

**Recycling redefined**  
efficient, sustainable, economical.

# Recycling systems for the plastic industry

Discover our machine solutions

## **Stylianos W. Nikolaou**

Owner & Managing Director

“We can proudly announce that SIKOPLAST Recycling Technology GmbH is one of the first pioneers in the development of sustainable and environmentally friendly plastics recycling equipment.

Nevertheless, today we must not rest on the successes of days gone by and must see environmentally conscious opportunities, act accordingly and bring them to the market. This is what I am committed to at SIKOPLAST.”

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# COMPLETE PLASTIC RECYCLING SYSTEMS

FROM ONE SOURCE

KNOW-HOW SEIT 1956



SIKOPLAST Headquarters



## ABOUT US

In the early 1970s, the oil crisis temporarily caused a sharp increase in the price of plastic raw materials, leading to the emergence of a new market for recycling systems. Heinrich Koch, founder of SIKOPLAST, recognized this as the future of his company and began developing machinery and systems for plastic recycling. This development was consistently pursued, even when other companies withdrew from the market.

A key element of this success is the conical single-screw extruder. This frequently copied screw design—still at the heart of SIKOPLAST recycling systems in a modified form—remains a core technology.

The foundation of today's SIKOPLAST Recycling Technology was laid in 1986. Since then, the company's product range has been continuously expanded.

In addition to conventional recycling systems for production waste, the portfolio now includes washing lines and systems for processing post-consumer waste, as well as silos, conveyor belts, cutting mills, and pelletizing systems. The company's strategic realignment began in 2021 with the move to its new sales and service office in Troisdorf.

<b>Founded</b>	1956
<b>Headquarters</b>	Troisdorf, Germany
<b>Production</b>	Budapest, Hungary
<b>Employees</b>	40+
<b>Representation</b>	20 countries
<b>Supplied</b>	70 countries



## WHY SIKOPLAST?

- › Over **70 years of experience** in the recycling industry (since 1956)
- › **Full-service provider:** individual components & complete systems
- › Top quality through components from **German manufacturers** (Siemens, Koellmann, etc.)
- › **Global network** & test facility for optimal service – from inquiry to after-sales
- › **Trade fair presence** & up-to-date information via our website

## OUR PRODUCT RANGE INCLUDES

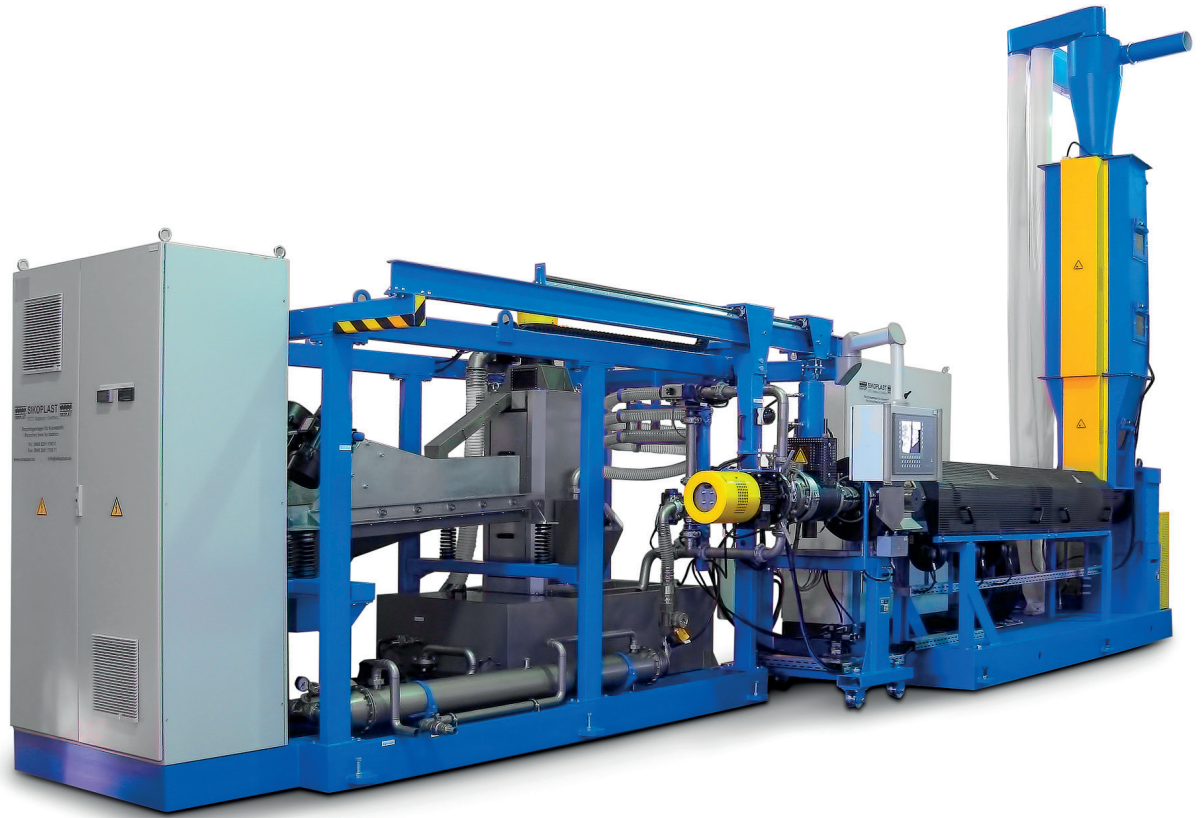
- › **Off-line pelletizing systems** for thermoplastics (granulate production)
- › **In-line recycling systems** for film and PP nonwovens (direct refeeding of production waste without intermediate pelletizing), as well as for PA/PET fibers for return to a raw material reactor
- › **Pelletizing systems** (water ring, underwater, and air-cooled)
- › **Cutting mills & screen changers**
- › **Washing lines** for contaminated plastics
- › **PET recycling systems**
- › **Conveyor belts, steel platforms** & integration of material and color sorting
- › **Granulate transport containers**, granulate and material silos



