



Application

# POST CONSUMER

CHOOSE THE NUMBER ONE.

# Don't waste your waste.

Post consumer waste as a valuable secondary raw material.

## Plastics – indispensable in everyday life.

You cannot think of consumption today without thinking of plastics. No other packaging solution is on a par with plastics in terms of flexibility, formability, barrier properties, coatability and printability. Additionally, the spectrum of the applications is extremely broad and develops all the time to fulfil specific requirements.

## Plastics recycling – a future technology.

This wealth of positive characteristics has a further advantage: plastics are recyclable. The recycling of post consumer plastics as a secondary raw material with the best possible quality thus plays a major role in making the use of natural resources more efficient and drastically reducing the negative environmental impact of landfilling.

## EREMA – the global Number One.

The challenges faced in the recycling of post consumer waste are highly complex and can be met only with the best and most reliable systems. As the world's Number One in the development and production of plastic recycling systems and components EREMA is known for having the strongest performing and most environmentally-friendly technologies in the global marketplace. Operators of EREMA recycling systems have the right answer to rising production costs as a result of expensive and short-supply primary raw materials – a win-win situation for both companies and the environment.

## What Post Consumer Waste Recycling is all about:

- A robust and flexible recycling system, especially in the case of complex material mixtures, high moisture and strong contamination
- Drying before extrusion to remove moisture from the film flakes
- Filtration of solid (e.g. sand, aluminium) or soft contaminants (e.g. wood, paper)
- Homogenisation required for mixed plastics, washed film flakes and multiple-layer films
- Degassing downstream of the melt filtration achieves top recycled pellet quality
- Uniform pellets to prevent any problems later on when feeding



## The decisive benefits for the customer:

### 1. High degree of flexibility thanks to Counter Current technology:

EREMA systems are extremely flexible and robust in terms of the remarkable variety of input materials, especially with complex material mixtures, high input moisture and strong contamination

**2. Efficient drying with very moist materials** by means of the patented EREMA preconditioning unit and additional technologies such as Air Flush and Double Disc

**3. High-performance degassing** – for example through the highly efficient triple degassing of TVEplus® technology

**4. Efficient melt filter systems** for soft (e.g. wood, paper) and hard contaminants (e.g. sand, aluminium)

**5. End products can contain a considerably higher share of recycled pellets:** optimum recycling and a sensitive recycling process ensure high throughput rates for high-quality recycled pellets, even in the case of materials which are difficult to process

**6. Extremely easy operation** of EREMA systems with the Smart Start principle

# Application-oriented.

Flexible and reliable for maximum output.

## Collected – sorted – recycled.

EREMA once again proves its competence in the field of post-consumer waste by uniting both the technical and the economical requirements of the end users. With this in mind EREMA has developed solutions especially for very moist, mixed, strongly contaminated or printed films which are regarded as the leading standard in the recycling of thermoplastic household and agricultural waste.

With the INTAREMA® TVEplus® and a series of additional components EREMA has a technology with which the two types of packaging films used most frequently – polyethylene (PE-LD, PE-LLD, PE-HD) and polypropylene (PP) – can be recycled flexibly and reliably.

## Washed PE film flakes



In the case of washed post consumer film flakes (PE-LD, PE-LLD, PE-HD) the challenge lies in recycling with a high moisture content, which the materials have as a rule.

Thanks to the predrying in the EREMA preconditioning unit and the patented Double Disc (DD) technology, materials with up to 12 % residual moisture can be processed.

## PE or PP film with solid contamination



In the case of PE or PP films with non-melting content such as paper, wood, aluminium, copper etc. the challenge lies in the required filtration performance. The conventional melt filtering technology on the market fails to meet these requirements in many cases. In order to fulfil these requirements EREMA has developed continuously operating high-capacity filtering systems.

### PE and PP applications:

- Carrier bags
- Packaging films
- Stretch films
- Agricultural films

## Regrind materials



EREMA systems are very flexible in respect of varying particle sizes of regrind materials from the automotive sector. Thick-walled particles are heated through evenly well in the patented EREMA preconditioning unit and dosed in the robust single-screw extruder. Thanks to feeding with this preheated material there are no shearing peaks. The result is considerably less wear. The EREMA preconditioning unit, an optimised screw design, extruder degassing

and innovative, patented add-on technologies mean high-performance degassing for the removal of moisture and volatile contaminants.

