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Plastic Tomorrow

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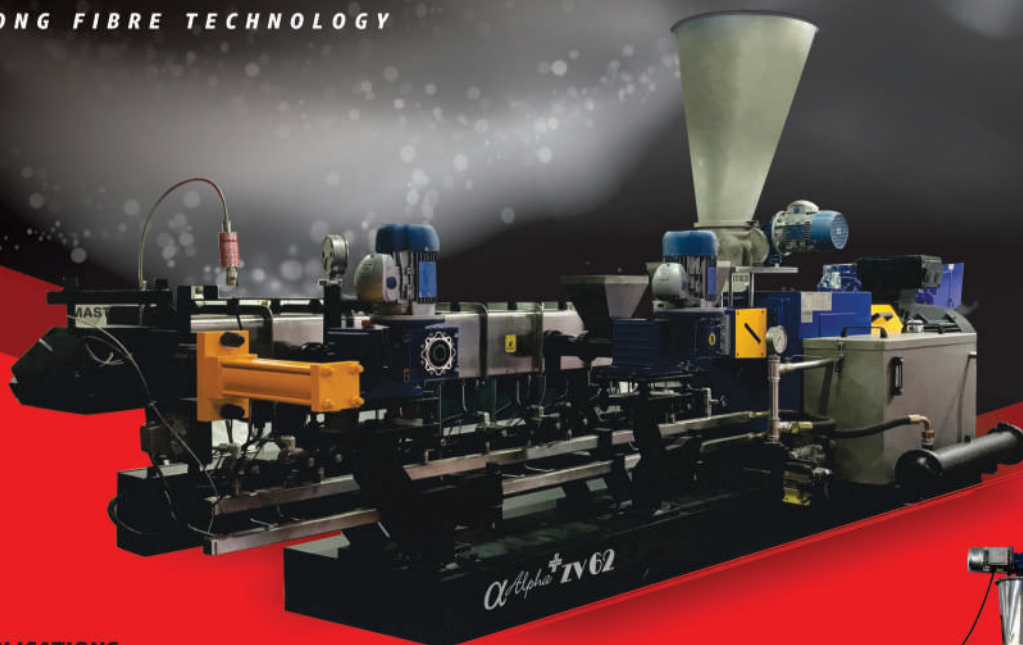


HIGH TORQUE COMPOUNDING LINES

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APPLICATIONS

Engineering Compounds

LFT Glass fibre & Carbon fibre
PA6, PA66, ABS, PEEK POM,
FR Compounds, PBT, PES & More
Master Batches
Bio degradable
Filler compounds
Elastomers TPU

Toner Compounds

Dual & Mono

Human Food

Expandable foods
Wheat, Rice, maize
Millet & Pulses
Chocos & Cereals

Pharmaceuticals

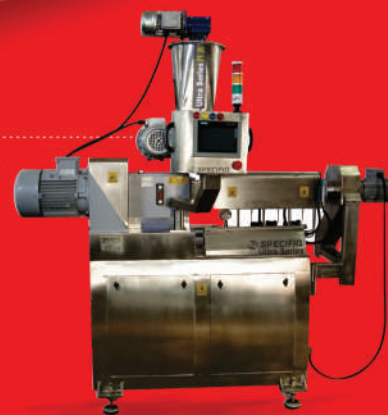
Hot Melt
Medicines

Fish & Pet food

Pellets
Brine shrimp
Floating pellets

Crucibles

Catalysts



FEATURES

Lab Cap : 1-10 Kg/hr
Production line : Upto 1000 Kg / hr
Screw : Hi Do-DI Volume ratio
Dosing : Loss in Weight Feeders (Gravimetric)
Gear Box : Robust Gearbox Cap 110 Nm -2100 Nm
Scre Rpm : 300 - 800
Moc : AISI Tool Grade steel W5

Side Feeder : Twin Screw Feeders for Glass fibre & Minerals
Overload Safety : Torque limiter Quick release coupling
Pellatization : Dry Strand, under water, Water ring, Air Ring Pelletisers
Controls : Touch screen Human Machine interface,
PLC & Data Recordings
Barrel : Segmented, Liquid cool & Electric Cast Heating

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Innovations & Technological Upgradation: Trained technical team of **GMS** design machines keeping in mind the best quality and advanced Technology to provide 100% performance and maximum customer satisfaction. Since inception **GMS** made a prime decision to deliver machines with the highest quality at the lowest possible value to remain world leaders in Recycling Technology. We invest a lot in development and upgradation. Our new developments are done keeping in mind easy replacement of parts with local available parts to reduce downtime to customers. Automation and staff as well as equipment safety have our core care when developing newer equipment. Our future decision for intelligent machines providing data analysis, will bring us closer to Industry 4.0.

Service & Backup: Our team of experts is the main asset of **GMS**. Our staff are trained to provide quality and uninterrupted service as and when requested. Our technicians are ready to fly in the shortest time to deliver quick service to our customers in the remotest cities of the world.

Extended Producers Responsibility: Recycling is the need of the hour especially in India with the introduction of the Extended Producers Responsibility. Companies producing plastic products and packaging will need to introduce recycling as their secondary activity. With the fast changes in the Plastic Industry and its exponential growth **GMS** is already geared up to deliver machines on time with complete satisfaction and keeping our moto of "Quality and Service" intact.

Make In India: **GMS** is a perfect example of "Make in India" as all our equipment are made in India, with technical support of our Joint Venture Partners in Italy. This is reason enough to sell 430 and ever-growing number of machines in the market.

GMS Plastics Machinery Pvt. Ltd., India is one of the leading manufacturers in the plastic recycling sector and offers a wide range of machines to recover different types of plastic materials.

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- ✓ Techno-Commercial Joint Venture with **M/s. Gamma Meccanica S.p.A., Italy** the world leaders in Plastic Waste Recycling Equipment.

2. Compac Recycling Lines

- ✓ Designed for particularly difficult materials coming from post-consumer waste.