\*SOME OF OUR CUSTOMERS

# OFF-LINE PELLETIZING SYSTEMS

## FOR THERMOPLASTIC MATERIALS















### HOW IT WORKS

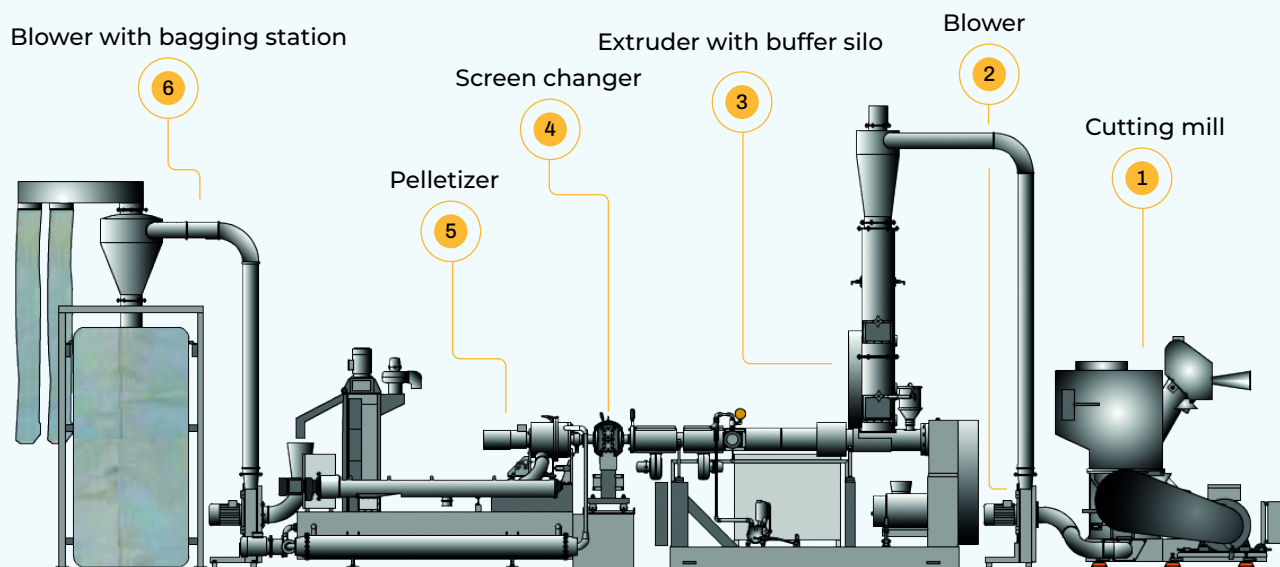
- › Size reduction with a cutting mill
- › Material is conveyed via blower into the extruder hopper
- › Agitator in the hopper ensures consistent extruder feeding, independent of material type
- › Oxygen-free extrusion – gentle melting
- › While the pelletizing head shapes the melt into granules, the screen changer ensures its filtration
- › Drying of the granules in a centrifuge
- › Conveying of the finished granules to big bag station, silo or container

### AREAS OF APPLICATION

- › For thermoplastic materials
- › Recycling of edge trim, start-up rolls, and scrap from the plastics processing industry
- › Designed for a wide range of input materials, such as: films, nonwovens, injection-molded parts, profiles, pipes, start-up lumps, regrind, hollow bodies, fibers, yarns, monofilaments and much more
- › Also suitable for printed and coated materials
- › Both, clean production waste and slightly contaminated or moist materials  $\leq 2\%$  can be processed as well

## BENEFITS

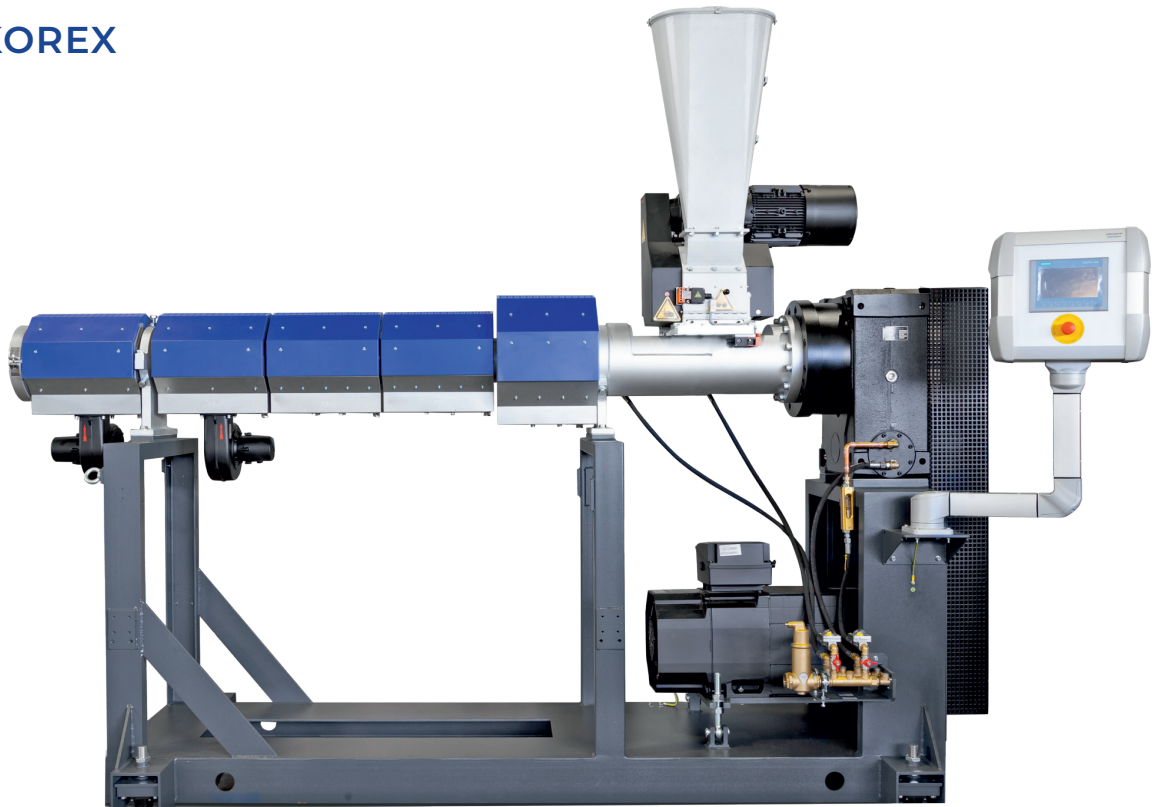
-  The material is efficiently recovered in a single step and provided as high-quality granulate for various applications.
-  Our systems achieve throughput rates from 30 kg/h up to over 1,300 kg/h – suitable for a wide range of requirements
-  Feeding is flexible and can be manual, via conveyor belt, pneumatic, or fully automated
-  A conical, adaptable screw enables the processing of a wide variety of materials – from light to heavy
-  Melting is particularly gentle, without the need for pre-compaction or material-stressing pre-treatment
-  Precisely controlled heating and cooling zones ensure an optimal melt temperature profile
-  The open, robust design allows for easy operation, excellent accessibility, and maintenance-friendly construction
-  The modular system enables flexible placement and individual combination of all components
-  Optional dosing stations for additives and masterbatches can be integrated
-  For critical materials, a degassing zone with vacuum pump ensures the removal of volatile components
-  The reclaim extruder is equipped as standard with a buffer silo to ensure consistent material flow
-  Melt filters increase the level of purity and can be flexibly adapted



