

THE MAGAZINE FOR PLASTICS RECYCLING & THE CIRCULAR ECONOMY

Recycling

NEWS

Issue 2019

PRODUCT WORLD

Bottle-to-Bottle
innovation VACUNITE®

SERVICE WORLD

Smart technologies boost
machine performance

BEST PRACTICE

World first in the
cosmetics sector



SEEDS

FOR YOUR
PERFORMANCE



SEEDS ...

... for your Performance
... for the Circular Economy

Two major issues currently challenge not only our industry, but also the economy and society as a whole: digitalisation and the circular economy. The pressure to find solutions to close the loop in plastics has risen rapidly over the past two years. This is due to society's growing awareness of the need for sustainable use of plastics, legal requirements such as the recycling quotas set by the EU, but also initiatives launched by globally active brand manufacturers who are committed to increasing the proportion of recycled pellets in their product packaging. At the same time, the image of end products containing recycled plastic has improved to such an extent that the proportion used is actively communicated in product advertising. Just a few years ago that was unthinkable!

36 years ago, at a time when plastics recycling was not yet an issue, the founders of EREMA had the foresight to put their faith in it. The same foresight is also in demand when it comes to integrating recycling know-how as a fixed link in the plastics value

chain. Digitalisation, with its opportunities for further optimisation of recycling processes, is an important pacemaker in this respect.

In cooperation with our customers, our goal is to put circular economy solutions on the road even faster. That is why we are constantly developing our recycling technologies and components in all application areas. We offer competent advice and comprehensive services, from new digital assistance systems through to complete solutions for plastics recycling projects. These are all "Seeds for your performance", i.e. success factors for our customers, and a contribution to ecologically and economically sound closed plastic cycles.

Michael Heitzinger
Managing Director EREMA Engineering Recycling
Maschinen und Anlagen Ges.m.b.H.

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SEEDS FOR YOUR PERFORMANCE

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FOOD PACKAGING MADE WITH UP TO 100% PCR-HDPE

EREMA sets yet another new standard in the post consumer sector for the production of the highest possible quality recyclate. The U.S. Food and Drug Administration (FDA) has recently approved the food contact compliance of post consumer recycled HDPE (PCR-HDPE) produced with the patented INTAREMA® TVEplus® ReGrindPro® extrusion system in combination with the ReFresher module.

This opens up new opportunities to close the loop in food packaging made of high-density polyethylene (HDPE). "FDA approval means that new food packaging can contain up to 100 percent of PCR-HDPE produced using this recycling process," says Clemens Kitzberger, Business Development Manager in the EREMA Group for the post consumer sector. The starting material for the PCR-HDPE is a defined post consumer input stream consisting of 99 percent food containers, i.e. milk and juice bottles. PCR-HDPE produced from this can be processed into bottles, food dishes and similar

products. EREMA achieves the necessary purity of the PCR-HDPE by combining the proven INTAREMA® TVEplus® ReGrindPro® extrusion system with the ReFresher module, a highly efficient anti-odour technology.

PCR HDPE, which is produced using the patented INTAREMA® TVEplus® ReGrindPro® extrusion system in combination with the ReFresher module, can be used up to 100 percent for the production of new food packaging.



MOBILE REFRESHER FOR ON-SITE DEMOS

EREMA customers can also test the effect of the ReFresher directly at their own production plant. A compact and mobile version of this module has been developed specifically for this purpose.



PCR-HDPE produced from milk and juice bottles can be processed into bottles, food dishes and similar products.

"The high decontamination performance of our machine is thanks to the pre-treatment of the material during the one-hour residence time in the preconditioning unit of the recycling extruder and the additional removal of low-volatility odorous substances

from the granulate by the ReFresher," says Michael Heitzinger, Managing Director of EREMA, explaining the quality advantages of this recycling process. The efficiency of the ReFresher was tested and confirmed in a separate challenge test using highly

contaminated input material. Because the ReFresher uses the latent energy of the pellets preheated by the extrusion process, this system is also particularly energy-saving.



rPET SUPERCLEAN

> INNOVATION VACUNITE®: BOTTLE-TO-BOTTLE TECHNOLOGY MEETS THE HIGHEST SPECIFICATIONS <

VACUNITE® defines the benchmark for performance in bottle-to-bottle recycling: Uncompromising safety, productivity and quality are ensured thanks to the highest decontamination efficiency, rPET granulates with the best colour values, top IV stability, compactness of the system as well as low energy consumption throughout the entire process.

This is made possible by the unique combination of two technologies: VACUNITE® unites VACUREMA® technology that has been proven over decades and has been further developed especially for this application - together with newly patented vacuum-assisted

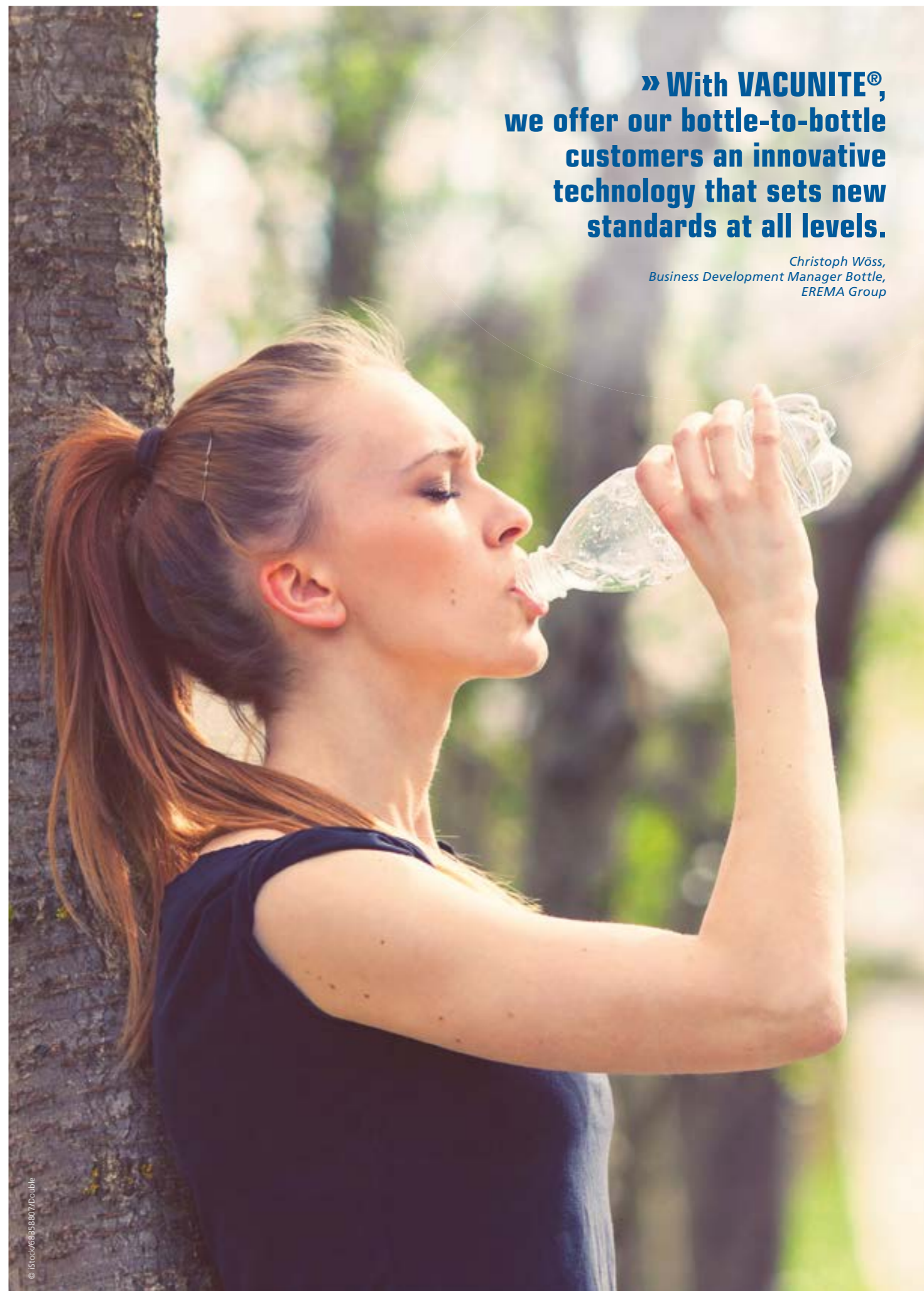
V-LeaN Solid State Polycondensation (SSP), which was also specially developed by Polymetrix (the manufacturer) for EREMA for this demanding application. A key quality and safety advantage is that all thermal process steps take place in nitrogen and/or vacuum atmosphere. This means