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- ✓ Machine with Densifier / Cutter Compactor to cut the waste and feed directly to the extruder.
- 3. **Washing Plant**
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 - ✓ Fully and Semi-Automatic Both systems available.
- 4. **Drying Plant**
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 - ✚ Thermal Drying

Benefits of [GMS](#) Recycling Systems:

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- ✓ Machines made with utmost high quality and hence we have bare minimum calls for maintenance on our machines.
- ✓ In any form: Film, Raffia, Non-Woven, Filament, Runners, Lumps, Powder, Agglomerate, etc.,
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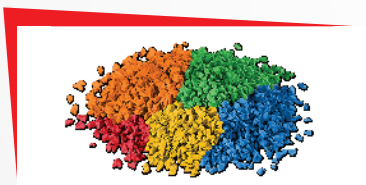
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Competence in thermoplastic elastomers and custom-engineered hybrids



- K2019: New KRAIBURG TPE compounds for consumer and automotive applications
- KRAIBURG TPE will present itself once again as competence leader in the thermoplastic elastomer (TPE) market at the upcoming K 2019 trade fair held from October 16 to 23 in Düsseldorf. At both booth C58-4 located in "Rubber Street" in hall 6 and its ideas factory at booth E22, the TPE manufacturer will address major challenges and trends the growing TPE business is facing.
- "K is the most important leading trade fair for innovation in the global plastics and rubber market and sets the course for the industry," says Franz Hinterecker, CEO at KRAIBURG TPE. "Our trade fair appearance will focus, among other things, on new TPE compounds that pass migration tests even when in contact with foods that contain fat. Trade fair visitors may also look forward to exciting new developments in the fields of emission and odor relating to interior applications and in the field of thermoplastic elastomer hybrids. In addition, we will present new materials with adhesion to ASA and PMMA for exterior applications."
- KRAIBURG TPE's highlights at K 2019:
 - Two custom-engineered compound series with significantly improved migration control as compared to common TPEs. They are particularly suited for closure systems, valves and seals for packaging with direct contact to foods that contain fat. This innovative material technology develops recipes with minimal migration potential that can be precisely calculated.
 - TPE compounds with a secure, optimized odor and emission behavior for interior automotive

- applications. In recent years, KRAIBURG TPE has been intensively occupied with the factors that influence odor and emissions.
- Together with an independent testing institute, we have thoroughly examined raw materials and sample histories as well as packaging and test methods in order to develop market-oriented materials and bring an ultra-low-emission material to market.
- TPE compounds with enhanced UV resistance and adhesion to plastics for exterior automotive applications including ASA, EPDM and PMMA.

□ • New custom-engineered thermoplastic hybrids (TEHs) that provide superior chemical and thermal resistance and thus fill the gap between classic elastomers and thermoplastic elastomers. Depending on application profile and applications, KRAIBURG TPE combines appropriate elastomers with thermoplastics to achieve the right thermoplastically processable material solutions.

• The expanded product portfolio, with its improved emission and odor values as well as its migration results, meets strict requirements worldwide and thus minimizes risk and may accelerate the launch of new applications. The expansion of material solutions for the packaging market has been targeted to cover also high-end applications.

KRAIBURG TPE is regarded as a specialist for custom-engineered TPE solutions and supports its customers on-site with a bundle of specific services. These services range from project-related advice on materials and processing recommendations through to quick color matching. Local and global contact persons ensure good customer management with short delivery times. The materials are manufactured according to identical, certified quality standards at

production sites in the Asia-Pacific region as well as in Europe and North America.

By means of several innovative applications, visitors to K 2019 can see for themselves the results of this customer-oriented strategy, which doesn't neglect market niches either. Current examples are a cosmetics dispenser with an integrated mixing element, multi-component roof rail bases saving mounting time and an interactive learning robot for children.

During the K fair from October 16 to 23, KRAIBURG TPE's materials and market experts are ready to conduct

technical discussions with customers and prospects and to provide them with competent materials and service support at booth C58-4 of "Rubber Street" in hall 6. The manufacturer also offers the opportunity to have a look inside its "ideas factory" at booth E22 in hall 6. "Exchanging knowledge with our customers and looking into the future, at trends and potentials are very important to us and sometimes form the basis for our new developments", Franz Hinterecker adds.

- About KRAIBURG TPE
- KRAIBURG TPE (www.kraiburg-tpe.com) is a global manufacturer of thermoplastic elastomers. From its beginning in 2001 as a subsidiary of the historical KRAIBURG Group founded in 1947, KRAIBURG TPE has pioneered in TPE compounds, today being the competence

leader in this industry. With production sites in Germany, the U.S., and Malaysia, the company

and For Tec E® product lines are processed by injection molding or extrusion and provide numerous processing and product design advantages to manufacturers. KRAIBURG TPE features innovative capabilities as well as true global customer orientation, customized product solutions and reliable service. The company is certified to ISO 50001 at its headquarters in Germany and holds ISO 9001 and ISO 14001 certifications at all global sites. In 2018, KRAIBURG TPE, with 640 employees worldwide, generated sales of 189 million euros.

For More Information

Email : info@kraiburg-tpe.com www.kraiburg-tpe.com

Courtesy

EXHIBITION DETAIL

PLASTEC EAST 2019	NEW YORK	11-13 JUNE 2019
COMPLAST	MYANMAR (YANGON)	14-16 JUNE 2019
PROPAK CHINA	SHANGHAI, CHINA	19-21 JUNE 2019
PLASTECH 2019	VIETNAM	26-28 JUNE 2019
COMPLAST	KENYA (NAIROBI)	11-13 JULY,2019
COMPLAST	COLOMBO (SRILANKA)	9-11 AUGUST 2019
IPLEX-2019	BANGALORE	23-25 AUGUST-2019
K-2019	DUSSELDORF GERMANY	16 TO 23RD OCT-2019
INTERPLAST-PACKPRINT	NAIROBI,KENYA	15 TO 17TH NOV.2019
PLASTIVISION-2020	MUMBAI(GOREGAON)	16-20 JANUARY-2020
COMPLAST	JOHANNESBURG (S.AFRICA)	3-5 MARCH 2020
PLASTIVISION ARABIA-2020	EXPO CENTRE-SHARAJ-UAE.	16-19 MARCH- 20200222-67778882
PLAST ASIA-2020	BIEC, BANGALORE	19-22 JUNE-2020
PLAST INDIA-2021	PRAGATI MAIDAN NEW DELHI	4-9 FEB 2021
PLAST FOCUS	GREATER NOIDA.	5 TH TO 9 TH MARCH2022



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100% recyclable RENOLIT TECNOGOR composite sheet production starts in India for automotive interior market



RENOLIT GOR S.p.A., a leading manufacturer of thermoplastic and thermoformable materials for the global automotive market, has responded to growing global demand for RENOLIT TECNOGOR. The RENOLIT COMPOSITES business unit has added a new production line to the APPL GOR Plastics India Pvt. Ltd. plant for customers in India and the Asia Pacific region. The new extrusion line, located in Pune, near Mumbai, is the first facility outside of Europe able to produce, clean, safe RENOLIT TECNOGOR thermoformable sheets and rolls, along with other lightweight, 100% recyclable, sustainable products in the RENOLITCOMPOSITES range.