# IN-LINE RECYCLING SYSTEMS

FOR THERMOPLASTIC MATERIALS

SIKOREX



## HOW IT WORKS

- › Material is fed directly from the winder (edge trims) or unwinder (rolls) via one or two feed units
- › In the extruder's feed zone, the material is compressed and melted
- › A pressure sensor monitors the melt pressure
- › The screen changer filters the melt
- › The return rate can be adjusted via the melt pump
- › A purge bore simplifies system start-up
- › Through the melt line, the melt is transferred to the production unit. A check valve prevents backflow

## AREAS OF APPLICATION

- › Specifically developed for the nonwoven and PE/PP film industry
- › Nonwovens (SMS) with high MFI values and 100% melt-blown content can be processed with maximum process stability
- › Direct return of production waste as melt into the production line or a raw material reactor (e.g. for PA/PET fibers)
- › Suitable for returning roll stock or direct edge trim refeeding at feed speeds of up to 375 m/min
- › Existing systems can be retrofitted without issue

## BENEFITS



Standard systems with a material throughput of 30 to 250 kg/h



The special screw geometry ensures gentle melting with short residence times



No pre-shredding required – resulting in less material stress and no grinding dust



The melt is fed directly into the production extruder – pelletizing is not necessary



Fast color and material changes thanks to a short L/D ratio and purge bore



Compact design enables minimal space requirements



Roll feed speed is controlled to avoid fluctuations and ensure a consistent return rate



Expandable with a melt metering pump for precisely defined return rates



Parallel feeding of edge trims and roll stock via two separate feed units, which can be controlled independently



A screen changer can be integrated if required



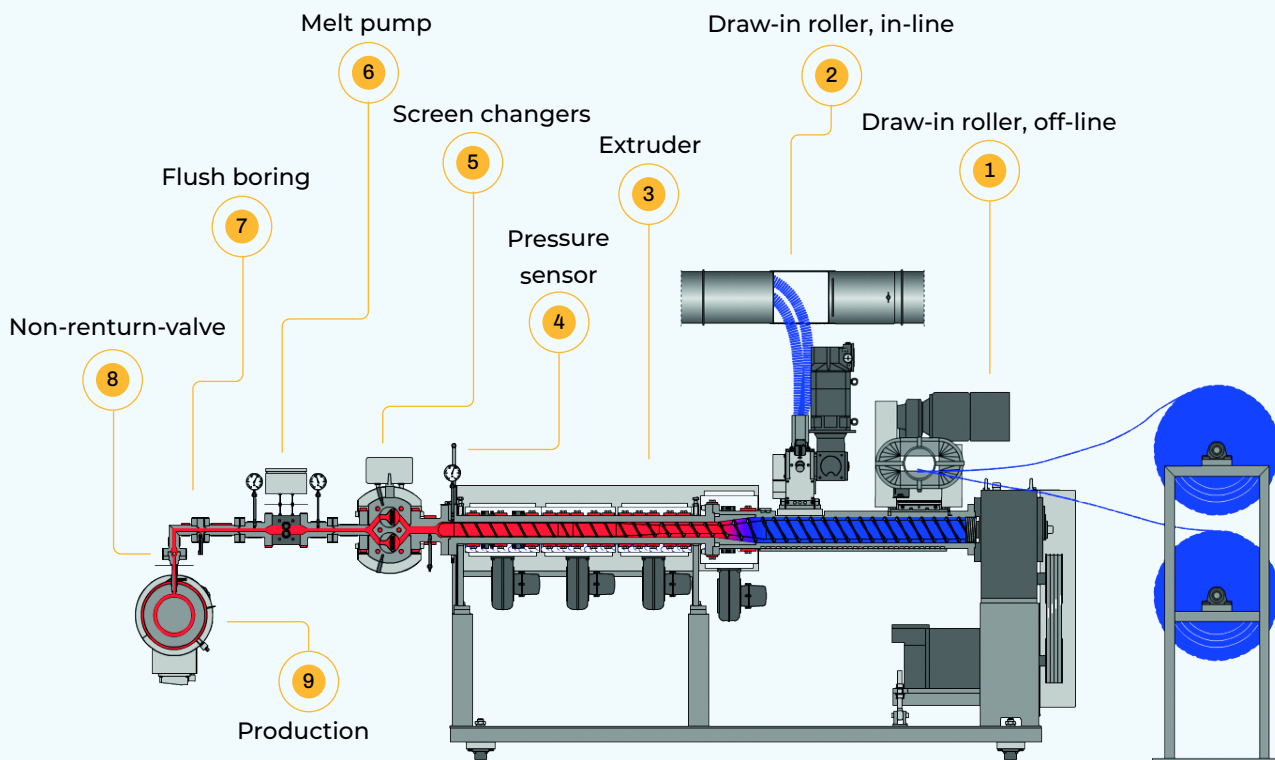
Energy consumption is approximately 50% lower compared to off-line systems, as no pre-shredding or pelletizing is needed