### Application examples:

- Car batteries
- Electronics waste
- PE lid flakes
- PO bottles
- PS cups

## Agricultural film



Agricultural films account for a substantial part of recycling raw materials. However, the mostly very high degree of contamination through mineral and organic material of these soft and often only 25 µm to 100 µm sheets makes processing both difficult and time-consuming.

As, on the other hand, they consist of high-quality plastics such as PE-LD and PE-LLD, they are in high demand as recyclates and can fetch good prices if the quality is high.

## Washed PET bottle flakes



EU legislation on waste provides in future for higher collection amounts of PET bottles and mandatory high recycle content in PET bottles. VACUREMA® technology is ideal for the recycling of blow-moulded PET bottles from collection systems.

Thanks to the patented pre-treatment of PET flakes, decontamination and IV increase is fast, reliable and thus effective and energy-saving.

See brochure on bottle recycling.

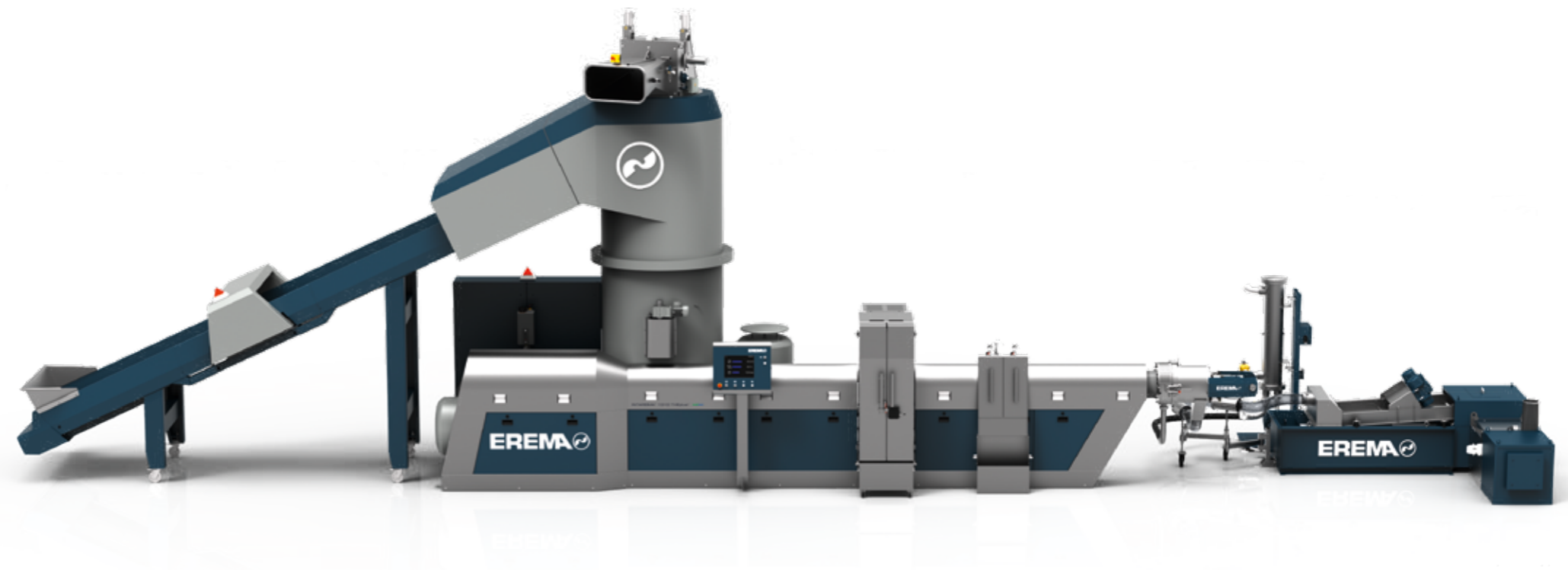
# All in one.

## Filtration, homogenisation and degassing at the highest level.

High-quality recyclates in a single working step.