The installation of the new line in Pune was celebrated at the official inauguration event earlier in the year attended by COO Dr. Axel Bruder from the RENOLIT Group Executive Board, CEO Fabrizio Carello and CFO Mauro Piccolo from RENOLIT GOR S.p.A., and Rahul Chivate, General Manager of APPL GOR Plastics India.

A key feature of the new production line design is the inclusion of RENOLIT's patented extrusion processing technology for manufacturing the innovative, new, 100% recyclable, RENOLIT TECNOGOR glass fiber (GF) reinforced, PP based, lightweight thermoplastic composite material. High quality 3D trim parts can be consistently thermoformed in a high productivity 'glue free' one-step-process, which reduces production costs.

Thanks to the unique production process, RENOLIT TECNOGOR has superior stiffness and impact performance. The patented fiber embedding extrusion technique also makes RENOLIT TECNOGOR a clean, very safe material to use on the shop floor and handle post moulding. This is because all the glass fibers are completely encapsulated in the PP polymer matrix during extrusion, so there are no free floating fibers in the air during lay up or exposed on the moulded part surface. This will be a major safety benefit to customers in the Indian market, which currently mainly uses glass fiber mats to produce composite moulded parts.

Technical director of RENOLIT COMPOSITES Adriano Odino, who headed up the installation project commented: "The local engineering team did a great job installing and commissioning the new line and the highly skilled blue collar workforce quickly learnt how to efficiently produce all the grades that the new line c

an extrude to RENOLIT's stringent specifications and quality assurance standards. The new line in Pune is now fully operational and open for business."

The versatile new line can not only produce RENOLIT TECNOGOR, but also RENOLIT DEEP-STOCK, RENOLITFLEXIGOR plus RENOLIT WOOD-STOCK which was the only RENOLIT product manufactured in India until now. "For many years we could only offer the classic RENOLIT WOOD-STOCK sheet range. We are very pleased to be able to now offer our clients a wider range of sustainable products which offer solutions to real problems the market is facing using traditional glass fiber mats", said Rahul Chivate, General Manager of APPL GOR Plastics India. The RENOLITCOMPOSITES products now being produced in India are primarily aimed at Tier 1 thermoformers supplying automotive OEMs in India and Asia Pacific. They offer vehicle producers a safer and more environmentally friendly material solutions to cost effectively fabricate, automotive trim parts.

RENOLIT TECNOGOR has gained a leading position in the global automotive interiors market with leading German, Italian, French and Japanese car makers for a variety of thermoformed, custom coated, vehicle interior 3D trim parts including parcel shelves, load floors, seat back covers, dashboard inserts and trunk trims. For other interior and exterior vehicle applications, such as door inserts, map pockets, trunk side trims and wheel arch liners, RENOLIT FLEXIGOR has been supplied to the thermoformer with a customer specified aesthetic surface fabric applied to either one or both sides as required. RENOLIT FLEXIGOR is a highly thermoformable, low VOC, lightweight composite material based on polyolefin and renewable natural/ mineral raw material fillers, so is sustainable as well as being a fully recyclable product.

The company

The RENOLIT Group is a globally-active specialist for high-quality plastic films, sheets and other plastic products. With more than thirty locations in over twenty countries, and with annual sales of EUR 1.031 billion in fiscal year 2018, the company with headquarters in Worms – nearly fifty km northwest of Heidelberg – is one of the world's leading plastics product manufacturers. Over 4,700 employees continue to further develop the knowledge and expertise gained from over seventy years of business.

For more information about RENOLIT TECNOGOR and the full range of products available from RENOLITCOMPOSITES visit www.renolit-tecnogor.com or www.renolit.com/composites.

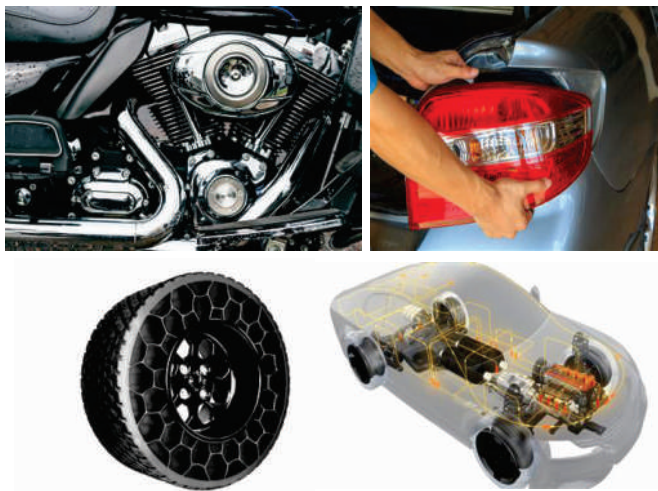
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Courtesy

DSM to showcase purpose-led innovations at K2019



Royal DSM, a global science-based company in Nutrition, Health and Sustainable Living, will showcase some of its latest purpose-led innovations at K2019, the world's premier fair for the plastics and rubber industry, in Düsseldorf, Germany, between 16 and 23 October 2019. Exhibiting under the theme of 'Bright Science. Brighter Living' – at hall 6, booth 11 – DSM will show how it is using its science-based competences to develop innovations to both address the needs of its customers and tackle the world's major challenges. Some of these innovations are detailed below.

Metal replacement for electric vehicles

With growing demand for electric mobility, electromagnetic interference (EMI) shielding and thermal management are increasingly important in delivering high-quality automotive electronic systems. In particular, metal enclosures house electronic control units, or power and battery management modules, protecting these elements from both heat and mechanical damage. Nevertheless, these conventional metal housings are heavy, driving fuel consumption and carbon emissions in case of pure combustion or hybrid cars and traction and driving experience in case of pure electric cars. DSM's portfolio of conductive plastics enables the replacement of full-metal enclosures, with shielding efficiencies of around 40-60dB of plastic thickness, which protect from EMI, and can lead to weight reductions of up to 50%.

