remove contaminant buildup by means of backflushing. In normal operation, polymer is flowing through all four cavities. While one of the cavities is changed, the other three remain in the process.

In addition to the two screen-bearing pistons, there is a single hydraulically actuated displacement piston that operates during backflushing. For each cavity, the displacement piston retracts, creating a reservoir of filtered molten polymer. This material is hydraulically compressed and discharged in reverse direction, back through the screen, carrying away contaminant for removal from the system. The sequence is performed for each cavity one after the other.

K 2019:
Hall 9 | booth A44/48

Further Information:
Nordson BKG GmbH
www.nordsonpolymerprocessing.com
Waste reduction through recycling, process efficiency, and equipment reuse are ways in which Nordson’s Xaloy® screws and barrels contribute to the circular economy.

The Xaloy® Recycling System is a screw and barrel package for injection molding and extrusion of highly filled compounds, particularly with more than 50% abrasive filler content. The package provides high output and low-shear distributive mixing for improved product strength and uniformity and prolonged working life of the plasticating system. The barrel is lined with an Xaloy® X-800® inlay, a nickel/tungsten carbide alloy that exhibits exceptional abrasion and corrosion resistance. The Xaloy® mixing screw design provides complete melt homogenization with low shear. Encapsulating the screw is the Xaloy® X-8000™ nickel/tungsten carbide alloy, which is fused to the base metal and is double the thickness of comparable coatings.

Xaloy® components also reduce scrap rates, save raw material, and reduce energy consumption. Nordson uses rheological analysis to custom-tailor screws for maximum productivity and output quality. The Xaloy® SmartHeat™ coating for injection barrels delivers heat more uniformly and reaches start-up targets more rapidly than band heaters, while reducing energy consumption.

Another way to prolong the working life of plasticating systems is refurbishment of injection barrels and very large or elaborately equipped extrusion barrels. Nordson bores out the existing inlay and replaces it with a new bimetallic lining.

**K 2019:**
**Hall 11 | booth A26**
Polystyvert has developed an innovative process that allows all forms of polystyrene (expanded, extruded and injected) to be recycled. Following a unique dissolution, purification and separation process, the regenerated polystyrene resin is of very high quality, permitting many applications to incorporate 100% recycled materials. Twenty million tons of polystyrene waste is generated each year around the world. However, polystyrene is the least recycled plastic due mainly to costs (transportation, decontamination) and a low-quality product. Therefore, the majority is sent to landfill and the polystyrene industry is intensively seeking a viable recycling solution.

Polystyvert’s innovative technology to recycle polystyrene in a closed-loop

Our unique technology employs a non-toxic essential oil to dissolve polystyrene on contact without altering its molecular chain, while removing any kind of contamination including the flame-retardant HBCD. Dissolving expanded polystyrene reduces its volume by 96%, thus the same truck can carry ten times more polystyrene than in its expanded form. Transportation costs and GHG emissions are significantly decreased.

Once purified, the polystyrene is formed into pellets as a high-quality end-product with the same mechanical properties as virgin polystyrene. These can be reused to manufacture polystyrene products such as packaging boxes, food trays, insulation panels, yogurt cups, etc. The solvent is also recycled for the next customer, thus answering the principles of a circular economy.

The company was founded in 2011 by its CEO, Solenne Brouard-Gaillot, with the aim of having a positive impact on the environment. A demonstration plant is successfully running in Montreal, Canada, and the technology is being deployed via licenses worldwide. Polystyvert’s breakthrough technology for recycling polystyrene is ecological, efficient and highly profitable, and thus meets the strong voices calling for a new plastics economy.

K 2019:
Hall 10 | booth H65
Packaging Sustainability

PCR in fabric care PET bottles – with up to 50 per cent recycled content

- Optimized Design-for-Recycling: moved colorant out of bottle and replaced by shrink sleeve with consumer message to remove sleeve prior at End of Product Life.

- Conditional approval from EPBP (European PET bottle Platform) for Household and Personal care PET bottles with full-body sleeves.

- Working on harmonized consumer messaging cross brands/companies.

- Lenor bottles contain 50% PCR resin.