The fully automated SIKOREX system requires no additional operating personnel



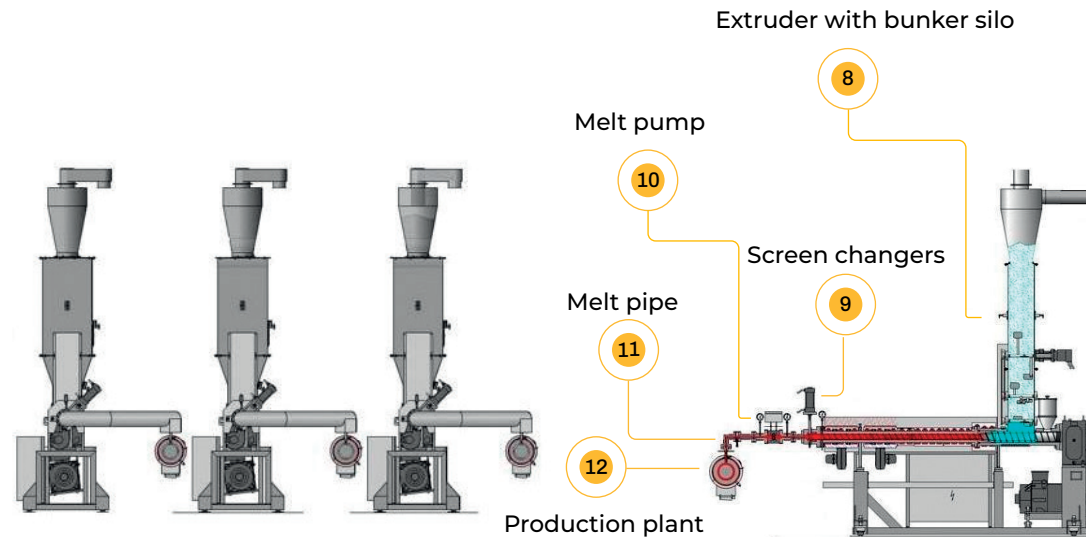
Fast amortization due to low investment costs, reduced storage costs, and in-line recycling directly within the production process



# IN-LINE RECYCLING PLANTS

## FOR THERMOPLASTICS PLASTICS

### HYBRID



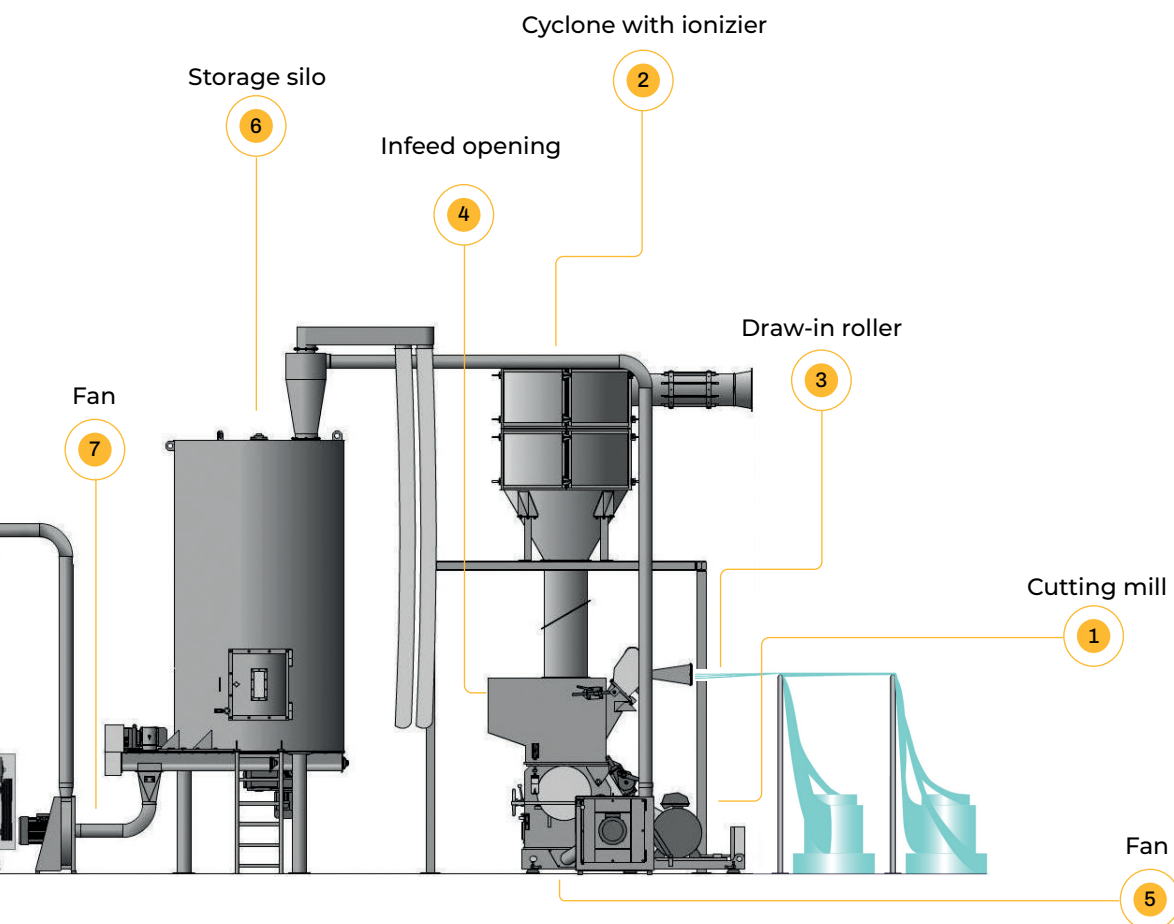
#### HOW IT WORKS

- Production residues are conveyed by blower and pipeline from the winder or slitter unit to the granulator. An ioniser unit removes static charges. The mounted cyclone separates the air from the material stream.
- Roll stock and loose waste can also be fed via the roll feed or through the infeed opening of the cutting mill
- The shredded material is mixed and temporarily stored in the buffer silo
- Discharge screws at the bottom of the silo transport the material outward, where it is distributed to various extruder lines via blower and pipeline
- Starting from the buffer silo, the HYBRID system consists of two or three identically designed extruder lines, which are supplied alternately. The mounted bunker silo ensures consistent feeding
- The integrated screen changer is used for melt filtration
- The plastic melt is transferred via a melt line and melt pump into the production extruder. The pump ensures a constant return flow rate

#### AREAS OF APPLICATION

- For the nonwoven and PE/PP film industry – ideal for SMS nonwovens with high MFI and 100% melt-blown content – maximum process stability
- Direct return of production waste as melt into the production line
- Return of roll stock, edge trims, and loose waste at infeed speeds of up to 1,500 m/min
- Easy upgrade/retrofitting into existing