Akulon® RePurposed: Recycled polyamide from discarded fishing nets

DSM and Starboard came together when the surfboard company selected DSM's Akulon® RePurposed, where the resin used is fully recycled from discarded nylon-based fishing nets and is known for its sustainability profile as much as its performance. The discarded fishing nets are gathered from the Indian Ocean and Arabian Sea and are given a new lease of life as fins, fin boxes, standup paddleboard pumps, and other structural parts in surfboards. The product can be applied in many other applications and is specifically targeted at the sports and leisure market.

Arnitel® E-TPEE in sustainable, high-performance athletic footwear

In recent years, the athletic sportswear industry has increasingly integrated high-performance materials to deliver higher durability, stability and functional performance without compromising on weight. DSM's expanded Arnitel® co-polyester (E-TPEE) can be used in mid-soles of athletic footwear to deliver a range of performance advantages:

- Very high rebound rate of 75-80%, compared to 65-70% other materials such as E-TPU at same densities
- Consistent performance across diverse climates; Arnitel® has a high consistency in modulus across temperatures from -25°C to +50°C
- Arnitel® enables circularity when designing an all-polyester solution for upper and sole materials, including the adhesives

Arnitel® in non-pneumatic tires

The market for non-pneumatic tires, or flat-free tires that are not supported by air pressure, is being driven by the need to integrate higher levels of sustainability, durability, efficiency and reduced costs. Arnitel®, a family of high-performance thermoplastic elastomers (TPE), offers a unique combination of flexibility, high temperature resistance, strength and processing characteristics. As such, Arnitel® is increasingly being used as a lighter, smarter, greener alternative to conventional rubbers, reducing environmental impact and, ultimately, system costs.

Reinventing the wheel with Arnitel®: Non-pneumatic tires that don't go flat

Additive manufacturing for automotive spare parts, low volume and customized production

Additive manufacturing (AM) is quickly evolving from prototyping into mainstream production, opening up a wide range of new horizons across many industries. The digital production technology enables new designs and applications, as well as reducing inventories, process waste, transportation cost and carbon footprint. DSM has pioneered additive manufacturing for over 25 years, and at K2019 will be outlining opportunities of AM for automotive OEMs. From creating vehicles produced in comparatively low volumes to individual requirements and tastes, to production of spare parts – an area with huge potential as it could help reduce inventory, typically 7% of an automotive OEM's liquid assets. However, AM is used though, cost-cutting and carbon footprint reduction are uppermost in the minds of the users. More information you will find in the article about the trends in automotive for additive manufacturing.

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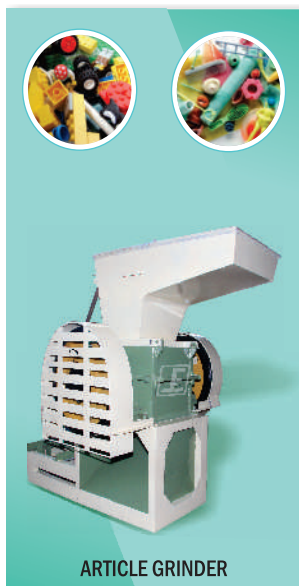
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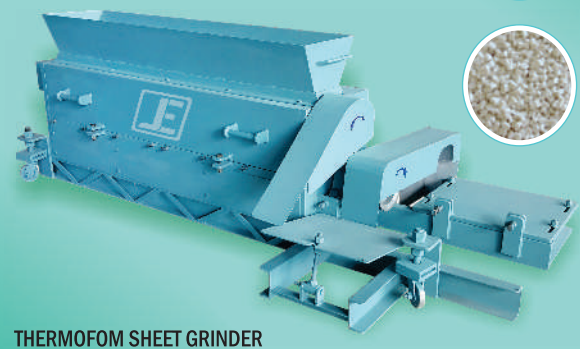
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It's mainly use as Inline grinder or form grinder in online plant of XPS Thermoforming.



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चलो बनाते हैं, प्लास्टिक नियंत्रित भारत



प्लास्टिक आज बड़ी समस्या बन चुकी है। सिर्फ भारत में हर दिन २५,९४० टन प्लास्टिक तयार होता है। महत्वपूर्ण ये की केंद्रीय प्रदूषण नियंत्रण मंडल के अहवाल के अनुसार हर दिन देश में २५,९४० टन प्लास्टिक में से ४० % यानी की १०,३४० टन प्लास्टिक कचरा उठाया ही नहीं जाता। बड़े ६० शहरों में से १५, ३४२ टन प्लास्टिक हर दिन तयार होता है,

उसमें से ९२०५ टन प्लास्टिक पुनः वापर किया जाता है, बाकी ६९३७ टन कचारा ही बन जाता है। इतनी प्लास्टिक की गंभीर समस्या है। उस समस्या पर सचिन देशमुख (सांगली) इन्होंने संशोधन करके वेस्ट प्लास्टिक प्रोडक्ट मशीन के रूप में उपाय खोजा है। ये सक्षम उपाय इसीलिए है क्योंकि इसमें कचरा डेपो पर इकट्ठा होनेवाला किसी भी तरह का प्लास्टिक सीधे मशीन में प्रोसेस करके प्रोडक्ट बन सकते हैं जैसे की प्लास्टिक इटे, पेवर ब्लॉक, ट्री गार्ड, मेल स्टोन इ.