When processing post-consumer waste, heavily printed, moist or mixed film packaging materials, previous recycling technology was often stretched to the limit. The patented, modular INTAREMA® TVEplus® system from EREMA now offers for the first time efficient filtration, homogenisation and degassing at the highest level and makes it possible to process even fully coated and multiple-layer printed, strongly contaminated or very moist film waste.

Besides this, the systems feature additional ecoSAVE® technology and likewise stand out not only through optimised energy requirements but also through user-friendliness (Smart Start principle), remarkable robustness and maximum throughput.

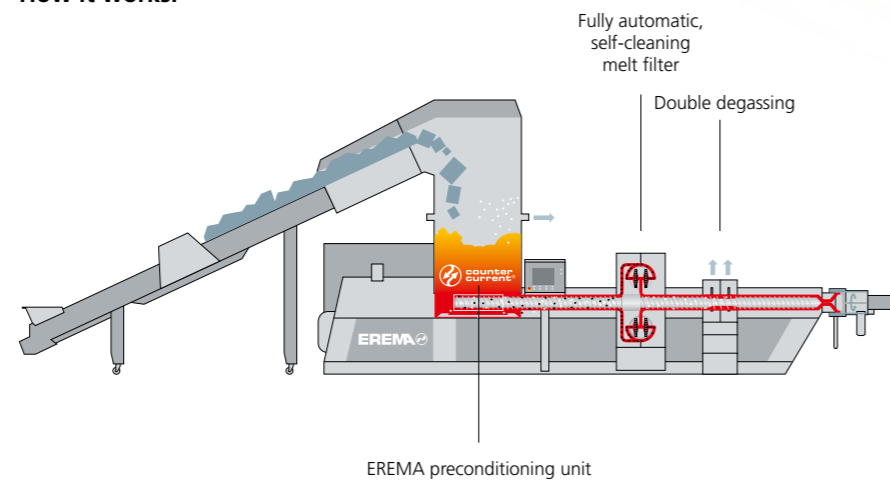


### INTAREMA® TVEplus®

#### Benefits:

- **The extruder is fed with preheated material from the preconditioning unit**, thus guaranteeing a high-quality end product
- **Efficient drying** for very moist materials by means of the patented EREMA preconditioning unit and additional technologies such as Air Flush and Double Disc
- **Melting process with minimum shearing effect** – no further size reduction of contaminants before filtration
- **The melt filter is UPSTREAM of degassing** – this means that all contaminants are already removed prior to homogenisation
- **Greater homogenisation efficiency** downstream of filtration and upstream of degassing enhances the subsequent degassing performance and improves the characteristics of the melt
- **Optimised triple degassing** through the EREMA preconditioning unit, optimum screw design and extruder degassing

#### How it works:



#### High filtration performance thanks to reduced shearing upstream of the melt filter

The melting procedure takes place with minimum shearing effect. This prevents any further size reduction of disturbing contaminants prior to filtration and enhances filtration efficiency. A comparison test with washed post-consumer films (film sample with 100% recycled pellets), filtered with the EREMA laser filter (110µm), confirms this increased filtration performance thanks to minimal shearing.

#### Optimised triple degassing

Blown film test with recyclates, made from fully printed PE-LD film



Single-screw extruder with standard degassing



INTAREMA® TVEplus® – no quality-impairing fish eyes!



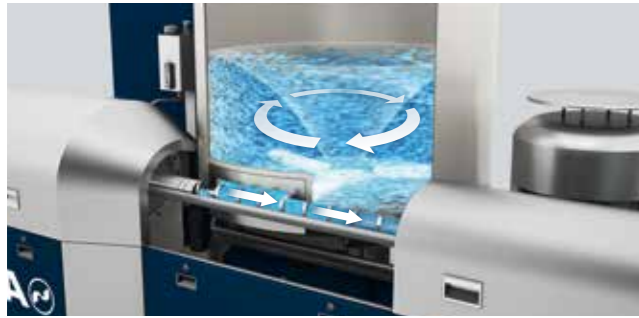
Single-screw extruder with standard filtration



INTAREMA® TVEplus® – no disturbing contaminants

# The Number One technology

The efficient centrepiece preconditioning unit.