## BENEFITS



Our product range includes standard systems with material throughput rates from 30 kg/h up to approx. 250 kg/h (per extruder)



Flexible material feeding options: manual by the operator, pneumatic via a conveying line, or fully automatic via roll feed



Roll stock over 4.2 m in width (depending on basis weight) can be fed into the system through the granulator's roll feed unit



Direct conveying of edge trims at speeds of up to 1,500 m/min – without the need to rewind the trims in a winder



Direct feeding of the plastic melt into the production extruder – the intermediate pelletizing step is completely eliminated



The hybrid system is fully integrated into the production process. Once the return rate is set, it is maintained consistently. In the event of changes in the production line throughput, the hybrid system adjusts automatically



An integrated melt metering pump ensures a precisely defined return rate



An integrated screen changer removes contaminants from the melt



Energy consumption is approximately 50% lower compared to off-line systems

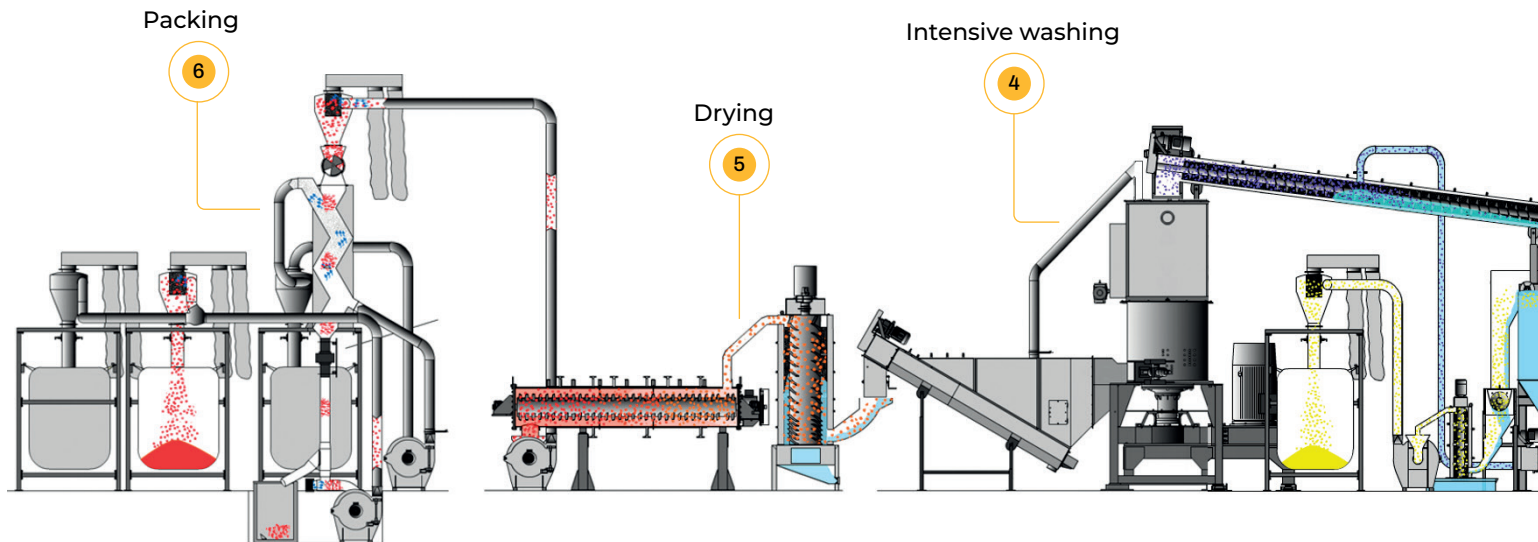


The entire process is gentle on both material and energy. No pre-compaction or thermal pre-treatment takes place, which means the material is not pre-stressed



# WASHING PLANTS

## FOR THERMOPLASTIC PLASTICS



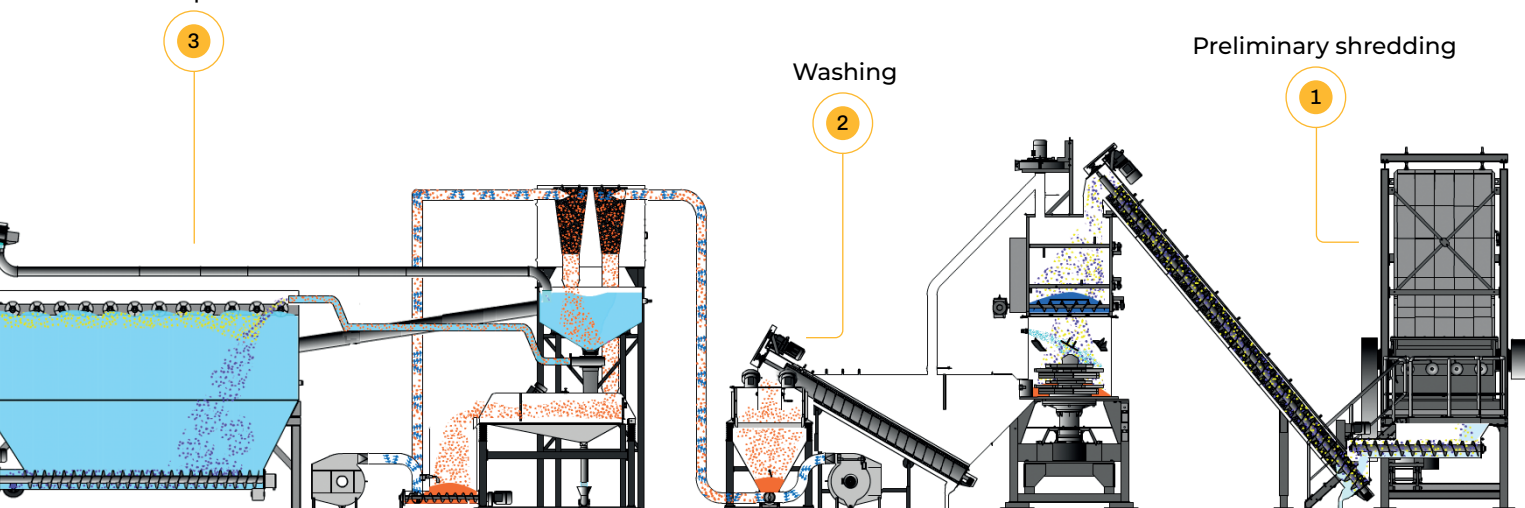
### HOW IT WORKS (Example PET)