सचिन देशमुखजी का प्लास्टिक वेस्ट कंट्रोल प्रोजेक्ट अगर स्वच्छ भारत अभियान, ग्रामविकास अभियान जैसे अभियान का हिस्सा बन जाये और कचरा बनने वाले प्लास्टिक को दस रुपये प्रति किलो किमत मिले तो ५०,००० करोड़ से भी उपर का

रोजगार गरीब लोगोकेलिए तयार हो सकता है। ये सब साबित करने के लिए सचिन देशमुख इन्होंने अपने संशोधन का रोल मॉडल इस्लामपुर नगरपालिका के कचरा डेपोपर तयार किया। उन्होंने वेस्ट प्लास्टिक प्रोडक्ट मशीन ये टेक्नोलॉजी का संशोधन किया और उसको देशमुख प्लास्टिक वेस्ट कंट्रोल प्रोजेक्ट नामसे देश के सामने लेके आ रहे हैं। उन्होंने इस टेक्नोलॉजीका पेटेंट किया हुआ है।

इस्लामपुर नगरपालिका कचरा डेपोपर यहाँ प्लास्टिक के उपर प्रोसेस करके ८०० इटे बनाई है। सचिन देशमुख चाहते हैं की इस टेक्नोलॉजी का संशोधन, उसका विकास और आज देश के सामने यह टेक्नोलॉजी सेना में होते हुए ही हुआ इसीलिए विश्व में इस मशीन से बने प्लास्टिक इटो का पहला उदहारण भारतीय सेना में ही बने। और वही बनाने जा रहे हैं। (ये कोई भी गोपनीय माहिती नहीं, जैसे साधारण इटो का बंकर, पोस्ट बनाने के लिए इस्तिमाल होता है वैसेही प्लास्टिक इटो का भी ये चीजे बनाने में इस्तिमाल हो सकता है।) और हमारा हेतु प्लास्टिक कचरे को समाज उपयोगी किसी चीज में ब्लॉक करना तो है।

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सचिन देशमुख ये चाहते है की उनपर स्वच्छ भारत अभियान की जिम्मेदारी सोपी जाये , सोपी गयी तो सचिन देशमुख क्या करेंगे :-

१) इस्लामपुर के प्लास्टिक वेस्ट कंट्रोल प्रोजेक्ट के मॉडल को रोल मॉडल बना देंगे और इस्लामपुर मे वेस्ट प्लास्टिक को दस रूपये प्लास्टिक को किमंत दीयी जाएगी ।(यह सचिन देशमुख आपके शहर में भी कर सकते है , अगर आपके शहर की लोकसंख्या एक लाख से कम है ।) प्लास्टिक वेस्ट से पैसा मिलता है, इसिलिये लोक प्लास्टिक बाहर नहीं फेकेंगे । और फेका गया प्लास्टिक गरीब लोक उठाके इकट्टा करके रख देंगे क्योकि उसका दस रूपये प्रति किलो कीमत जो मिलता है।

२) एक घंटागाड़ी (कचरा इकट्टा करने वाली गाड़ी) प्लास्टिक इकट्टा करने के लिए रख देंगे । उस घंटागाड़ी में प्लास्टिक जमा करने के बाद उस व्यक्ती को प्लास्टिक के वजन के अनुसार पैसा (रुपये 10 प्रति किलो) दिया जायेगा । (ये प्लास्टिक कीमत शुन्य होगा और हर दिन एक आदमी पाच किलो ही जमा कर सकता है।)



३) घंटागाड़ी मे जमा प्लास्टिक प्लास्टिक वेस्ट कंटोल प्रोजेक्ट पर लाया जायेगा और उसपर वेस्ट प्लास्टिक प्रोडक्ट मशीन से प्रोसेस होकर इटे बनाई जाएगी।

४) उन इटोका इस्तिमाल, इस्लामपुर मे आयलैंड, फुटपाथ या भारतीय सेना के लिए किया जायेगा।

५) कचरे मेसे प्लास्टिक बाजु हो जायेगा तो बाकी कचरा (बायोडीग्रेबल) खाद बनाया जायेगा और उसको चार रूपये प्रतिकिलो से बेचा जायेगा । ये रोल मॉडल तयार होने बाद इसीको भारत देश के सभी नगरपालिका को कॉपी-पेस्ट करने के लिए बोला जायेगा । इसमे ना हमें लोगो को साफ-सफाई का महत्व समजना पड़ेगा और ९५ % देश साफ सुतरा बनेगा ।

*** आकरी कदम स्वच्छता की और ***

सचिन देशमुख

पत्ता- खुजगाव , तहसील- तासगाव ,

जिल्हा-सांगली , महाराष्ट्र . ४१६३११

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Pet Bottles Recycling.



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PET bottle recycling is the HOT topic these days. Lots of people have only a rough idea of what this means so let me try to explain what's good, and what's not.

The good part, it is always better to start from the good part, the fact is raw material is "a bottle" and even a kid can recognize it.

Second good part, and it depends by the first one, is the fact collection becomes "easy" and the right translation for this means "low cost". End of the good part of it, not much folks.

Because transport of empty, loose, bottles is practically impossible, PET bottles need baling to increase the bulk density and to be handled more easily.

In some location, pre-sorting is done right after the baling process not because the people doing it like it but because sorting means to sell PET bottles at a higher price and to bale some HDPE bottles scrap as well and makes some more money out of them.

This, unfortunately, doesn't apply to PVC bottles but this something we'll be talking about later on.

So, a certain day you see a lot of these bales piled up and together with the fact you are environmental conscious, and have some money, you start thinking about recycling PET bottles.

Well, this is a day you're going to remember.

Here's why:

PET is an engineering material and the final product needs precise characteristics to be used and, always remember, you're starting from a bunch of bottles collected on the street from somebody that doesn't know what PET is, and never will, plus the fact that many of them carry a label where's written "water"

but has been used to store "? "You name it, and think to the worse.

And here we go.

As said before, the final product needs to be 100% (actually 99,95% or 50 PPM, parts per million residues allowed) clean, out of garbage.

Now, from now on, keep this in mind and don't ask any more why a washing line cost so much; we'll go into it step by step explaining the reasons there are so many machines.

You get bottles in bales and, according to production rate and the country you are in, you may want to use a bales breaker to open them up and have all bottles single.

This is required, doesn't matter if you'll go with manual or automatic sorting, bottles need to be single for people, or machines, to be recognized and sorted.

Bottles will go on a conveyor belt, always sized according to the number of bottles that will go on it, and further step, pretty important, is to "stabilize" the flow of bottles going to sorting.

The best, easy, and inexpensive way to do it is a trommel.

Most of everybody thinks trommel is used to remove glass, stones, some caps etc; it is somehow true but the main reason for a trommel to be there is the fact it delivers a very steady flow that's required by people but, mainly, by automatic sorting devices.

We'll not be talking about the single devices here; there are some other pages for that, but only why that particular machine or device needs to be there.

So, from the trommel, bottles will go onto a conveyor belt, or a set of conveyors according to the sorting method that has been chosen.

Let's talk a little more about sorting because our opinion is this makes the difference.

Pet Bottles Recycling.

