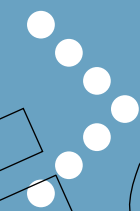




coperion

Coperion Recycling

Zeynep Ekici | Process Technology Engineer | Coperion Weingarten



For more recycling
of all kinds of plastic



A graphic element for the 'Business Unit Recycling' section, consisting of a white rectangular box with a thin black border. To the left of the text is a blue icon of three dots arranged in a diagonal line. The text 'Business Unit Recycling' is in a bold, black, sans-serif font.

Business Unit Recycling

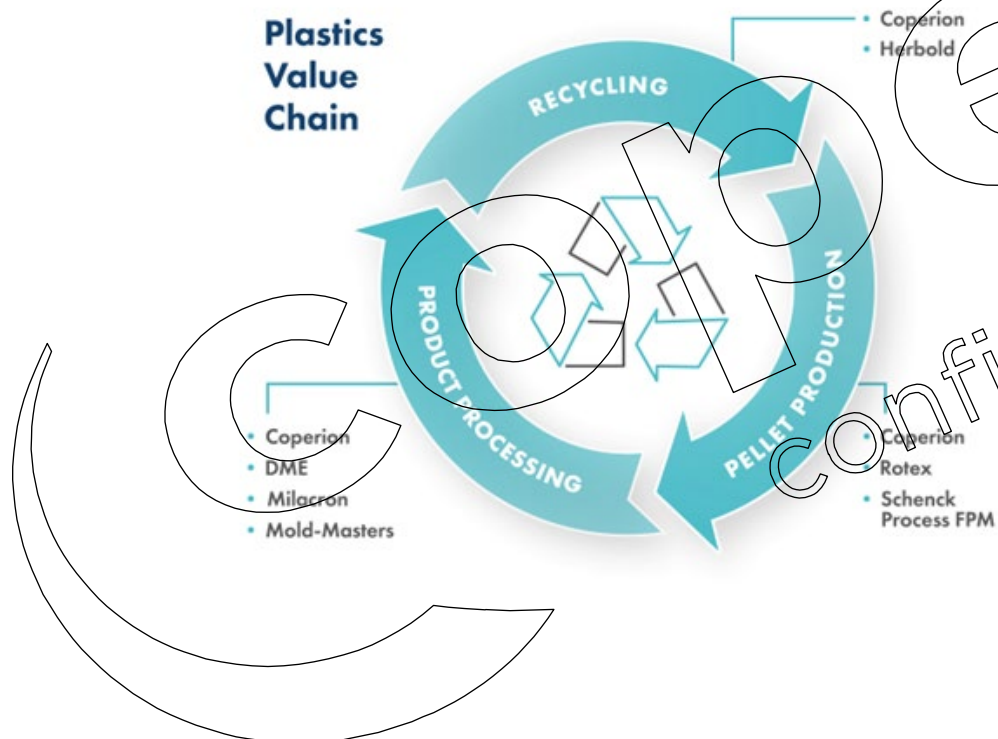


Optimized and Closed Plastic Value Chain



Key words: Circular Economy, Sustainability, Energy Savings

A circular economy keeps materials and products in circulation as long as possible. Coperion has a system-focused approach starting with the design of our equipment to maintain their highest value for as long as possible and aims for the elimination of waste during operation for high quality products.