- Pre-sorted PET bales are conveyed via belt to the bale opener, where they are separated into individual bottles
- If the input material contains PVC, a heating tunnel is recommended: PVC bottles discolor when exposed to heat and can then be manually removed at the sorting belt
- The PET bottles are shredded into PET flakes in a wet granulator
- Intensive cleaning takes place in the friction washer: paper labels and adhesives are removed, and contaminants are separated using vibrators and air separators
- In the flotation tank, density-based separation occurs: PET flakes sink, while PE/PP caps float to the top
- For high purity, a hot washer is added – optionally with NaOH. The flakes are then dried and pre-crystallized (residual moisture < 1%)
- As an alternative to manual sorting, an automatic sorting unit can be integrated – including material and color separation
- The cleaned PET flakes are dried and either filled into big bags or conveyed to a silo for further processing

### AREAS OF APPLICATION

- For washing plastic waste materials
- Suitable for bottles, films, technical plastics, and other materials
- Produces clean flakes and agglomerate
- The washed material is suitable for use in food packaging and thus meets the highest quality standards
- For existing washing lines, we offer upgrades and individual components or segments to improve quality

Sink or swim producedure



## BENEFITS

- 

Our product range includes standard systems with material throughput rates of up to 2,000 kg/h
- 

The washing lines achieve high purity levels even with heavily contaminated material – without the use of chemical detergents
- 

The modular design allows for customized systems tailored to your specific application
- 

Our systems produce high-quality flakes suitable for food packaging (B2B process)
- 

Energy-efficient motors and drives reduce overall consumption – in some cases to below 0.4 kW/kg
- 

The systems can be equipped with a water treatment unit – enabling closed-loop operation and resource-efficient processing
- 

A complex washing line can also be flexibly installed in smaller production halls
- 

By selecting specific components, we tailor the system to your application and the desired flake quality level

## WHY SIKOPLAST IS THE BEST SOLUTION

- Experience in washing system design since 1977
- **Specialized in post-consumer plastic waste**
- **Modular system** design for individual requirements
- **Customised purity** – each system is tailored to your specific goals

# PELLETISING SYSTEMS

## TAILOR-MADE SOLUTIONS FOR THERMOPLASTICS

### HOW IT WORKS

- › The homogeneous plastic melt is discharged through a die plate
- › The strands emerging from the die plate are cut by a rotating knife head
- › The pellets are then cooled and conveyed either by air or water
- › In the subsequent cooling section or centrifugal dryer, the pellets are cooled to a dimensionally stable temperature or dried
- › To achieve uniform pellet size, the material is passed over a vibrating screen
- › In the final step, the pellets are filled into big bags, octabins, containers, or material sacks



### AREAS OF APPLICATION

- › Pelletising of all current thermoplastic plastics
- › Different pelletising systems cover just about any application type
- › Both individual components used to complete existing systems are available as well as in conjunction with complete recycling extruders

### CHARACTERISTICS OF AIR COOLED HOT WASTE PELLETISING SYSTEMS - TYP HG



**Throughput:** Suitable for material volumes of up to 250 kg/h



**Materials:** Processes LD-PE, LLD-PE, MD-PE, and HD-PE – flexible application for various polyethylene types



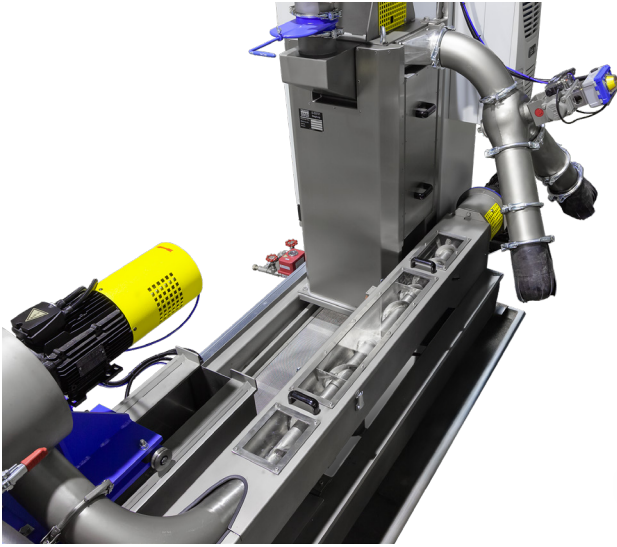
**Dry cut:** Melt strands are pelletised without the use of water



**Cooling:** The integrated cooling spiral efficiently cools the material using air



**Advantages:** Simple design, environmentally friendly, and impresses with low operating costs



#### CHARACTERISTICS OF WATER-RING PELLETISING SYSTEMS OF - TYP HAW



**Throughput:** Up to 1,300 kg/h



**Materials:** PE, PP, (E/X)PS, ABS, and similar plastics



**Process:** Melt strands are pelletised by a rotating knife head, conveyed and cooled in a water stream



**Drying:** Centrifugal dryer removes residual moisture



**Maintenance:** Automatic knife adjustment ensures constant contact pressure and minimal wear



**System:** Simple, compact, and proven

#### CHARACTERISTICS OF UNDERWATER PELLETISING SYSTEM - TYP UWG



**Throughput:** Up to 2,000 kg/h



**Materials:** PE, PP, ABS, (E/X)PS, PA, PET, TPU, and others – reliable pelletising even for high-viscosity plastics



**System:** User-friendly, universal, and technically optimised



**Process:** Rotating knife head cuts melt strands in water; cooling and transport take place in the water stream



**Drying:** Centrifugal dryer located directly behind the cutting head removes residual moisture



**Maintenance:** Automatic knife adjustment ensures constant pressure and minimal wear



**Start-up:** Start-up diverter prevents smearing or freezing of the melt



**Special feature:** Materials with MFI up to 2000, as well as high-viscosity materials

# Cutting mills



## HOW IT WORKS

- › Feeding can be carried out in various ways: manually, pneumatically, via a conveyor belt or fully automatically via roll feed
- › The input material is ground using the double inclined cut method
- › The particle size of the regrind is determined by the screen perforation
- › The shredded material is either extracted by a blower or via a discharge screw to the downstream unit



## AREAS OF APPLICATION

- > For shredding plastic parts and production waste
- > Suitable for films and nonwovens (start-up rolls, edge trims), injection-moulded parts, profiles, pipes, start-up lumps, regrind, hollow bodies, fibers, yarns, and much more
- > Also available as a wet cutting mill (for contaminated materials)
- > Available both as a standalone component for upgrading existing systems and in combination with complete recycling extruders

## BENEFITS



### High throughput

Processes material volumes of up to 2,000 kg/h – ideal for industrial applications.