Even with the very best, sophisticated washing line, will NOT give you nice, shiny clean, perfectly dry garbage in form flakes at the end, if you feed garbage.

Let me try to make this a little more clear:

As said before PET bottles from kerbside collection will be out of , about, 96 / 97 % of PET bottles while the rest will be PVC first (average 1,5 %) some PS, normally in form of clear trays, some aluminium cans and "something else".

Let's talk about PVC contamination:

The maximum content allowed at the end is in the range of 10 PPM and most of everybody will start from that 1.5 %, that's equal to 15.000 PPM.

In simple words, this means the amount of PVC needs to be less than 0,7 % of what it is at the beginning or, if you're not in mathematics, less than one bottles of thousands coming are allowed to the washing line.

Of course there are ways to sort them out and get to this purity but let's keep an eye on costs.

Fortunately NIR and X-ray detectors are going down as far as price, so it is kind of affordable now or, at least, it can be evaluated.

The rest is kind of easy to sorted and removed from main stream of PET bottles.

It can be a can, a Polystyrene tray or a pair of cotton socks but none of these look like a bottle so anybody is in position to sort them out.

Don't laugh too much about the socks because this is the least of what it's going to come on the sorting conveyor and, always as an example, there is no automatic device that can sort out cotton from PET so, even with the most technologically advanced device, you'll need somebody on the conveyor for final check before going to granulation.

And now, let's talk a bit about granulation.

What's the deal with granulation?

Well, again, doing something wrong before going into washing line means to have problems into it.

Granulator should therefore have some specific characteristics:

First it needs to be strong, no not the one you're thinking about, stronger.

Second, it needs to be run with sharpen blades all the time otherwise size of flakes will increase, bulk density of flakes will be a lot less and, most important, running a granulator with dull blades means many flakes will "open up" like it was a multi-layer material and this traps air

when going into water making them to float together with PE.

Last, but not least, dull blades create lots of fines that are good material thrown away.

PET is a very abrasive material and dirt and paper don't make things better so you should expect the blades to wear out in very little time.

Choices are therefore two; or you should consider to stop the line once every, let's say, a day or two maximum or go with two granulators having one running and the other on maintenance, stand by.

You may argue this is an expensive choice, and this is true, but how much it costs to keep a million dollars line stopped 4 or 5 hours every two days or less ?

If you run some numbers, you'll find out you get your money back in a very short time indeed and after this, cost of downtime, that's the most expensive item in the costs list, will decrease a lot.

When it goes to operating costs in fact, you better pay a lot of attention to "hidden" costs rather than the ones very clear to everybody.

How much is maintenance cost for example ?

Does anybody tells you this when sending an offer of the PET bottles washing line ?

You better ask about it, together with energy costs to heat water up, filtering water and so on.

Back to granulators, there is another choice to make.

It is better a dry or wet (running together with water) granulator?

Dry granulation has the advantage to work together with a blower and this increases a little bit the capacity of the machine, labels can be easily removed afterwards with a simple air separator that works only with dry flakes and bearings will never have a problem running dry.

The wet one instead, is better because rotor and blade will always stay cool, blades life will be surely longer, it performs like a pre-washing machine removing most of the surface dirt, it converts most of paper labels to pulp and it is less noisy than dry one.

Wet granulator is equipped with a screw conveyor running on a screen for dewatering purposes and flakes will come out with 20/30% water content.

If you choose to go with the wet system, you should consider a screw conveyor just after granulator to separate remaining loose dirt.

PET flakes will have only some PP and PE contamination (labels still glued on the bottle, caps and rings and glue of course), very little dirt, paper and other contamination.

Pet Bottles Recycling.

So, first one is simpler from operating point of view and delivers a material just ground while second, is effectively more expensive but, in the long run makes you to save a lot as far as cleaning, starting from a pre-washed material, and blades life is longer (maintenance cost is less).

I personally suggest going with the wet one but, of course, the matter is open for further discussion.

In case of dry granulation I suggest a pre-washing machine to get flakes clean, at least from paper and most of dirt because of something we'll be talking later on, very important part of the system, that's water filtration that has a chapter by its own.

In both cases at this point we have semi-clean flakes, and here the washing line starts.

The very beginning of the line is a buffer silo where flakes went after pre-washing system, doesn't matter which one; every washing line, for any kind of scrap, likes very much to have a steady amount of material going through.

There are many reasons for this and main ones are the fact that residence time of flakes for the washing stage will be pre-set, and constant, second because centrifugal dryers will perform much better if material comes at the same flow rate all the time.

Washing is not the first step of the washing line anyway.

Our flakes are semi-clean it is true but still have caps and rings, labels left that we better remove prior going into the washing stage.

So, from buffer silo extracting flakes at a constant rate set by the operator, flakes we'll go into a sink-float tank where separation of olefins occur.

Once more I would like to point out that a tank doesn't wash anything so call them "washing tanks" doesn't sound right to me.

Anyway, let's go ahead with the washing line.

After pre-washing and olefins separation our flakes are ready to be completely washed out from remaining dirt, whichever it is.

One of main concern everybody has is glue washing so, let's talk about glue removing and various technologies available to get rid of it.

The oldest one, still used very much, is to put flakes into a hot water tank, together with a caustic solution, and leave flakes into for a certain period of time with the help of a steering, agitation, friction shaft, call the way you like it the most, to detach (not remove) glue from the surface.

Together with glue, of course, the rest of paper, dirt etc, will be detached as well and go into water.

It normally is a "batch process" in order to control the residence time because, according to the "solution" and temperature to which the solution is set, time can vary.

Finally the washed flakes will be passed through dryer to dry up the flakes for big bag packing.

Now it is either carried for self use or sold for further processing.

Flakes can be used for making fibres, sheets, injection moulding etc. OR it will be taken for further pelletizing process depending upon the need for end use.

Good Luck !!

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Plastic zero - Plastic ZERO - Public Private Cooperation's for avoiding plastic as a waste and how in INDIA WE CAN LEARN FROM IT FROM EUROPEAN COUNTRIES



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In recent decades, as the amount of plastic used in products, packaging and construction has increased, so the amount of plastic in waste streams has also risen. Unfortunately, while plastics have many useful properties, they are very difficult to recycle as they come in many different types and they need to be separated into polymer types to ensure real recycling - upcycling. Most Member States collect either mixed plastic packaging or plastic bottles only, or they collect rigid and flexible plastic packaging separately. Either way, the plastic will still need to undergo some kind of sorting process if it is to be recycled into new, high-value products. In the project location of Greater Copenhagen (Denmark) it is estimated that plastic waste constitutes some 15% of the residual waste destined for incineration. Meanwhile, in Hamburg (Germany) and Malmö (Sweden) this figure is around 8%; and in Riga (Latvia) roughly 20% of the mixed/landfilled waste is plastic waste.