that it largely eliminates flake and pellet discoloration and reliably removes additives which could lead to undesired reactions in the melt. Another benefit of VACUNITE®: the nitrogen used in the SSP is cleaned and can be fed back into the previous processing stage so that nitrogen consumption

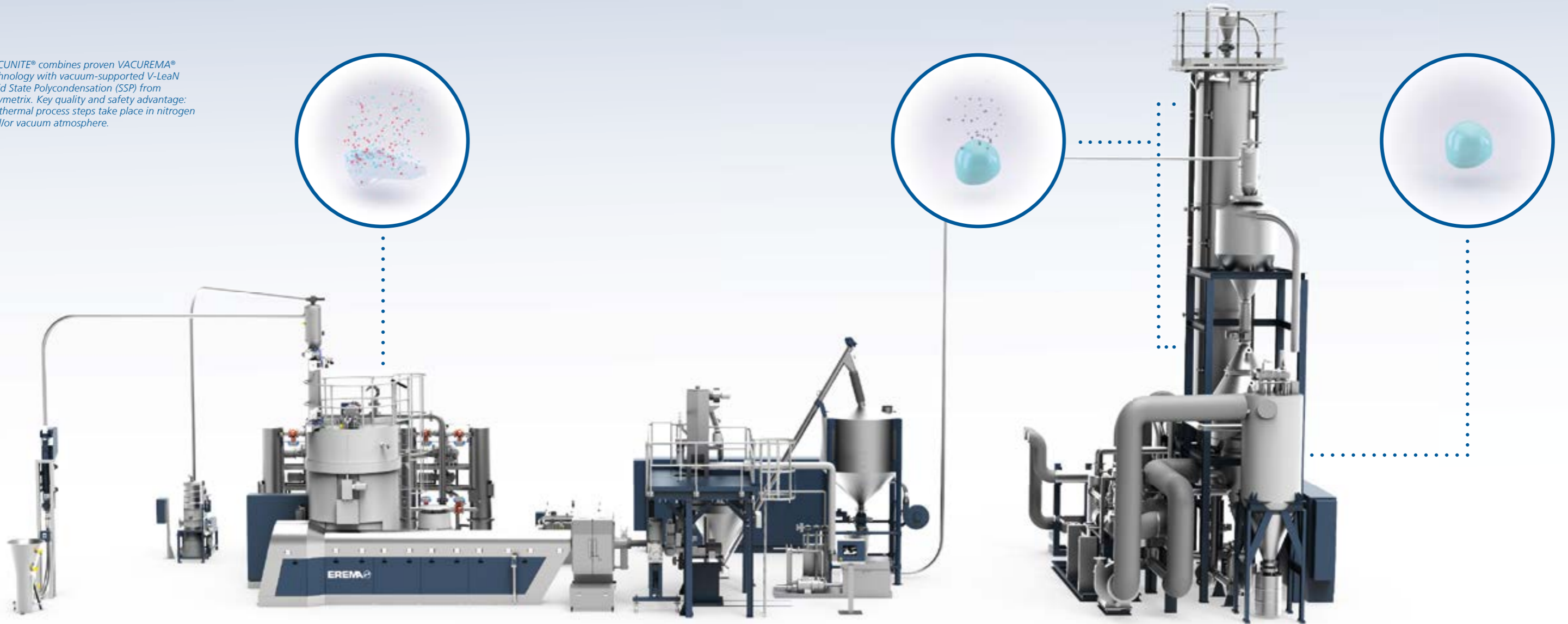
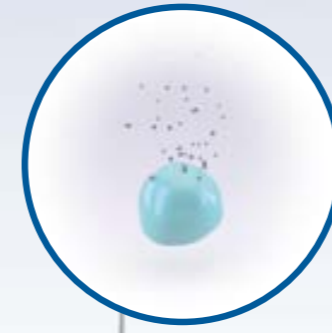


» With VACUNITE®, we offer our bottle-to-bottle customers an innovative technology that sets new standards at all levels.

Christoph Wöss,
Business Development Manager Bottle,
EREMA Group



VACUNITE® combines proven VACUREMA® technology with vacuum-supported V-LeaN Solid State Polycondensation (SSP) from Polymetrix. Key quality and safety advantage: All thermal process steps take place in nitrogen and/or vacuum atmosphere.



is reduced as a result. To increase the transparency of the preforms, the pellets are dedusted again before filling.