Design for Value with optimized CO₂ Footprint

Lowest Energy Consumption during Operation

Zero Waste Strategy during Operation

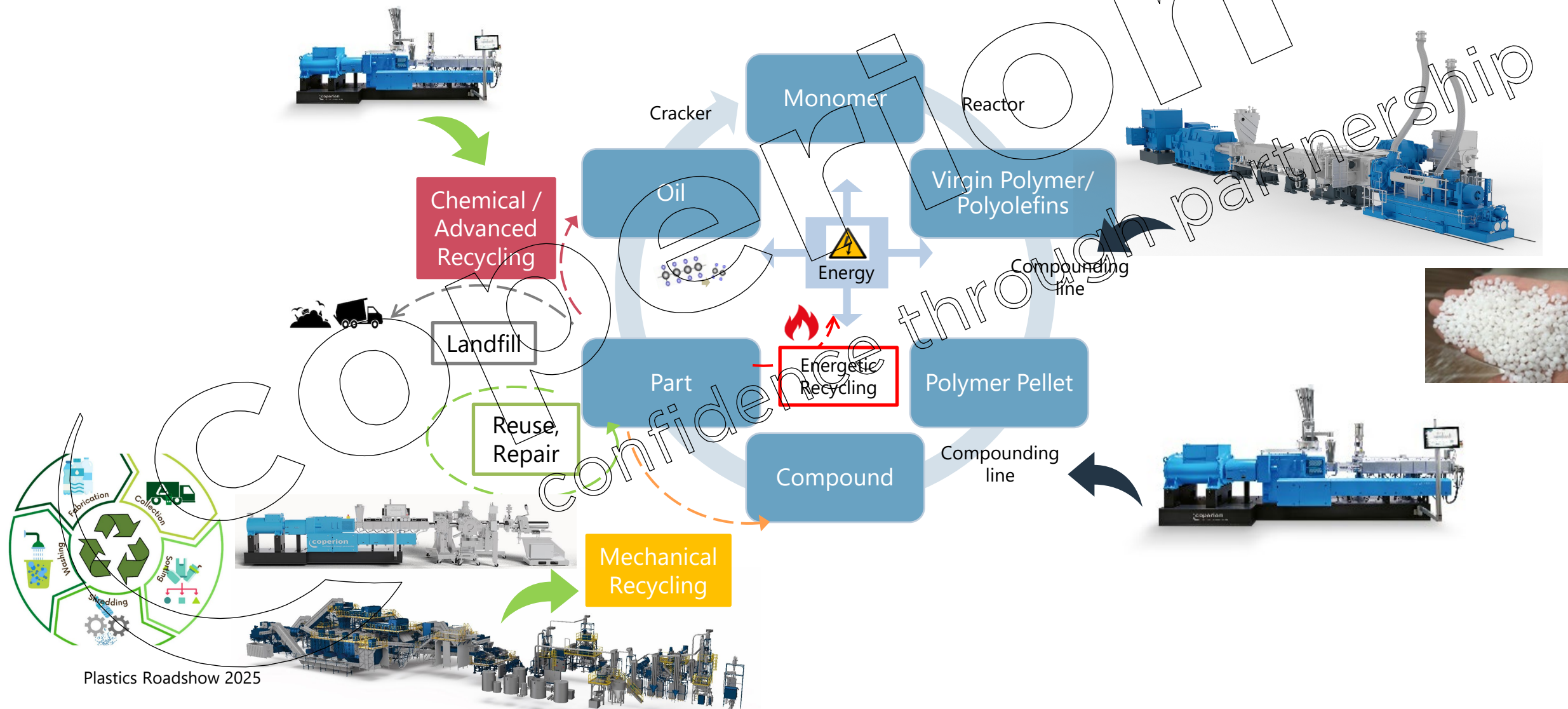
Optimized Process Chain from PCR to Pellets



Plastic Value Chain



Coperion covers the entire process chain from raw material to final high-quality pellets