OBJECTIVES

The overall objective of the Plastic Zero project was to reduce wasteful use of plastic made from fossil-based oil, save non-renewable resources and enable carbon neutral energy production from waste. Involving the partner European cities of Copenhagen, Hamburg, Malmö and Riga, three waste management companies and a university, this project would investigate how to prevent waste plastics and increase recycling rates. Information would be gathered from interviews with stakeholders and site visits, plus a review of literature in the field.

Specific objectives included:

- The establishment of a road map for reducing plastic in waste streams with a view to providing inspiration on possible measures to tackle the issue;
- The demonstration and documentation of

selected measures for the prevention of plastic waste;

- The demonstration and documentation of selected technologies and methods for sorting and recycling plastic waste;
- The development of initiatives to create new green businesses and growth within the recycling sector; and
- The dissemination of knowledge, good practices, technologies and systems to other European cities.

RESULTS

The Plastic Zero project's most important achievement was the development of a digital road map for managing plastic waste. This was designed following the establishment of a Strategic Advisory Board (SAB), whose experiences were integrated into the project's guidelines on the creation of a plastic waste roadmap. This in turn resulted in the development of a methodology for estimating amounts of waste plastic generated and managed in partner cities. A key deliverable, following on from this, was a review on plastics in municipal waste streams. This focuses on countries with high recycling levels - Austria, Belgium, Germany and Ireland - and high-quality sorting and recycling systems (i.e. it is not restricted to the partner countries).

Other main project deliverables include:

- Individual reports on plastic waste for Copenhagen, Liepaja and Tampere regions, Malmö and Hamburg;
- The development of models for assessment of future plastic amounts for Copenhagen, Liepaja, Tampere, Malmö and Hamburg;
- A report on technologies and options for plastic waste prevention;
- A manual for plastic waste prevention, green public procurement (Danish and English versions);



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- A report on existing technologies and methods for plastic waste sorting and collection;
- A report on the initial assessment of relevant recycling technologies; and
- The testing of innovative techniques, methods and procedures for sorting and collecting plastic waste.

The beneficiaries carried out 14 waste collection tests, mainly focusing on the collection and recycling of household plastics. They also carried out a test dealing with construction waste and another with textile collection and reuse of clothes, as a large amount of clothing includes synthetic fibres (i.e. plastics). It is worth noting the successful collection of rigid plastic at one recycling station in

Copenhagen. This is now being permanently implemented in all recycling stations in the city, with 90% of the apartment buildings in the city having rigid plastic collection bins; this will soon be expanded to family houses. With regards to waste prevention, the project estimated that if all demonstration projects were to be implemented on a city-wide scale, the prevention potential is 200 tonnes of plastic waste per year, equivalent to 600 tonnes of CO₂ emissions.

In the implementation period alone, the project managed to divert more than 900 tonnes of plastic waste from landfills and incineration to recycling. However, when considering the project pilot demonstrations already in place, or are likely to be implemented soon, more than 2 500 tonnes of plastic waste could be diverted from landfills and incinerators each year. This, says the LIFE team, would amount to 9 000 tonnes of CO₂-equivalents, if

the plastic was recycled. Furthermore, assuming all demonstration projects would be fully implemented

at city scale, a total of 11 000 tonnes of waste plastic would be recycled. Furthermore, the project had a direct impact in one of the partner regions – Liepaja – where thanks to LIFE, there is an increased focus on the promotion of waste sorting activities,

collection, and transportation to treatment and recycling companies, thus developing a sustainable network of cooperation.

Another noteworthy achievement concerns communication activities, in particular, regarding the implementation of collection schemes for three new waste streams (rigid plastic, metal and small electronics) for multi-storey buildings in

Copenhagen; the city launched a communication campaign, “Recycling is gold”, which was awarded the 'ISWA Communication Award 2013'.

In addition, the project makes the following main observations. Firstly, that there should be a considerable potential for exploiting the resources in waste plastics, as current recycling levels are relatively low. Secondly, there is a need for further development of sorting technologies and incentives for sorting facilities to become more effective. And thirdly, there is a “major potential” for informing and training designers on the best design of products for recycling (or for reuse or repair).

Regarding policy, the Plastic Zero project is highly relevant for the European Commission's Circular Economy Package adopted in 2014, which proposes a ban on the landfilling of recyclable plastics by 2025.

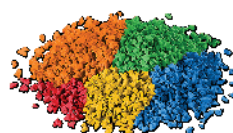
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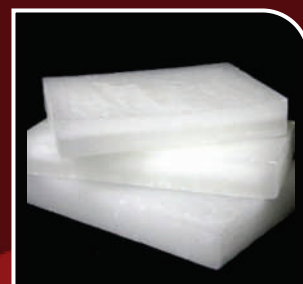
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પ્લાસ્ટીક એજ મિત્ર