### Adjustable regrind size

Grain size is determined by screen selection.



### Modular expandability

Can be combined with roll feed, conveyor belt, or cyclone – suitable for roll stock, edge trims, and bulk materials.



### Clog-free cutting

Special knife arrangement prevents blockages in the granulator.



### Sturdy design

Robust steel construction – durable and resilient

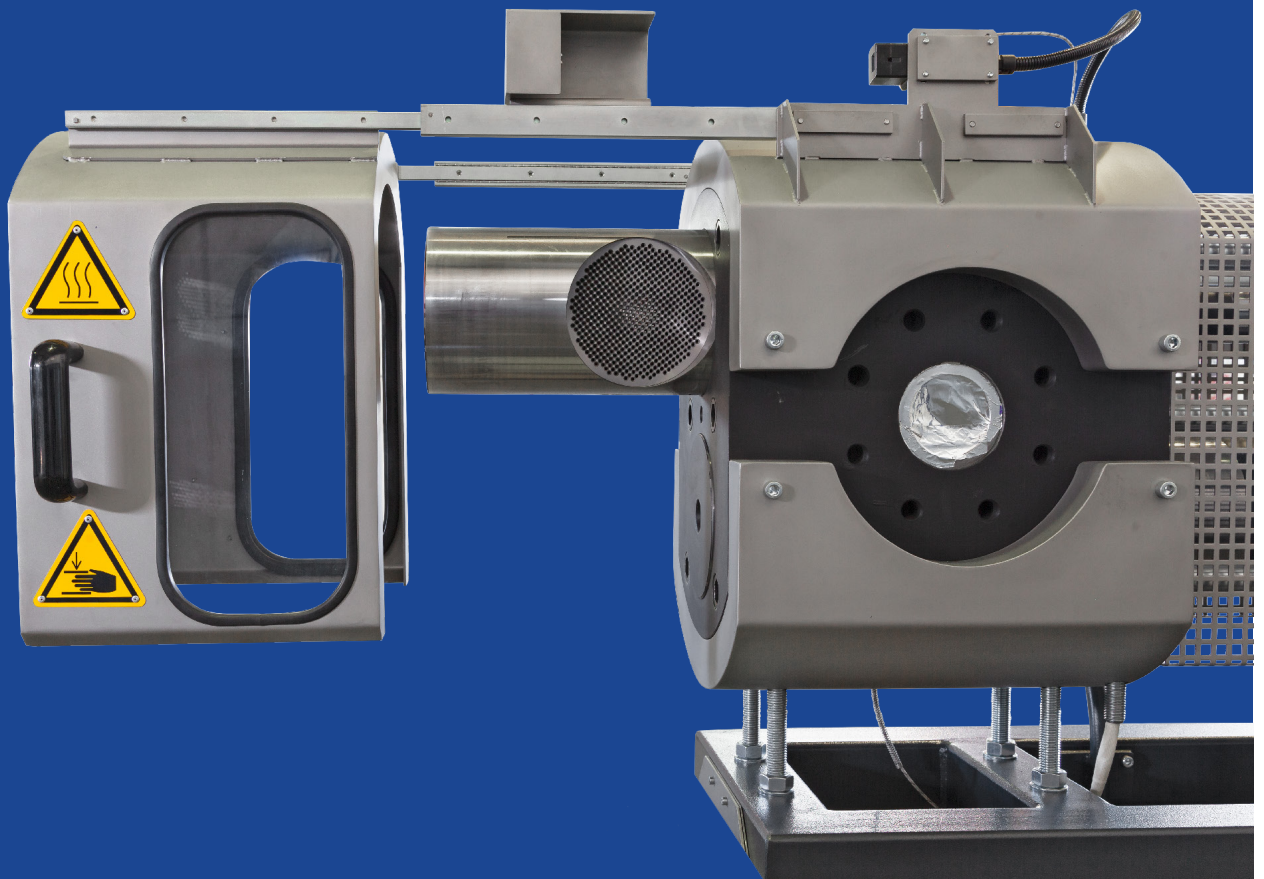


### External bearing placement

No contact with dirt or heat – ensures long bearing life.



# SCREEN CHANGERS



## HOW IT WORKS

- › The plastic melt is conveyed through the screen changer and filtered by the installed, replaceable screens
- › The melt pressure is continuously monitored throughout the process to ensure safe and stable operation
- › As soon as the set pressure is reached, a signal is given: Screen(s) must be changed
- › The screen change takes place during on-going production – no system shutdown is required



## AREAS OF APPLICATION

- For filtering thermoplastic melt
- Depending on the level of contamination and desired operation mode, the product range includes manual screen changers (for discontinuous operation) up to dual-piston screen changers (with 4 screens)
- If required, SIKOPLAST screen changers can also be installed in existing systems

## BANEFITS



### High throughput

Processes material volumes of up to 2,000 kg/h



### Variable screen diameters

Flexible use with screens ranging from 56 mm to 250 mm



### Single or dual piston

Available as a single- or dual-piston system



### Continuous operation

No production interruption during screen change



### Hydraulic actuation

Pistons are extended and retracted conveniently via a hydraulic system

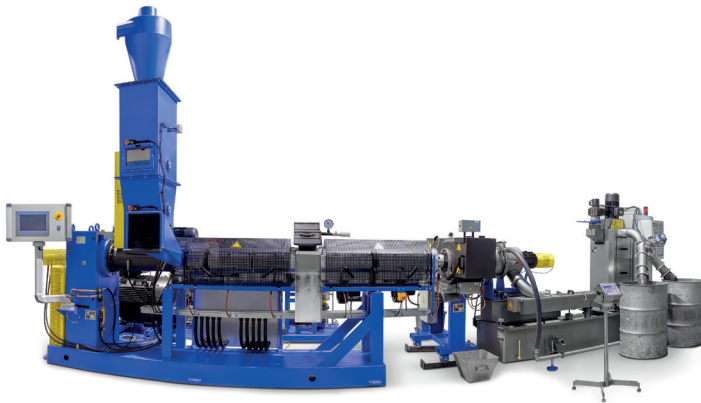


### Simple and low-maintenance

Low maintenance requirements, intuitive operation, and continuous pressure monitoring