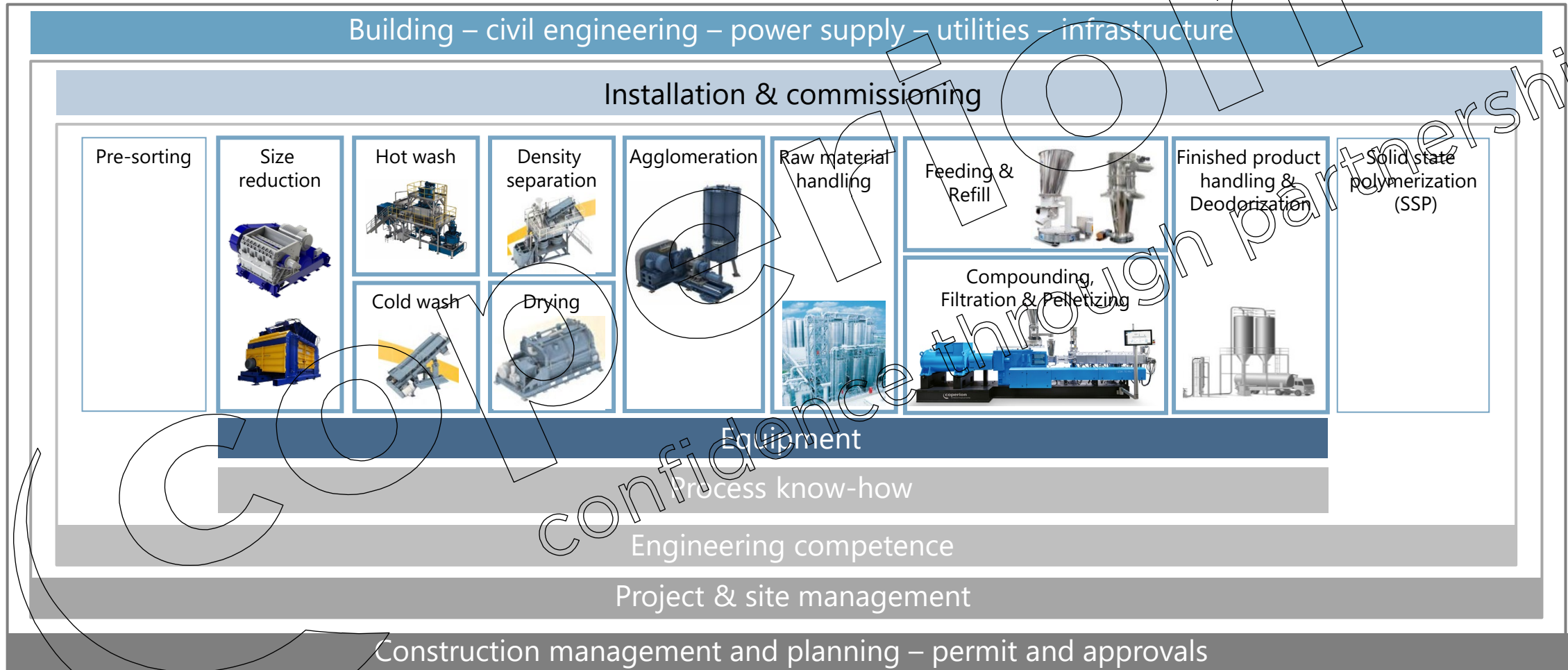




Recycling Business Unit – New common product range



The integration of Herbold and Schenck allow us to offer the Recycling industry best in class equipment as well as full scale Recycling plants by leveraging Coperion's Engineering capabilities.



Coperion Recycling – activity spectrum



We offer a wide range of recycling solutions across a wide spectrum of plastics types, recycling technologies, customer segments and geographic regions.