More information during K-show:
Event in VDMA pavilion:
P&G packaging speech during Packaging day: October 17

More info post K-show:

K 2019:
OA Hall 16 | booth 16.1 (outdoor area)

Further Information:
Procter & Gamble · Key contact: debelder.g@pg.com
Pioneer Project HolyGrail
Digital watermarks for intelligent packaging and better recycling

HolyGrail 2.0 originates from New Plastics Economy Pioneer project (29 member full-value chain pre-competitive project), investigating how tagging of packaging can have a drastic impact on more accurate sorting and higher quality recycling.

**Focus:** Innovate in the field of sorting technologies by using Digital Watermark technologies to make packaging “intelligent”

- 2 possibilities to integrate Digital Watermark (Digimarc Barcode):
  - In artwork (no special ink, no special print technology)
  - In mold (embossing)

- System uses add-on modules (LED light and high speed cameras) on existing sorting equipment

Great potential for 1 technology to be used throughout entire lifecycle of a package (QA and inventory management, fast check-out at retailers, consumer engagement..) and now also RECYCLING

New bigger consortium being formed (more brand owners and retailers) and first steps to commercialize

**More information during K-show:**

- **Booths of participating companies:**
  - Verstraete IML incl. expert talks (Hall 5/ B37), Tomra (Hall 11/F17), Borealis (Hall 6/A43)

- **Events in VDMA pavilion:**
  - P&G packaging speech during Packaging day: October 17
  - HolyGrail interview during Waste day at K: October 21
  - Open House at Tomra Oct 22:
    - Subscribe via
    - https://solutions.tomra.com/holy-grail-2.0

**More info post K-show:**

https://packagingeurope.com/pioneering-sorting-technology-holygrail-project-moves-toward/

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Further Information:

Procter & Gamble  ·  Key contact: debelder.g@pg.com
Film properties for technically demanding packaging
Polyethylene terephthalate (PET) gives conventional packaging made from different materials its stiffness and basic barrier properties. On the downside, it restricts the recyclability of the packaging as the materials cannot be separated after use. For this reason, Reifenhäuser is replacing PET completely with stretched PE. The component EVO Ultra Stretch stretches PE film using first heat to obtain properties similar to PET for the first time. With its excellent appearance and heat-sealing property, high rigidity in the machine direction and its extreme flatness and printability, this film meets all the requirements for high-performance packaging, such as pouches.

High overall production efficiency lowers entry barrier
Operating costs for Ultra Stretch are considerably lower compared to conventional MDO units since energy consumption levels are lower and process stability is higher. This results from the patented positioning of Ultra Stretch within the machine. In addition, the PE film can be further processed on existing conversion lines with no adaptations required. This is a key factor in lowering entry barriers for the production of mono-material packaging.

Short time to market with our expertise package
For stretched PE film, Reifenhäuser supplies a complete package of expertise, comprising technology, film recipes, and processing parameters that are proven. As a result, customers can already operate in stable processes shortly after commissioning and minimize their time to market significantly.


K 2019:
Hall 17 | booth C22

Further Information:
Reifenhäuser GmbH & Co. KG Maschinenfabrik
www.reifenhauser.com
So how does a circular economy work? Recyclability must be taken into account when designing packaging. The material itself must be as pure as possible in order to be able to use plastic waste or used plastics as a secondary raw material and convert it into recyclates of the quality required to manufacture new products, no matter where in the world this process takes place.

Creating a circular economy and recognizing the value of a material that is widely considered as waste will be essential in the future. The overall strategy is based specifically on four basic principles:

- Manufacturing recyclable products
- Optimising the separation and collection of plastic waste
- Increasing recycling capacities
- Reusing recyclates in production

So how does a circular economy work?

Sesotec is part of the loop

Sesotec is one of the leading manufacturers of machines and systems for contaminant detection and material sorting. Against the backdrop of developments materials sorting technologies and contaminant detection systems are becoming increasingly important for the value chain of the plastic industry.

And this is exactly where Sesotec’s expertise is in demand. Sorting technology which processes waste with the highest precision and produces pure material from it.

K 2019:
Hall 10 | booth E60

Further Information:
Sesotec GmbH · www.sesotec.com
Sumitomo (SHI) Demag, in collaboration with eco-sustainable materials specialist Borealis, will premier a new fully-automated 1,000 tonne El-Exis SP packaging machine at K-2019.