## APPLICATION EXAMPLES



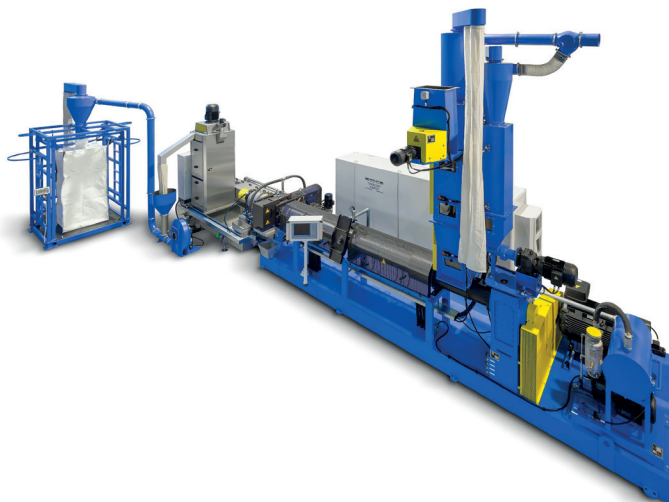
### REGENERATION PLANT FOR PE MILLED GOODS AND UNCUT PIECES

- › Regeneration extruder with bunker silo
- › Special screw with hopper for manual feeding of uncut pieces into the extruder
- › Waterring pelletising system



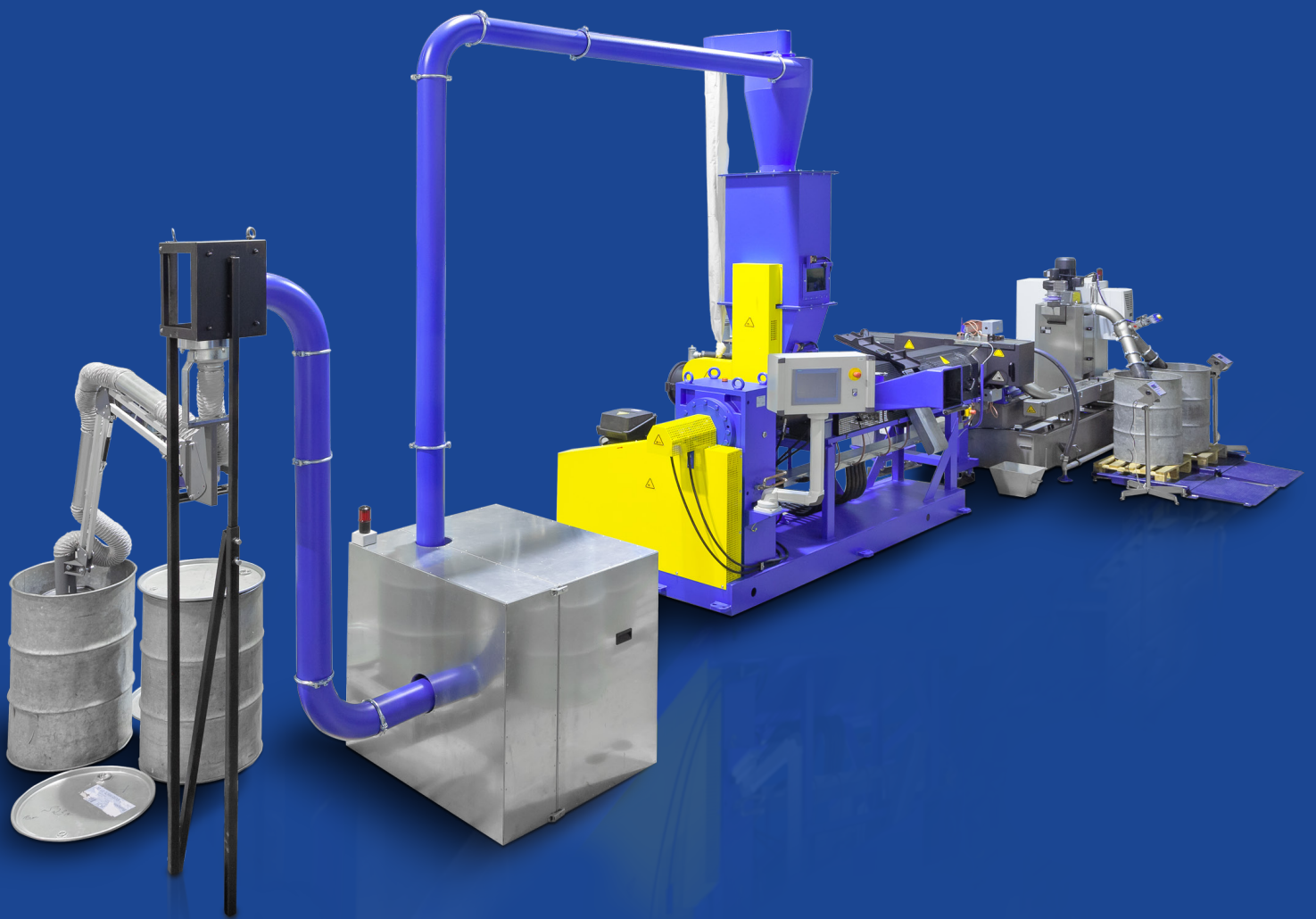
### REGENERATION PLANT FOR PE/PP SHEET

- › Regeneration extruder with bunker silo
- › Screen changer
- › Underwater pelletising system



### REGENERATION PLANT FOR PE/PP CARPETS, BAGS AND FILAMENTS

- › Dosing unit for rigid plastics
- › Dosing unit for powder
- › Regeneration extruder with bunker silo and degassing zone
- › Screen changer
- › Waterring pelletising system
- › Big-Bag Station





**Our machines improve the world**  
SIKOPLAST Recycling Technology GmbH



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