Do you attach importance to the **quality of your recycled pellets being not only high, but consistently high**? Especially when significant parameters of your input material such as moisture and density can vary at any time during the process? The EREMA preconditioning unit is the centrepiece for a stable end product. Because it adjusts itself in line with your input material at all times. **Dynamic, operator-independent and self-regulating** – this is how it prepares your material perfectly for the tangentially connected single-screw extruder. And this is why we also refer to the preconditioning unit as a dynamically controlled preconditioning unit.

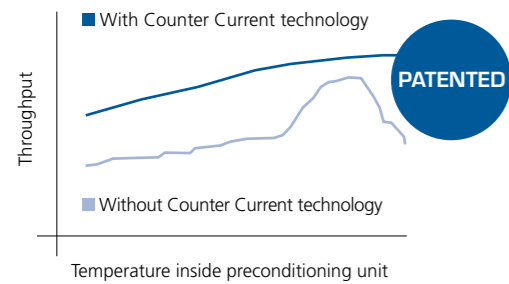


Cutting, homogenising, heating, drying, compacting, buffering and dosing – in a single stage. The preconditioning unit is a talented all-rounder. It enables you to get the maximum out at the beginning of the recycling process and ensures that your expectations are fulfilled at the end of the process: **consistently high pellet quality and remarkable throughput performance.**

Counter Current – a groundbreaking innovation.



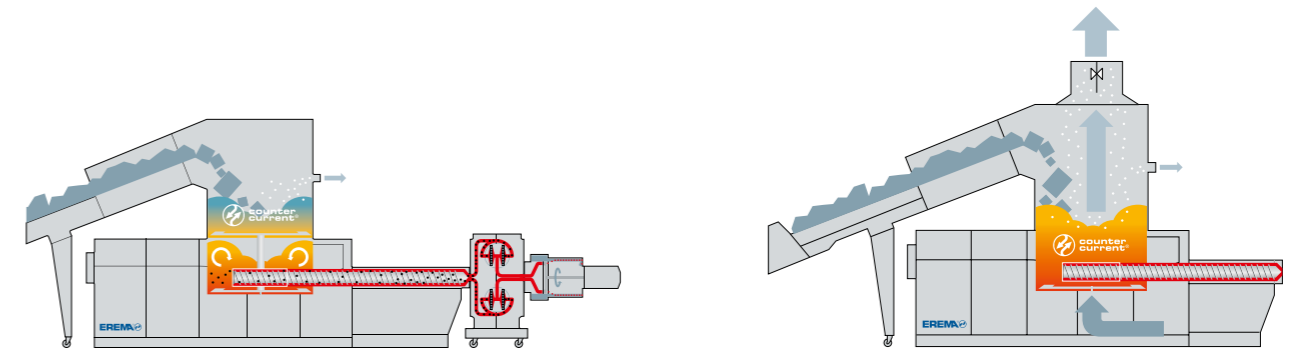
- **Highest process stability through improved material intake** ensures constantly high output over a considerably broader temperature range
- **Higher flexibility** and operational reliability with a variety of materials
- **Increased throughputs** with the same plant size for more productivity



Add-on technology for the preconditioning unit

The **patented Double Disc (DD) technology** and **patented Air Flush module** ensure efficient drying of the material before

the extruder, meaning that materials with up to **12 % residual moisture** can be processed with consistently high output.