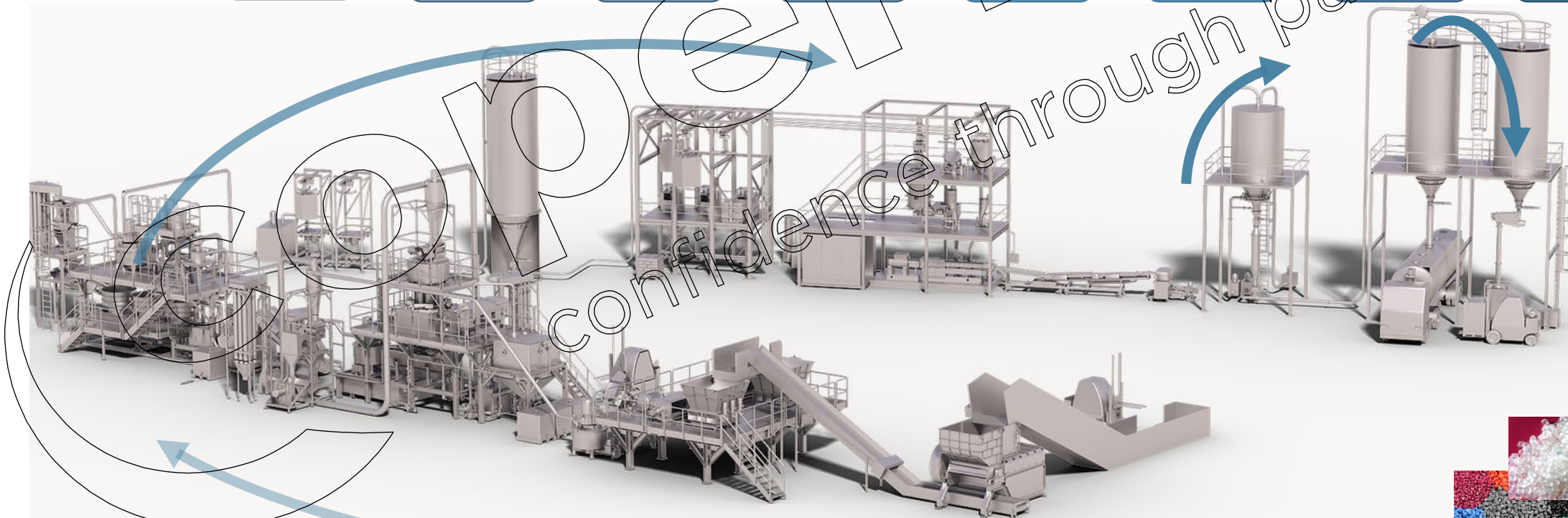
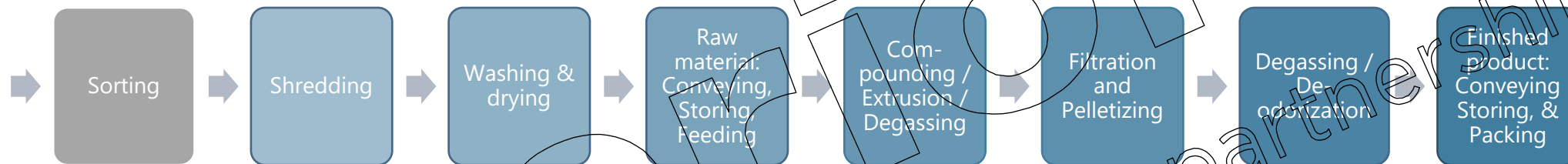


Material	Plastics	Wood	Paper	Metal	Other	
Feedstock	Virgin Plastic			Plastics Waste		
Waste Source	Post-consumer plastics waste			Post-industrial plastics waste		
Waste Material	High-density Polyethylene (HDPE)	Low-density Polyethylene (LDPE)	Polypropylene (PP)	Polyethylene Terephthalate (PET)	Others (PVC, PS and PA)	
Customer Type	Waste Management incl. Recycling	Recyclers		Petrochem Companies	End Product Manufacturers	
Recycling Technologies	Mechanical recycling	Solvent-based purification	Chemical decomposition	Pyrolysis and gasification	Thermal decomposition	
Throughput ranges	<0.5t/h		0.5t/h – 2t/h		>5t/h	
Regional Focus	Europe	North America	Asia	China	India	Others



End-to-end plants for recycling of plastics

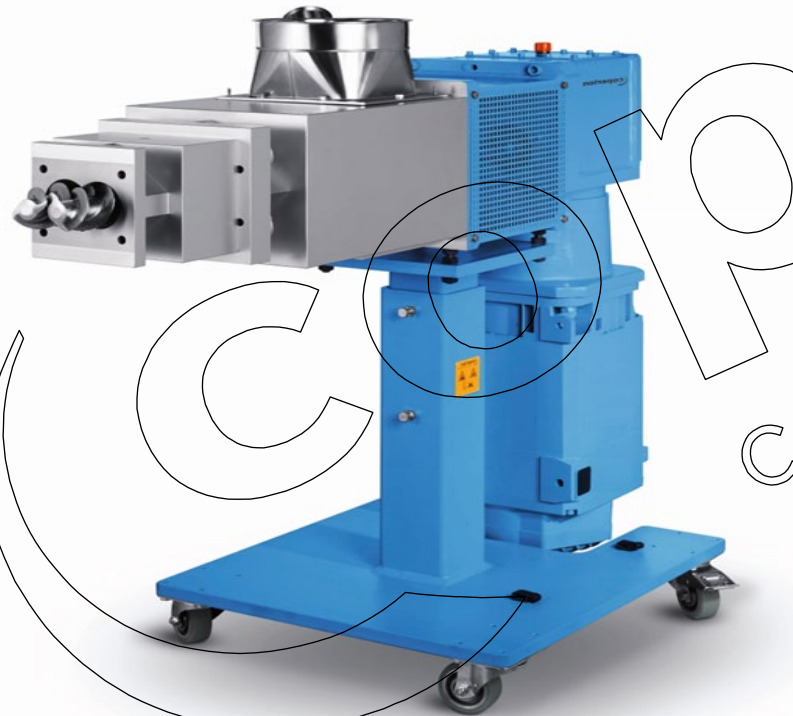
full end-to-end solution for recycling processes, combined with a global footprint and strong innovation.