**BETTER OUTPUT
DESPITE WORSE INPUT
= FIT FOR THE FUTURE**

The innovative VACUNITE® system is the answer to the challenges facing PET recycling, because in order to be approved for contact with food, recycled PET plastics must meet increasingly stringent quality criteria. At the same time, the demand for high-quality recycled pellets is increasing because legal requirements and voluntary commitments of leading brand manufacturers demand a higher use of recycled

material in the end products. Although this development increases the overall collection rate, it also reduces the quality of the material to be recycled, as the collected material inevitably has a higher proportion of inhomogeneous components. "Recycling plants have to therefore produce better output material despite a reduction in input quality," says Christoph Wöss, Business Development Manager for the Bottle Division at EREMA Group.

COMPACT AND COST EFFECTIVE

VACUNITE® is special not only because of the exceptional quality of the output material. Overall, the technology requires 40 percent fewer components, making the

system much more compact while at the same time consuming up to 36 percent less energy than comparable systems on the market.

"With VACUNITE® we offer our bottle-to-bottle customers a new technology which sets new standards at all levels from technical performance to recyclate quality," says Christoph Wöss. The end product is rPET pellets of unique quality which, in terms of food contact compliance, significantly exceed both the current legal requirements and the even higher requirements of leading brand owners.

VACUNITE® UNITES VACUUM AND NITROGEN TECHNOLOGY:

- Highly efficient decontamination, minimal VOC level, AA content < 1 ppm = **Brand Owner Approved**
- Higher rPET content is possible in the end product thanks to the best rPET colour values = **fit for the future**
- Very energy-saving: only 0.35 kWh/kg specific energy consumption
- Around 40 percent fewer components than comparable systems on the market



» A GROUNDBREAKING INNOVATION FOR THE HIGHEST rPET PURITY





ZERO WASTE AT ITS BEST

> HIGHLY EFFICIENT RECYCLING OF FILM PRODUCTION WASTE <

A strong automation package, modern connectivity solutions and short delivery times thanks to a high level of standardisation: The new INTAREMA® ZeroWastePro is a state-of-the-art recycling machine for production-related film waste. The machine is specially designed for PE and PP films, which are processed either in inline or offline. Up to 100% of the recycled material can be fed back into the main production process.

The stability of the process, the consistently high quality of the recycled pellets produced, and a high degree of automation are of key importance to the processing of production waste. The new ZeroWastePro is designed to meet precisely these requirements - on the one hand thanks to proven Counter Current and Smart Start technology, both of which are used on all INTAREMA® machines. In addition, however, components specially designed for film applications, such as optimised screw geometry

and quality-optimising in-house controls, which are included in the standard, ensure a decisive increase in quality. For example, the pelletising speed tracking control supports the production of pellets with a consistent bulk density and shape.

IT'S SO EASY

"Making it easy for the operator - this requirement was at the top of the development agenda for the new machine," says Andreas Dirnberger, Business Development

Manager for Inhouse & Industrial Applications at EREMA Group. Starting with installation and integration into the existing film production process through to process control during operation - the concept of simplicity has been consistently implemented in all these areas.

INCLUDED ONBOARD: MODERN CONNECTIVITY SOLUTIONS

The new ZeroWastePro boasts impressive modern connectivity solutions. The EREMA



Smart Service Package is included for the first 12 months, for example. This enables machine operators to use practical Remote Access services such as remote maintenance, as well as the advantages of BluPort - the

new digital EREMA Performance Platform.

DON'T WASTE YOUR WASTE

In cost saving terms, the machine gets you off to a great start with especially short

delivery times and an attractive price-performance ratio. Thanks to the reduced use of primary raw materials and the savings in energy costs, the return on investment for the recycling plant is very short.





SMART TECHNOLOGIES FOR BOOSTING MACHINE PERFORMANCE

> NEW DIGITAL ASSISTANCE SYSTEMS AND THE BLUPOINT CUSTOMER PLATFORM <

The plastics industry is currently facing two major challenges: the circular economy and digitalisation. EREMA is convinced that digitalisation in plastics recycling is an important pacemaker on the way to implementing a circular economy. The plastics recycling machine manufacturer is promoting this drive in the industry and at K 2019 will be presenting smart technologies and its new BluPort customer platform, where existing and new digital assistance systems will be brought together in future.

The demands on recycled pellets are increasing, while at the same time more contaminated input streams and new material compositions have to be integrated into the recycling process. "Digitalisation opens up new opportunities for planning, controlling and organising these processes. Its potential must be harnessed to provide the required quantities of high quality, stable recycled pellets," says Manfred Hackl, CEO of the EREMA Group, explaining why EREMA is promoting digitalisation in plastics recycling so strongly.

BLUPOINT - THE NEW CUSTOMER PLATFORM FOR DIGITAL ASSISTANCE SYSTEMS

Smart technologies have been part of EREMA's product range for some years. These include the Smart Start Package for a high degree of automation, the QualityOn packages for continuous measurement of quality data such as colour, MVR and composition of input material during processing, and Smart Factory re360, a Manufacturing Execution System that collates production and machine data from all the customer's machines. EREMA customers can now access more assistance

systems and information tools using the new BluPort customer platform. "Our BluPort online platform puts together in one place a collection of intuitive and user-friendly service and data processing apps that support our customers in quality control and, as a result, increase machine performance. With a focus on data security and customer benefits, we will continuously supplement and expand the BluPort range in the future," says Michael Heitzinger, Managing Director of EREMA. The basic version is free to all customers. The full version with all the latest updates is available when customers purchase a Smart Service Package.

All EREMA machines delivered from K-2019 onwards are equipped with the technology to use the Smart Service Package. A special offer to mark the launch of the BluPort customer platform includes the My Recycling Plant dashboard with the most important key performance indicators and comparison values of the customer's own recycling systems, an investment calculator as a decision-making tool for investments, as well as a pool of maintenance videos customised to each user and their machines with step-by-step field-proven

instructions. "With these maintenance videos, which are unique in this industry, we enable our customers' employees to carry out their work quickly and correctly. This is an important contribution towards achieving the highest possible system availability," Michael Heitzinger is convinced. The proven Spare Parts Online shop, which has also been integrated into the new customer platform, also serves the same purpose. Here, EREMA customers will not only find spare parts that can be ordered around the clock for their machines, but also their own order history, drawings, circuit diagrams, documentation, instruction manuals and photos. Convenient search functions and an intuitive user interface simplify and speed up the procurement process.

"Digital networking is an important step on the way to integrating recycling know-how into the plastics value chain. With our smart technologies and the new BluPort customer platform, we are creating the conditions for developing new solutions together with our customers for cost-effective and environmentally sound optimisations in the process chain," says Manfred Hackl.



» Digital networking is an important step on the way to integrating recycling know-how into the plastics value chain.

Manfred Hackl
CEO EREMA Group



EREMA's BluPort online platform provides service and data processing apps that support customers in quality control and process optimisation.