Demonstrating what’s believed to be the first-of-its-kind fully recyclable 17-litre pail, the Sumitomo (SHI) Demag cell tackles the circular economy agenda from every angle.

Still the fastest injection moulding machine in the world, the El-Exis SP 1000-tonne system has been designed specifically to produce large plastic containers used in food, pet, paint and chemical applications. The increased machine size means that the El-Exis SP being unveiled at K-2019 can accommodate a twin mould, optimising efficiency.

Reuse and recycle
To address the plastics agenda, the pails are manufactured using a recycled polypropylene (rPP) compound made of 50% post consumer waste. Rather than being incinerated, polypropylene bottles and yoghurt pots are being recycled to create the new Borcycle UG522MO material being showcased at K-2019, giving the waste a second life.

Completing the sustainability cycle, the In Mould Labels made from polypropylene optimise decorative possibilities and create a 100% recyclable, rigid and attractive pail.

To view how our El-Exis SP machine leads on packaging sustainability and speed, visit our booth in hall 15!

Further Information:
Sumitomo (SHI) Demag
www.sumitomo-shi-demag.eu
In the light of this – and similar – questions, UNICOR wonders if the raw material plastic (polymers) can play a role in the long-term sustainable development of our society. Having a close look at this question of principle – even from different angles – the answer is definitively positive, if politics, economy and society are ready to take up this challenge in a responsible way. We see the future of polymer industry in a combination of sustainability and economic viability. Linear process thinking belongs to the past. Closed economic loops for the creation of values move into the centre of production and recycling process.

However, what can we do with the collected plastic waste?

With our developments in the field of multi-layer technology, we have not only anticipated the signs of time, we actively work on ideas and suggestions coming from our customers. The ongoing development of the corrugated pipe principle to multi-layer technology allows for the production of high-quality products by combining different material layers. In the enclosed picture you can see a corrugated pipe where the red layer (=outer) is made of virgin material and the grey layer is made of recycled material. The recycled material represents approx. 70 % of the total weight of the product.

The profitable re-use of used polymer materials by offering innovative technologies, combined in a value-creating way is our technological and economic aspiration. With this background, we in UNICOR have to face the challenge to develop further our high competence in the most different product development cycles and to integrate new technologies via corporations and development partnerships.

Further Information:
Unicor GmbH · unicor.com

K 2019:
Hall 16 | booth D11
The idea of a circular economy is that to simply use and discard products and components is no longer a viable option. To achieve such change both industry and society need to re-think the way to design products. Still the range of plastic waste requires a variety of recycling processes. Is chemical recycling the missing link to save resources and reduce pollution? Chemical recycling processes vary, but they typically follow this template: Plastic is shredded and treated with some combination of water, heat, pressure and enzymes or catalysts, breaking the resin down into its constituent parts. These chemicals can be repolymerized into virgin-quality resins, used as fuel or as raw materials for other products.

One of such flagship projects is Brightmark Energy in US-Ashley. Slated for completion in mid-2020, Brightmark’s Ashley facility will produce more than 18 million gallons of ultra-low-sulfur diesel and naphtha blend products and six million gallons of commercial-grade wax each year. Feedstock for Brightmark’s Ashley, Indiana plant will include over 100,000 tons of mixed plastic scrap per year. This landfill-diversion material will consist of single-use and other post-consumer plastics, residuals from material recovery facilities, and post commercial and post-industrial plastic waste streams.

Vecoplan has been selected by Brightmark Energy to design and build material preparation system for their first plastics-to-fuel plant.

Jay Schabel, President of Brightmark Energy’s plastics division, said, “We entrusted Vecoplan with our first-of-its-kind facility after an extensive review of the material processing technologies available on the market. The Vecoplan proven turn-key solution is the best fit for our operational requirements. The level of experience and support offered by Vecoplan’s technical sales group has been world class, and we look forward to a successful installation at our Ashley facility.”

Further Information:
Vecoplan AG · www.vecoplan.de
cera2heat® is watttron’s solution for faster and more efficient heating systems. Our heating technology is used for processing polymer materials and is based on thick film technology which leads to a saving in energy and materials used.