Raw Material Handling

Raw Material Properties and Challenges

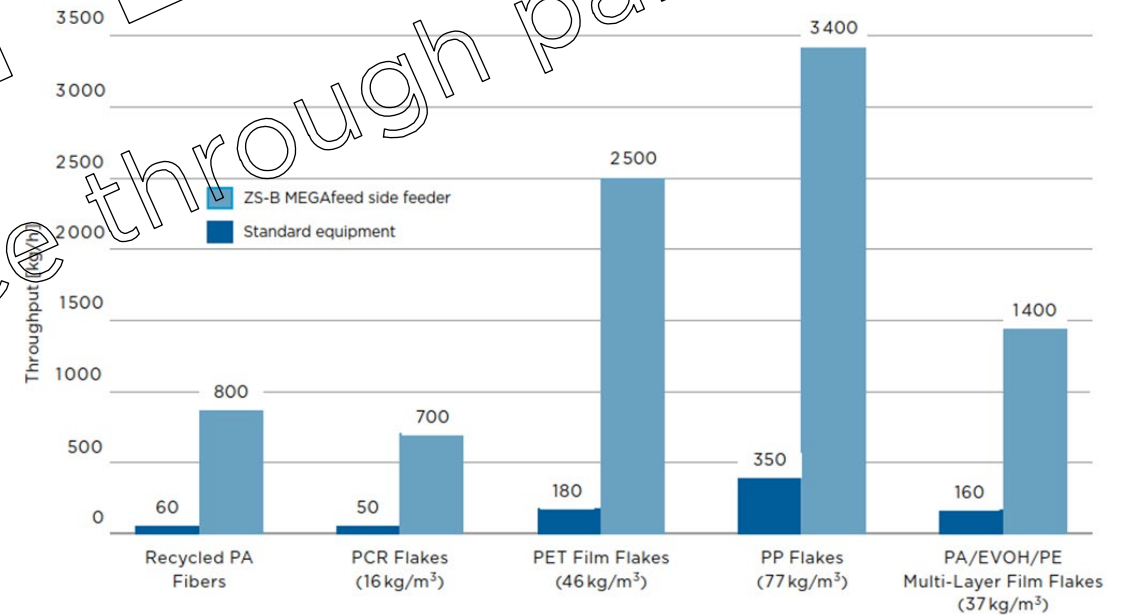


New innovative feeding device

Even with very low screw speeds at the **NEW side feeder**, higher throughputs can be achieved with very fluffy materials