EREMA GROUP CONTINUES TO GROW

> INCREASING DEMAND FOR HIGH-QUALITY RECYCLING TECHNOLOGY <

The EREMA Group achieved the most successful business year in the company's history. Consolidated total turnover of more than EUR 180 million in 2018/19 represents an increase of 16 percent compared to the previous year. A total of 6,000 EREMA plastics recycling machines are currently in operation in 108 countries around the world. The company group started the 2019/20 financial year with personnel changes at management level and the expansion of the company headquarters in Ansfelden/Linz.

The plastics industry is undergoing change. In the recent past, political and voluntary initiatives as well as an end to the plastic waste exports to China have led to more investment in high-quality recycling technology. The increasing demand is reflected in a new turnover record of the group of companies of EUR 180 million. Half of this volume was generated in Europe.

This increase is due to growing sales worldwide in all three recycling markets: post-consumer, in-house and industrial, and bottle recycling. In the latter case, incoming orders almost tripled compared to previous years. This can be attributed to the high demand for proven VACUREMA® technology and new processes based on it, such as the Flakes to Pre-forms XTREME Renew System developed together with SIPA.

The new bottle-to-bottle system VACUNITE® is also making its mark.

TRENDSETTER IN POST-CONSUMER SOLUTIONS

Order intake in the post-consumer segment also increased again significantly, doubling within the last three years. "Here we are pioneers and trendsetters in solutions for a growing recycling industry that focuses on quality and is becoming increasingly

industrialized," says Manfred Hackl, CEO of the EREMA Group. He is also pleased at the way sales are developing in the in-house and industrial sector. Both the EREMA solutions and the shredder-extruder solutions of the Group subsidiary PURE LOOP were able to increase their turnover yet again. The expansion of the in-house product range thanks to participation in PLASMACH, VACUNITE® and also the newly-created KEYCYCLE business unit as a provider of complete solutions for



Manfred Hackl, CEO EREMA Group GmbH



Horst Wolfsgruber, CFO EREMA Group GmbH



Markus Huber-Lindinger, Managing Director EREMA Engineering Recycling Maschinen und Anlagen Ges.m.b.H.



Michael Heitzinger, Managing Director EREMA Engineering Recycling Maschinen und Anlagen Ges.m.b.H.



plastics recycling, are current examples of new products and innovations. "We thrive on close relationships with our customers! This enables us to understand their challenges and develop appropriate solutions," says Michael Heitzinger, Managing Director of EREMA, one of the recipes for success.

MANAGEMENT CHANGES

At the beginning of the 2019/20 financial year, Klaus Feichtinger stepped

down at his own request as CEO of EREMA Group GmbH. However, he continues to contribute his know-how as a manager in the area of IP and new technologies. Together with Manfred Hackl CEO, Horst Wolfsgruber CFO is now responsible for the strategic planning and ongoing development of the entire group of companies. In order to be able to concentrate fully on this task in the EREMA Group, Manfred Hackl handed over operational management of the subsidiary

EREMA. Markus Huber-Lindinger took over the areas of technology and production as Director. Together with Michael Heitzinger, Managing Director responsible for Sales, Customer Services and Project Planning, he forms the management team duo at EREMA. "We are convinced that this allocation of tasks will enable us to meet the many challenges, both in terms of the size of our group of companies, and due to the rapid changes in the industry, so that we can continue on our successful course of growth," say Hackl and Heitzinger.

EXPANSION OF COMPANY HEADQUARTERS

The expansion of the company headquarters in Ansfelden/Linz is also a response to increasing demand. End of March there was the ground-breaking for the construction of additional production and office space, scheduled to go into operation in spring 2020.



Products made of recycle



SHARE-MINERAL WATER,
GERMANY

BOTTLES MADE OF 100% RPET

The German company Share supports aid projects all over the world with every product sold - in the areas of food, water, hygiene and clothing. Share mineral water is bottled in 100% recycled PET bottles, and the rPET they use is produced with EREMA technology.

HIGH PROPORTION OF RECYCLED PELLETS DESPITE PAPER LABELS

Supermarket film with up to 30% recycled material

SAICA Natur Cycle Plus produces high-quality LDPE and LLDPE pellets from post consumer supermarket film with paper labels: What's special about this is that the high quality of the recycled pellets makes it possible to return up to 25 percent to the production of stretch winding film and up to 30 percent to the production of stretch hoods for pallets. "Such a high proportion of PCR material was unthinkable just a few years ago because of the mechanical properties required for these products," says Clemens

Kitzberger, Business Development Manager for Post Consumer, EREMA Group. SAICA uses an INTAREMA® TVEplus® system equipped with a laser filter for the recycling process.

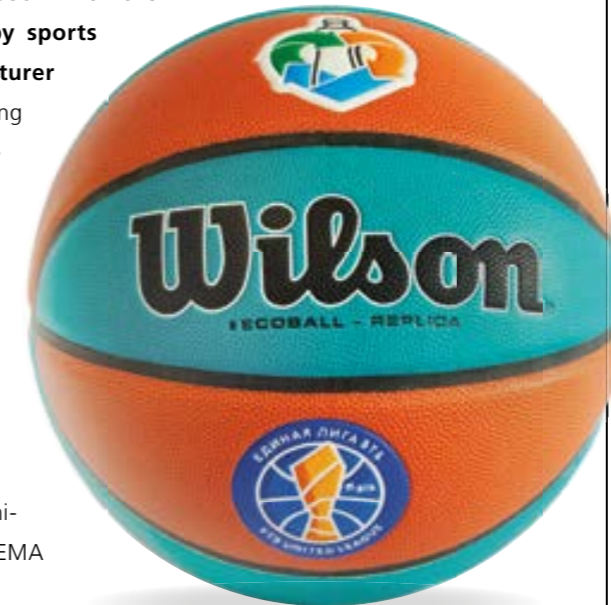
Film: SAICA Natur Cycle Plus
<https://www.saica.com/en/natur-cycle-plus/>



Products made of recycle

LAYUP WITH R-PET FILLED BASKETBALLS

The professionals in the VTB United League, an international competition of the leading basketball clubs in Eastern Europe, are doing their layups this season with the SIBUR balls made by sports equipment manufacturer Wilson. The special thing about them is that the core of these balls consists of rPET. In fact, each individual ball contains two used 1.5 litre PET bottles processed into rPellets. The rPET manufacturer is the Russian petrochemical group SIBUR, an EREMA customer.



COOPERATION BETWEEN
HENKEL AND BOREALIS

ADHESIVE PACKAGING WITH 100% PCR PLASTIC

Henkel has launched its Pattex Made-at-Home universal adhesive with a new bottle based 100% on recycled material. In cooperation with Borealis it has been possible to replace the new plastic materials used so far with plastics made from household waste. The post-consumer recycled pellets come from mtm plastics in Niedergerbra, Germany - an EREMA customer that has been part of the Borealis Group since 2016. The bottles are made of polyethylene, the three components that make up the adjustable application nozzle are made of polypropylene.