પ્લાસ્ટીકની થેલી બ્લોઈંગ પ્રોસેસથી બનાવાય છે. જ્યારે પણ આપણે પ્લાસ્ટીક શબ્દ સાંભળીએ ત્યારે મગજમાં એક જ પ્રશ્ન ઉદ્ભવે કે શું પ્લાસ્ટીકથી પર્યાવરણને નુકશાન થાય છે ? પરંતુ દરેક વસ્તુના બે પાસા હોય છે. (૧) સારા (૨) ખરાબ. જેવી રીતે તમે ખરાબ પાસા એટલે કે પ્લાસ્ટીકથી નુકશાન થાય તે સાંભળો છો પણ એવું વિચાર્યું કે તેનાથી આપણે કેટલો બધો લાભ થાય છે. પ્લાસ્ટીકને શાપરૂપ માનશો નહીં એ તમારો મિત્ર પણ બની શકે છે. દુનિયામાં પ્લાસ્ટીકનો માથાદીઠ વપરાશ સૌથી ઓછો ભારતમાં છે. ભારત સરકાર હવે માથાદીઠ પ્લાસ્ટીકનું વપરાસનું પ્રમાણ વધારવા માંગે છે. હાલમાં પ્લાસ્ટીકનો વપરાશ માથાદીઠ ૧૨ કિલોનો છે. પરંતુ આગળના વર્ષમાં તેનું લક્ષ્યાંક વધારવા માંગે છે. ભારતમાં પેટ્રોકેમિકલ્સ ઈન્ડસ્ટ્રીઝનું ભાવિ ઉજ્જવળ છે અને હજી વિકાસની તકો રહેલી છે. દહેજમાં ભરતમાં સૌથી મોટું પેટ્રોકેમિકલ્સ કોમ્પ્લેક્સ ઉભું કરવાનું કામ અંતિમ તબક્કાઓમાં છે. અમુક જણે તો કે.કે. પોલીબ્લેન્ડ નામનું રી-સાઈકલ થઈ શકે તેવું પ્લાસ્ટીક બનાવ્યું. સંસ્થાનો પારંભ કર્યો જેમાં પ્લાસ્ટીક રી-સાઈકલ થાય. જ્યારે બૃહદ મહાનગરપાલીકાએ આ પ્લાસ્ટીકનો ઉપયોગથી રોડ તૈયાર કર્યો. ઉપયોગ : પ્લાસ્ટીકને રી-સાઈકલ કરીને ફરીથી પ્લાસ્ટીક બનાવતા ૮૦% ટકા જેટલી વીજળી ઓછી વપરાય છે. પ્રોસેસમાં પાણીનો ઉપયોગ બીલકુલ થતો નથી, વારંવાર ત્રીસથી વધુવાર રીસાઈકલીંગ કરી ફરી વાપરી શકાય છે. પ્લાસ્ટીક પર પ્રતિબંધ મૂકવો કે ના મૂકવો ? પ્લાસ્ટીક પર પ્રતિબંધ મૂકવો એ જ માત્ર ઉપાય નથી કારણ કે એમ કરવા જતાં પ્લાસ્ટીકને બદલે કાગળો અને કપડા નો વપરાશ વધશે અને તેને પરિણામે વૃક્ષોનો નાશ થશે. વળી, આ પ્રકારના પ્લાસ્ટીકથી નુકશાન થવાની સંભાવના ઓછી છે. તેને રી-સાઈકલ કરીને એ પ્લાસ્ટીકની આવરદા લંભાવી શકાય છે. પ્રતિબંધ મૂકવા કરતાં તેને રિ-સાઈકલ કરીને તેનો ઉપયોગ વધારીને જંગલોનો નાશ અટકાવી શકાય છે. દુનિયા ભરના તમામ પ્રગતિશીલ દેશો એટલેજ પ્લાસ્ટીકનો માથાદીઠ વધુને વધુ વપરાશ કરી પર્યાવરણનું ખરા અર્થમાં જતન કરવું.

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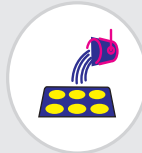
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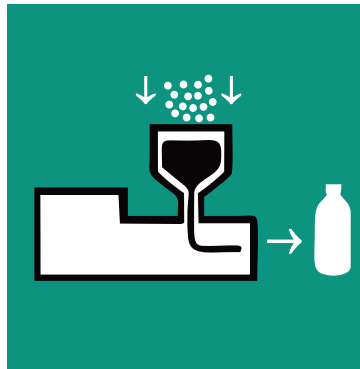
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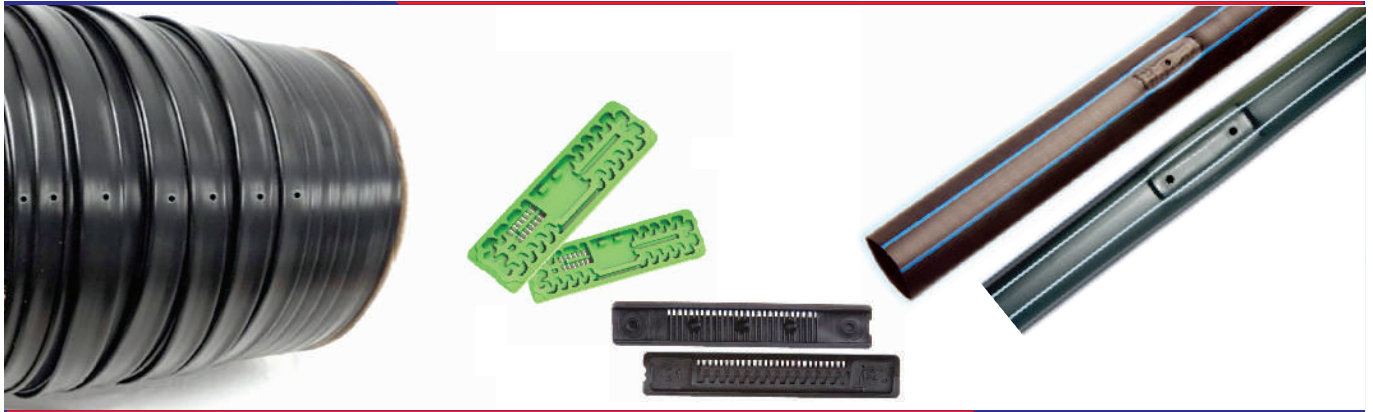
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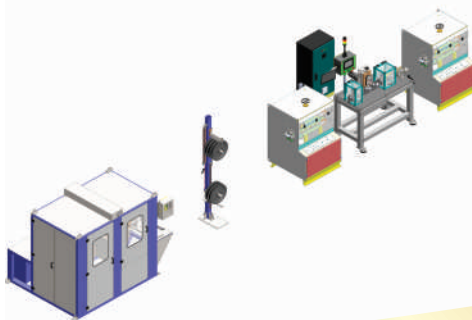
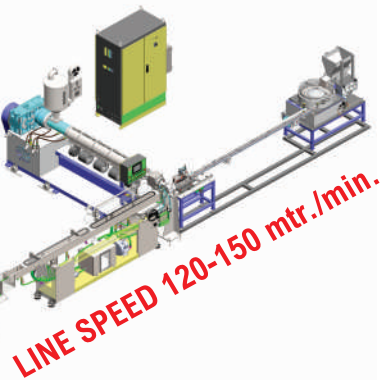
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