At the core of this technology are modular ceramic matrix heaters. These heaters consist of heating circuits printed on thin ceramic substrates and arranged in 8X8 rows. Each heater consists of 64 small (5x5mm) pixels and can be adjusted depending in the specifications of the thermoforming machine according to the customer’s requirements. All the necessary control electronics (as well as the power supply) are fully integrated into the module.

The functionality of our system can be compared with thin film transistor home cinema systems, which produce defined colour fields. cera2heat® systems produce defined temperature fields. Each of the regularly arranged heating pixels can be individually programmed and controlled with independent temperature settings. The precise temperature of each pixel can be visually projected as a thermal image and applied to the films to be formed. Due to its module design, cera2heat® can be integrated or retrofitted into almost any machine. Furthermore, due to watttron’s knowledge and experience, our technology can be used to develop any customized heater.

K 2019:
Hall 8B | booth F39-06
Produced in Germany. Built for the world.
WEIMA shredders and briquette presses are produced exclusively in Germany at production facilities in Saxony-Anhalt and Baden-Württemberg. More than 250 employees work on around 1,000 solutions for customers around the world every year. We also have long-standing sales and service centers in the USA, France, Poland, Great Britain and China. More than 80 agencies complete our worldwide presence.

From voluminous residuals to sustainable recoverables
The formula for success is simple: Turn big into small with WEIMA shredding technology – and that in a controlled and dependable manner.

The final result is a high-quality shredded material of homogeneous size that can be recycled and used again, or disposed of in an environmentally sound manner.

An unbeatable team:
Experience and technical leadership
WEIMA works keenly and continuously on developing technical solutions to make shredding and briquetting even more efficient. The interaction between the components such as the rotor, cutting knives and drive is the key to success. Because every application is unique. And plastics come in numerous shapes and forms. Large blow-moldings, long pipes and profiles, solid purge pieces, production wastes, PET bottles, fibers, films, floor coverings, containers, crates and much, much more. So it’s good to know you can rely on an experienced partner.
All PE Stand-Up Pouch for Full Recyclability

PE based stand-up pouch designed for recyclability, packaging performance and production efficiency.

This All-PE stand-up pouch provides you with a proven film concept that helps to overcome the recycling issue with mixed material laminates like PET-PE. The pouch is made of a stretched and stiff W&H-MDO PE film which is laminated to a PE sealing film making the end product a monomaterial laminate. Both films are exclusively made on our blown film extrusion line VAREX II.

Thanks to the W&H unique MDO technology with patented profile regulation the MDO-PE film achieves highest standards of stiffness and best in class flatness. This ensures perfect processability in the pouch making process. Gloss, transparency and mechanical properties of the film fulfill all requirements of downstream processes.

K 2019:
Hall 17 | boothA57

Further Information:
Windmöller & Hölscher KG Maschinenfabrik
www.wh.group/int/en/k2019
For the K 2019, WITTMANN BATTENFELD has taken up a central challenge of the circular economy to the plastics industry together with leading research institutions, universities and a partner company, and found a solution in the form of a bio-based compound consisting of no more than 3 components.

Compounds based on fossil fuels have one great strength. Adhering to the narrow specifications of industrial production, they offer only minor fluctuations, for example in MFI, MFR or viscosity.

This is not the case with bio-based materials. If we want to work on a larger scale with bio-based materials in injection molding and to do so without modifying them so that they lose their natural characteristics, we must find innovative solutions in programming and control technology which not only even out fluctuations more effectively, but also preserve the positive attributes of the natural materials with the help of such processes.

At the K 2019, WITTMANN BATTENFELD will present a successful example of such a solution with the production of a packaging product for the cosmetics industry. On a multi-component machine, cosmetic jars with lids will be manufactured from a compound entirely based on natural materials, which can be recycled without loss of its physical properties.

When no two eggs are exactly alike. Injection molding with the whims of nature.

K 2019:
Hall 15 | booth C06

Can we learn to compensate fluctuations more effectively in order to adapt injection molding processes better to the characteristics of natural materials? Is it possible to reduce the complexity and number of ingredients and additives in bio-based compounds and thus drive the re- and upcycling processes?