PCR MATERIAL FROM THE YELLOW BAG

PLANT POTS MADE OF 100% RECYCLED PLASTIC

The plastic for the plant pots in "recycling blue" made by Pöppelmann comes directly from the yellow recycling bag - and lands there again. This completely closes the raw material cycle. The company, based in Lohne, Germany, describes this system as PÖPPELMANN blue®. "We want to promote the necessary transition from a linear to a circular economy and harmonize ecological thinking with cost-effective actions," says Matthias Lesch, Managing Director of Pöppelmann GmbH & Co. KG.





Best Practice
Inhouse Recycling

PERFECT REGRANULATE FOR PERFECT PRODUCTS

> INTAREMA® TVEPLUS® FOR PRINTED AND UNPRINTED FILM PRODUCTION WASTE <

"Any Austrian film manufacturer who wants to be noticed on the international market must be flexible and deliver top quality," says Stefan Chalupnik, Managing Director of the second largest film manufacturer in the Alpine republic. The fulfilment of the highest quality requirements was therefore a decisive criterion for G. Coreth Kunststoffverarbeitungs GmbH in their search for a new in-house recycling machine, which they again found at EREMA.

Founded in 1980, the family-run film manufacturer based in Unterwaltersdorf produces 30,000 tonnes every year. Customers who purchase the high-quality printed and unprinted film products come from all sectors of the economy, from the construction and wood industries to the beverage industry. The product range is correspondingly large, including pallet covers, sacks, stretch film and hoses, packaging accessories and construction films. This is made possible by a machine park

consisting of eleven extrusion lines, five of which are equipped with in-line printers. An eight-colour printing machine is also used for high-quality printing. With an export share of almost 50 percent, Austria and its neighbouring countries, above all Germany, are the main sales markets.

RECYCLING PAYS OFF

In recent years, the company has increased its production capacity many times over and has continuously expanded its product range.

"Expansion has been necessary in order to survive in the market and ensure long-term security for our production location," says Stefan Chalupnik.

In 2016 the company premises were expanded by 24,000 m² to a total of 54,000 m². The higher production capacity has also pushed the recycling machine, which has been in operation for 15 years, to its limits. "With an output of 380 kg per hour, the old EREMA machine is now too small to process our production waste and the machine hall was already bursting at the seams," says the managing director, describing one of the challenges that he and his employees faced in the course of expanding the plant. There was no doubt that they would recycle the production waste themselves, however, because, according to Chalupnik: "This is the best solution in terms of quality, cost effectiveness and the environment and we have already had very good experience with this in the past. Recycling also creates a positive image for the film industry."

So a new recycling hall was built, which was a huge project due to the completely new infrastructure that was required, as Chalupnik describes impressively during a tour of the company premises: "We had to build our own transformer station for the power supply, lay around 10 km of power cables and construct new access roads." Finally, an INTAREMA®



The best solution

» Recycling the production waste yourself is the best solution in terms of quality, cost effectiveness and the environment.

Stefan Chalupnik

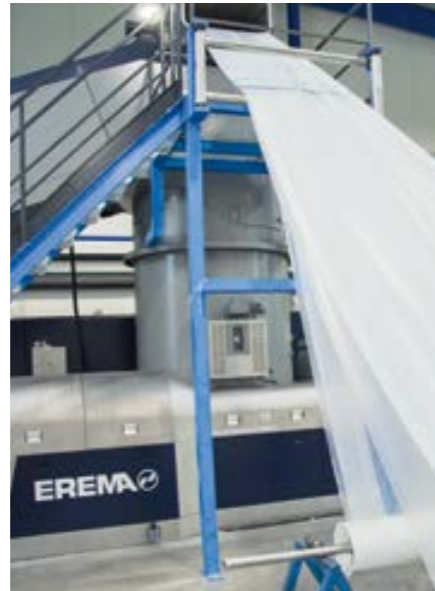


» The start-up of the new machine with the EREMA employees worked perfectly and we were able to sell our previously used EREMA machine immediately without any great effort.

Stefan Chalupnik, Managing Director of Coreth Kunststoffverarbeitungs GmbH



Lindner Antares and INTAREMA® TVEplus® in combination: The shredder transfers the shredded film flakes to the conveyor belt of the EREMA machine.



Depending on current utilisation, the INTAREMA® automatically switches from material being supplied on a conveyor belt to material being supplied from a reel feeder device.



The finest quality flows into the collection sack: Coreth then processes the regranulate into high quality shrink and construction films; in the case of multi-layer films, it is used in the intermediate layer.

1714 TVEplus® with a capacity of 1400 kg per hour was put into operation in the new hall in autumn 2018, producing regranulate in the categories transparent, transparent cloudy and black.

BETTER QUALITY THANKS TO IN-HOUSE RECYCLING

The recycling machine mainly processes production waste from their own plant, including material stored outdoors that is also damp. The remainder is purchased largely from their customers, who deliver used packaging film back to CORETH. The regranulate is used in shrink and construction film production as well as for intermediate layers in multilayer films. Their proportion varies depending on the product. "It is only

possible to use a high proportion of recycled material if the quality is right", says Chalupnik from experience. "We achieve significantly better results with our own regranulate than with bought-in regranulate. We know exactly what it contains and that the quality is consistently high. This is a decisive criterion for the manufacture of our products."

EREMA: THE BEST AT STARTING UP MACHINES

Everything considered, it was the combination of these quality factors, the company's own good experience and the excellent reputation of EREMA recycling technologies worldwide that were decisive factors in the managing director's decision to opt for one again. "Their reputation has been



reaffirmed in two respects," says Chalupnik in conclusion. "The start-up process with the EREMA employees worked perfectly, plus, we were able to sell our previously used plant immediately without any great effort."



Best Practice
Post Consumer Recycling

RECYCLING GOES X-LARGE

> INTEGRA PLASTICS COMBINES ALL THE PROCESS STEPS IN ONE RECYCLING PLANT <

One of the world's most modern recycling plants went into operation in Sofia, Bulgaria, in May 2019. Its operator, Integra Plastics, uses this plant to specialise in the recycling of heavily contaminated post consumer household waste - materials that represent a real challenge to sorting, collection and recycling technologies. For Julian Belev, CEO and one of the owners of the newly founded company, it was clear from the outset that the best technologies available on the market would have to be used to convert this material into high-quality pellets - technologies such as the INTAREMA® 1716 TVEplus® RegrindPro® recycling plant.



» We have now achieved our idea of a fully automatic plastics recycling plant.