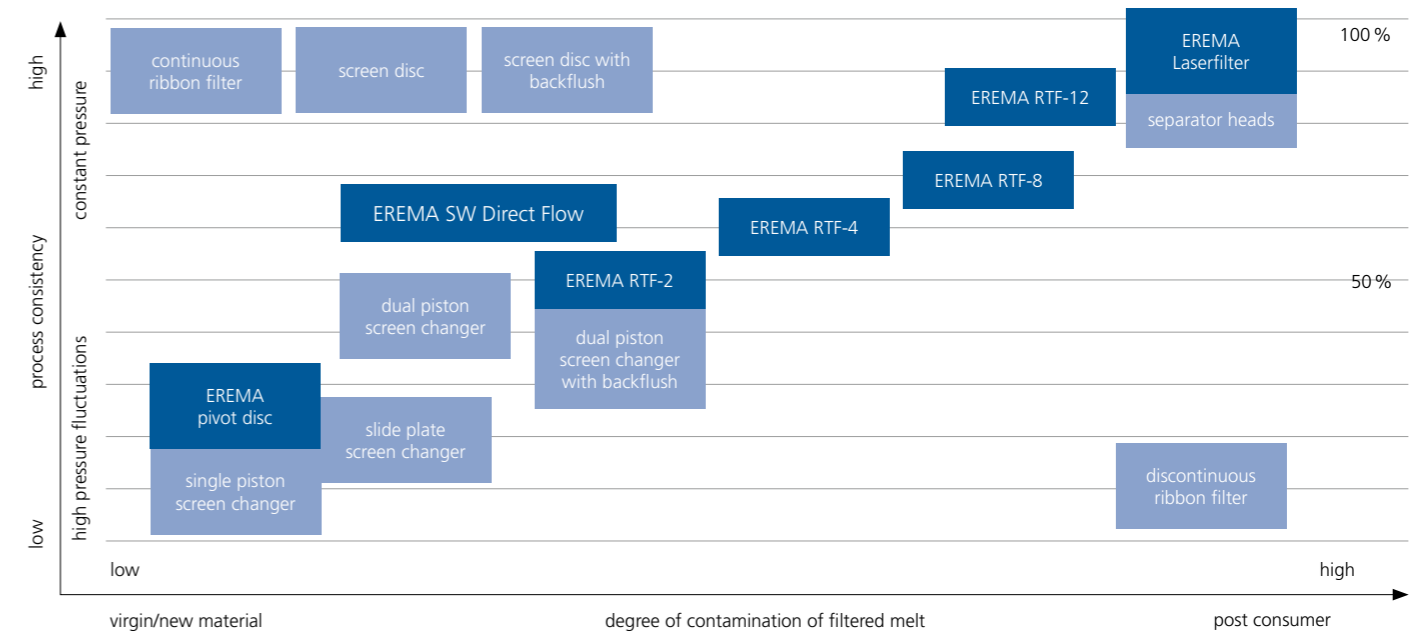
Double Disc (DD)

Air Flush

Which EREMA filter system for which application?

Depending on the type of contamination, the following filter systems are available for the INTAREMA® TVEplus® system:

- **EREMA backflush filter** specially for hard contaminants (e.g. sand, aluminium)
- **EREMA Laserfilter** specially for soft contaminants (e.g. wood, paper) and high level of contaminations





**The right system for all requirements**  
 EREMA melt filter systems meet the very highest quality standards and stand out through their robustness, high degree of automation and high-performance avail-

ability. The right system with the right size and the right filtration fineness is available for all needs, depending on the field of application and the throughput range.

Laserfilter – quantum leap through redesign:  
 Continuous melt filter for thermoplastics



**Applications:**

- Thermoplastics with non-melting content such as paper, wood, aluminium, copper etc.
- Particularly suitable for washed film flakes in combination with the INTAREMA® TVEplus® system
- For contaminants which cannot be filtered efficiently using conventional systems

- For the production of film-grade pellets from strongly contaminated thermoplastics

HG D pelletising system –  
 Hot die face pelletising system with Direct Drive technology



**Applications:**

- For all EREMA systems: COAX®, INTAREMA® T / TE / TVEplus® and special VACUREMA® applications
- HG D upgrade of existing extruders

- Variety of uses: for all polyolefins, technical plastics, PLA, EVA, PP, MFR100, PA6.0 etc.

# Customised.

## The right system for every application.

EREMA's product range offers the right recycling solution for every application scenario. Besides systems for Post Consumer Waste Recycling our range also includes in particular systems for the in-house recycling of production waste, food contact compliant bottle recycling, fibres, nonwovens, tapes and textile fibres, plus special applications such PLA films, WPC or compounds.

Additional application brochures available:



**In-house & Industrial**



**Fibre, Nonwoven, Tape, Textile**



**Bottle-to-Bottle**  
 Food Contact Approved



**Inline Applications**  
 Food Contact Approved

**Headquarters & Production Facilities**

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