Julian Belev, CEO and one of the owners of Integra Plastics

The view at the site of the recycling plant, which was built in just over a year, is impressive. The entire area extends over 35,000 square metres. 12,000 square metres of which are used as production space and 5,000 square meters as storage space. A total of EUR 40 million was invested in infrastructure, sorting, washing and recycling technology and a laboratory. "We have now achieved our idea of a fully automatic plastics recycling plant that complies in every respect with the requirements of European legislation for the implementation of recycling management", Julian Belev is pleased to report.

By combining all the necessary process steps at one location in a single recycling plant, Integra has a unique position on the market worldwide.

The input material consists of thick-walled post consumer packaging and film, both of which are material flows that are particularly difficult to recycle due to their contamination. The material comes from Bulgaria and other EU countries. This will be used to produce up to 30,000 tonnes of PE and PP recycled pellets annually. "We want to offer products that meet the increasing expectations of the market, and that deliver consistently high pellet quality as well as

a high level of availability. This requires the best technology," explains Kostas Ziogas, CSO and co-owner.

STATE-OF-THE-ART TECHNOLOGY FOR AN ESPECIALLY CHALLENGING MATERIAL FLOW

Following pre-shredding, the mixed household waste films are transported over a distance of more than one kilometre to a pre-sorting plant where they are sorted according to polyolefin type and colour. The material is then ground, hot washed and dried before the flakes are re-sorted. The two material streams - transparent/white

» We want to offer products that meet the increasing expectations of the market. This requires the best technology.

Kostas Ziogas, CSO and co-owner of Integra Plastics

and coloured - are then each recycled using an INTAREMA® 1716 TVEplus® Re grindPro® system. The recycling system components are designed for a throughput of 1,900 kg/h for polyethylene and 2,200 kg/h for polypropylene. The Preconditioning Unit (PCU) can be quickly set for processing film or

regrind material. A further advantage is that initial degassing takes place because the material is already preheated and pre-dried in the PCU. Thanks to patented Counter Current technology, a constantly high output over a very wide temperature range is ensured.

EREMA LASER FILTER FOR EFFICIENT FILTRATION

The two recycling plants are equipped with an EREMA twin laser filter, which is particularly suitable for the kind of post consumer input material that is processed by Integra. "To save packaging weight, films are becoming thinner and thinner, which increases the

relative proportion of impurities," explains Clemens Kitzberger, Business Development Manager, Post Consumer Applications at EREMA Group. The high-throughput laser filters are installed upstream of the extruder degassing system. Here, the melt temperature is even lower, and the short residence time directly at the screen thanks to permanent screen cleaning ensures that impurities such as paper labels, aluminium or foreign polymers originating from multilayer material such as PET or PA are reliably removed even at high levels of contamination of up to five percent. The double, i.e. twin design, ensures a throughput capacity of 1,800 - 3,000 kg/h with a variably selectable filtration fineness of 70 - 200 µm. The laser filter is available in filtration units up to 2,000 µm.

"With the technology we have chosen for our new recycling plant, we are ideally equipped to respond to each individual requirement - to the benefit of our customers," says Julian Belev, convinced that this investment has paid off.



EREMA twin laser filter for efficient filtration: impurities such as paper labels, aluminium or foreign polymers originating from multilayer material such as PET or PA are reliably removed even at high levels of contamination of up to five percent.



Best Practice Post Consumer Recycling



FIRST COSMETICS PACKAGING ON THE MARKET MADE OF 100 PERCENT RECYCLED MATERIALS

From recycled plastic collected in household recycling sacks directly to high-quality shower gel bottles - the companies Werner & Mertz, Systec

Plastics Eisfeld and EREMA managed this demanding recycling and production task in May 2019. Thanks to state-of-the-art recycling technologies and close, cross-company cooperation, the first 100 percent recycled plastic packaging for a body care product made its way onto the shelves. The EREMA technologies INTAREMA® TVEplus® ReGrindPro® and the ReFresher module, which ensure the required high regrind quality, including the necessary odour optimisation, play a major role in this success.

In an effort not to turn used plastics into waste in the first place, but to recycle them, the production of high-quality recyclates is becoming increasingly important in addition to avoidance and recycling strategies. This involves making plastic pellets from used and contaminated post consumer material, which is used again in the production of new plastic products. Although the processing of household plastic packaging is a challenge in recycling terms, thanks to technological advances and resourceful manufacturers, recyclates now meet quality criteria almost as high as virgin material and can therefore be used in almost as many ways. Just how diverse the fields of application for recyclates have become can be seen at Systec Plastics Eisfeld GmbH (SPE), an EREMA customer in The Group with the Green Dot.

WORLD FIRST IN THE COSMETICS SECTOR

The raw material for Systalen, the brand name for their recyclates, is plastic waste

» For us, this shower gel bottle is another milestone in the implementation of our recycle initiative.

*Immo Sander,
Head of Packaging Development
at Werner & Mertz.*

sourced from what is known as the dual system, which is packaging material collected from households in Germany. Depending on the product, plastics are processed that meet the required specifications and are of the same type. "They must have a high and reliably consistent quality, be colour-neutral and almost odourless," says Dr. Markus Helftwes, Managing Director of SPE, explaining the basic requirements that must be fulfilled by recyclates used to produce new high-quality consumer goods. The bottle for Frosch Senses brand shower gel launched in May 2019 had to meet particularly stringent requirements. This bottle

is the first packaging used in cosmetics to be made with 100% recycled HDPE collected in from household recycling sacks - a world first based on the cooperation between Werner & Mertz, the manufacturer of Frosch brand products, The Group with the Green Dot and EREMA.

INNOVATIVE TECHNOLOGY FOR THE HIGHEST POSSIBLE QUALITY

"The great challenge in developing the production process for these shower gel bottles - apart from attaining the required functional properties - was the washing process, which cleans the material not only of dirt



The raw material for the shower gel bottles is plastic waste sourced from what is known as the dual system, which is packaging material collected from households in Germany.



» RECYCLATES MUST HAVE A HIGH AND RELIABLY CONSISTENT QUALITY, BE COLOUR NEUTRAL AND ALMOST ODOURLESS.

Dr. Markus Helftwes, Managing Director of Systec Plastics Einfeld GmbH, a company in The Group with the Green Dot

and foreign matter, but also of odours. That's why a special method is already applied during washing," says Helftwes. The next stages in processing the washed flakes use EREMA recycling technology. The INTAREMA® TVEplus® ReGrindPro®

extruder system has been specially designed to process post consumer material following the addition of the laser filter and ReFresher module. The system is an absolute all-rounder regarding the materials it can process because the wide spectrum of

input bulk densities it can handle - from 30 to 800 g/l - makes it suitable for flakes as well as for regrind, film and nonwoven applications. The feed material is gently heated mechanically in the Preconditioning Unit for a period of one hour, flushed

with air and then during this process step it is degassed for the first time. The melt filtration using the laser filter takes place before the extruder degassing, and the laser filter used here can handle impurity levels of up to five percent. Finally, the ReFresher removes other odour substances from the pellets. "This process makes use of the latent energy generated by the preheated pellets during the extrusion process, which makes the entire process particularly energy-saving," explains Clemens Kitzberger, Business Development Manager for the Post Consumer Division at the EREMA Group.

COOPERATION ENABLES THE CIRCULAR ECONOMY

That 100 percent recycled packaging has been developed for the first time for a body care product - subject to the strict requirements of the cosmetics sector - is the result of the dedicated cooperation of the companies involved, says Clemens Kitzberger: "It's good that there are such innovative companies with whom we can jointly promote recycling. This sends out

an important message to the entire plastics industry!". Immo Sander, Head of Packaging Development at Werner & Mertz, adds "For us, this shower gel bottle is a further milestone in the implementation of our

recyclate initiative, following on from successful projects in the detergent sector". The aim of this initiative is to make recycling materials collected from households usable for the production of new packaging.



» The ReFresher makes use of the latent energy generated by the pre-heated pellets during the extrusion process. This really saves energy.

*Clemens Kitzberger
Business Development Manager Post Consumer
at the EREMA Group*

Efficient combination of technologies for high regrind quality and odour optimisation: The INTAREMA® TVEplus® in ReGrindPro® design extruder system with subsequent ReFresher module.





Best Practice
Post Consumer

SMART TECHNOLOGIE BOOSTS PLASTICS RECYCLING

> COREMA® WITH RE360 USED SUCCESSFULLY AT INTERSEROH <

Using the cascade extrusion system COREMA®, the environmental service provider Interseroh produces tailor-made recomponds for very high-quality applications in just one process step. Additives, modifiers and inorganic fillers can be added directly during production in proportions of 0.25 to 40 percent. Quality control is performed digitally and in real time with the EREMA re360 Manufacturing Execution System.

At Interseroh, the use of the new COREMA® system significantly shortens the manufacturing process for recomponds: a "one-extrusion process" enables precisely tailored recipes to be produced in a single step, depending on the customer's requirements, instead of the two steps previously required.



» With this innovative technology, we have reached a new stage of development in plastics recycling.

Manica Ulcnik-Krump, Head of the Recycled Resource Business Unit at Interseroh Dienstleistungs GmbH

© ALBA Group, Amin Alhtar

Switching from the original two-stage process to the single stage process not only optimised the quality of the recycled materials, but also significantly reduced consumption of energy and resources. Even in

the production of complicated recipes, the use of the COREMA® cascade extrusion system in combination with the recycled resource process saves considerable greenhouse gas emissions compared to the use of virgin pellets

from crude oil. This is 54 percent on average in the case of the recompond procyclen, as confirmed by a recent study by Fraunhofer Institute for Environmental, Safety, and Energy Technology (source: Interseroh). "With this innovative technology, we have reached a new stage of development in plastics recycling. This enables us to fulfil customer wishes even more precisely and in a much more sustainable manner," says Manica Ulcnik-Krump, Head of the Recycled Resource Business Unit at Interseroh Dienstleistungs GmbH.



A selection of products manufactured using Recompound Procyclen from Interseroh.

© Interseroh

ABOUT INTERSEROH

Alongside ALBA, Interseroh is one of the brands in the ALBA Group. The ALBA Group is active in Germany, Europe and Asia and is one of the world's leading suppliers of recycling and environmental services and raw materials.

INTERSEROH AND EREMA WIN PLASTICS RECYCLING AWARDS EUROPE 2019



Antonino Furfari, Managing Director, Plastics Recyclers Europe, Manica Ulcnik-Krump, Head of Business Unit Recycled-Resource, Interseroh, Managing Director Michael Heitzinger, Erema GmbH and Brennan Lafferty, Vice President, Crain Global Polymer Group, from left to right.

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EREMA and environmental service provider Interseroh are the winners of this year's Plastics Recycling Awards Europe 2019. In the category "Recycling Machinery Innovation of the Year", the two companies won the competition with the joint submission of their cascade extrusion system COREMA® for the production of tailor-made recycling compounds for high-quality applications. "We are very pleased about this award," say Manica Ulcnik-Krump, Head of the Recycled Resource Business Unit at INTERSEROH Dienstleistungs GmbH, and Michael Heitzinger, Managing Director of EREMA GmbH. "COREMA® is the best proof of the powerful force of innovation that stems from the cooperation between recycling service providers and technology manufacturers. At the same time, with COREMA® we have reached a milestone in the development of mechanical plastics recycling," they both emphasize.



Best Practice
Bottle Recycling

FLAKE-TO-PREFORM THE DIRECT WAY

> WORLD'S FIRST FTP PLANT IMPRESSES RECYCLERS
AND BEVERAGE BOTTLERS <

Kyoei Industry - the Japanese plastics recycling company - put into operation in the summer of 2018 the world's first plant that directly produces new PET bottle preforms from 100 percent recycled PET flakes. The innovative flake-to-Preform (FtP) inline process is based on the combination of EREMA's proven VACUREMA® bottle-to-bottle technology with the XTREME Renew Preform Production System from SIPA, the Italian manufacturer of PET packaging solutions. With top quality values for the preforms and its unique ecological and economic performance, it impressed not only Kyoei and its customers, but also the jury of the World Star Packaging Award 2019.

The joint development of the inline process was initiated in 2014 by Kyoei and the Japanese beverage group Suntory. In autumn 2017, the direct processing of washed PET flakes into food-safe preforms was demonstrated live for the first time at the headquarters of the Italian PET specialist SIPA. About a year after this presentation, Kyoei was able to put the world's first flake-to-preform system into operation at its plant in Kasama. Since then, the company has been producing up to 300 million food-grade preforms per year from post consumer PET bottles in a single step. Their customer is Suntory, the internationally active beverage group, who sell their

own beverage brands as well as products from well-known brand manufacturers around the globe and fill 2.5 billion bottles a year.

HOW IT WORKS

The VACUREMA® part of the plant decontaminates the flakes and increases the viscosity of the input material, which is then melted and filtered. The food-grade melt is then fed directly into the XTREME injection moulding machine. With this system, a further melting process (i.e. the melting of the rPET pellets, which is necessary in conventional processes) is no longer required. This in turn eliminates the risk of yellowing and the formation of volatile organic compounds. Bottles made

» If the quality of the washed flakes is right, the inline preforms don't need to shy away from being compared to injection-moulded virgin products.

Christoph Wöss
Business Development Manager
Application Bottle, EREMA Group



VACUREMA® Inline Preform System: The innovative process is based on the combination of EREMA's proven VACUREMA® bottle-to-bottle technology with SIPA's XTREME Renew Preform Production System.

» Preforms with top quality values

(photo SIPA)



from these preforms therefore differ significantly in their appearance to other 100 percent rPET products. "If the quality of the washed flakes is right, the inline preforms don't need to shy away from being compared to injection-moulded virgin products," says Christoph Woess, Business Development Manager for the bottle applications at EREMA Group.

BENEFICIAL IN BOTH ECOLOGICAL AND ECONOMIC TERMS

The combination of four process steps - decontamination, IV stabilization, melt filtration and injection stamping - in one system reduces energy consumption by 30 percent compared to conventional systems. CO₂ emissions are also reduced by

25 percent and are therefore significantly lower than with conventional PET bottle production from rPET raw material. Since no rPellets are produced, no additional dryers or storage areas are required, which leads to further cost savings.

WORLDSTAR PACKAGING AWARD: AND THE WINNER IS...

In May 2019, Christoph Wöss and Michael Heitzinger (EREMA), Eiichi Furusawa (President Kyoei), Munehiko Takada (Packaging Material Departments, Suntory) and Gianfranco Zoppas (President Zoppas Industries Group/SIPA) were presented with a WorldStar Packaging Award in the "Beverages" category for the development of the FTP XTREME RENEW system in Prague. "Our cooperation shows that bringing together the expertise of machine manufacturers, plastics recycling companies and branded article producers makes a functioning circular economy possible," say the people in the four companies responsible for implementing this successful project, which this year received the WorldStar Packaging Award. The award recognizes outstanding packaging solutions from around the world that set international standards for the packaging industry thanks to their design or the way they are manufactured.



WorldStar Packaging Award: Pierre Pienaar (President World Packaging Organisation), Michael Heitzinger (Managing Director EREMA GmbH), Gianfranco Zoppas (President Zoppas Industries Group/SIPA), Christoph Wöss (Business Development Manager Application Bottle, EREMA Group), Eiichi Furusawa (President Kyoei) and Munehiko Takada (Packaging Material Departments, Suntory), from left to right



NEW APPRENTICESHIP IN METALWORKING TECHNOLOGY

Young future

EREMA has always attached great importance to the sound training of its specialists of tomorrow. Young employees enter a promising industry through a technical or



commercial apprenticeship at the company headquarters in Ansfelden, Austria. As part of a motivated team, they make a valuable contribution to the development, sale and commissioning of state-of-the-art recycling machines through their work during vocational training and afterwards. With the new apprenticeship in metalworking technology, EREMA continues on its path of in-house training for skilled workers.

Thanks to the solid apprenticeship training at EREMA, many of the new specialists we need come from our own ranks.

INNOVATORS IN PLASTICS RECYCLING

EUROPEAN INVENTOR AWARD

On 20 June 2019, the European Patent Office (EPO) presented Klaus Feichtinger (IP & New Technologies EREMA Group) and Manfred Hackl (CEO EREMA Group) with the European Inventor Award 2019 in the "Industry" category. This was mainly due to the patents associated with

the company's Counter Current technology. The jury evaluated not only the patents themselves, but also the use and success of this technology on the market. "Feichtinger and Hackl have dedicated almost their entire careers to innovation in plastic recycling," said EPO President António Campinos.

"They have increased efficiency in plastics recycling, which is great news for sustainability in business and shows how innovation in industry can help to address environmental and societal issues too."



Klaus Feichtinger and Manfred Hackl receive the renowned European Inventor Award 2019.

3S: EQUIPPED FOR INCREASING DEMAND

PRODUCTION CAPACITY EXPANDED

3S, part of the EREMA Group, is meeting increasing demand for its products in the extrusion and oilfield industries by investing in the expansion of its manufacturing location. Founded in 1991, the maker of screws, spirals and spindles has made a name for itself with the quality of its products manufactured for specialist requirements. Today, 100 employees at the company's sites in Roitham and Wartberg produce key components for the plastics, rubber, chemical, oilfield and food industries as well as for ceramic extrusion, generating sales of around EUR 19 million. The focus continues to be on the manufacture of extruder screws for plastics and recycling technologies. Recently, 3S has processed between 1,200 and 1,500 extruder screw orders a year. With the additional production area of 1,600 m² and the extra machinery at the headquarters in Roitham, the company is prepared for the increase in demand for its products over the past few months and has created the conditions for further successful business development.



EREMA GROUP

60 PERCENT STAKE IN PLASMAC ACQUIRED

On 1 January 2019, the EREMA Group acquired 60 percent of the recycling machine manufacturer PLASMAC Srl to expand its range of tailor-made plastic recycling solutions for in-house applications. The remaining 40 percent of the recycling machine manufacturer is owned by SYNCRO Group, a manufacturer in Italy that makes equipment for the blown film industry. PLASMAC has been active worldwide as a manufacturer of recycling plants since 1994 and was previously based in Aylesbury, England. In June 2018 the SYNCRO Group relocated the business to Busto Arsizio (Italy) and in January 2019 Plasmac Srl was newly established. The CEO of PLASMAC Srl



The Omega shredder-extruder by PLASMAC for straightforward applications at throughputs of up to 250 kg/h.

is Gabriele Caccia, who is also CEO of the SYNCRO Group. PLASMAC has comprehensive expertise in edge trim recycling and with their Alpha direct feed extruder and Omega shredder-extruder system offers easy-to-use solutions for throughputs of up to 250 kg/h. This range is supplemented by the Powerfeed

edge trim transport system. "These machines and components expand our product range of systems for straightforward standard applications in the in-house segment, which is very important to us," says Manfred Hackl, CEO of the EREMA Group, explaining why they invested in this business.

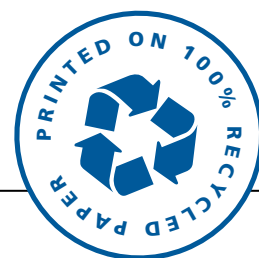
NEW INTERACTIVE EREMA FILM

Change - the world of Petra

While our oceans and the most beautiful beaches in the world are threatened with drowning in plastic waste, 27-year-old Petra Maier is struggling to get on in life. She knows that change is needed. Petra is the main actor in the latest EREMA film "Change - the world of Petra". What makes the film special is that it is designed interactively, so viewers can decide by clicking with the mouse how the film ends: Will Petra take over her father's recycling company and what role will modern EREMA technologies play in this? Or is she ready to create innovative designer items using post consumer plastics that could change the world?

www.changetheworldofpetra.com





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