Throughput increase x 10 -15





Silo Deodorization

Deodorization with Gas-X-Change

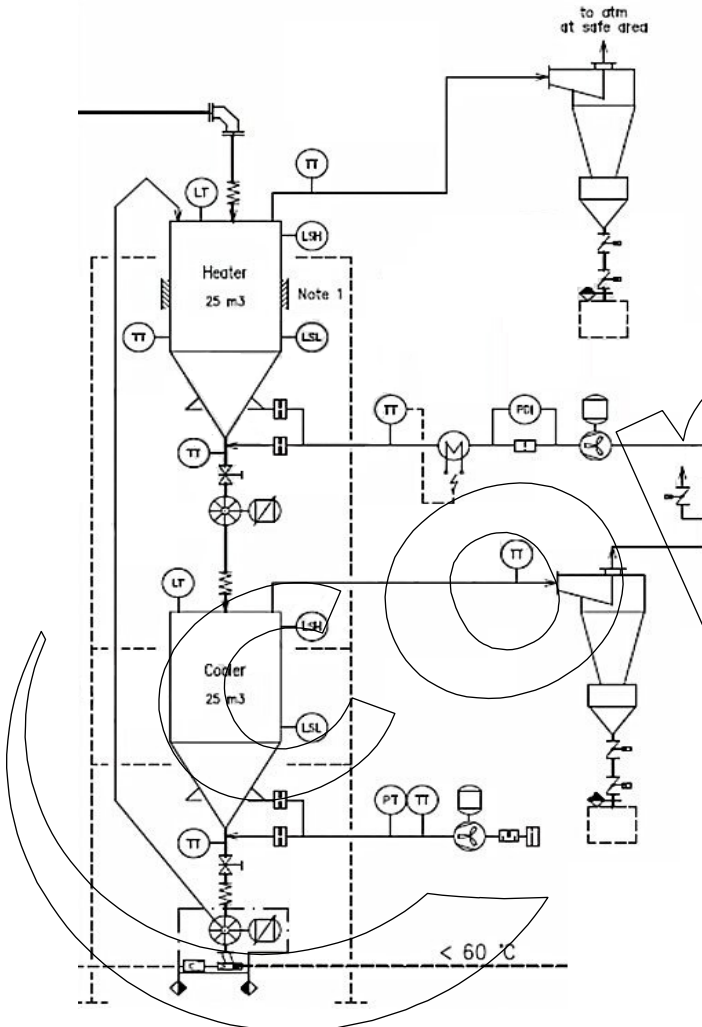


>> VOC reduction with Gas-X-Change

The process heat from the bulk material cooler is used to preheat the supply air

→ **Continuous process**

- Low energy consumption
- Energy is kept in the system
- Highest product temperatures possible





FilCo – Energy Efficient – High Quality – Less Space

Filco = Filtration Compounder



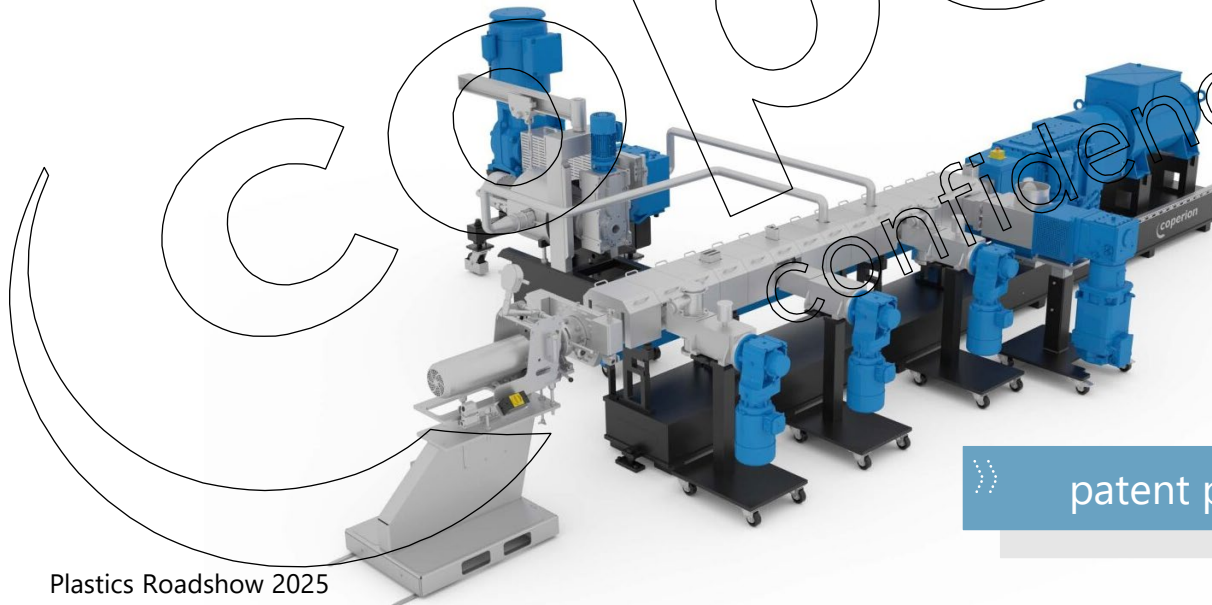
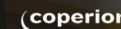
Filtration and Compounding of pre-washed and sorted PCR streams in **one** process step

- Melting and blending of different polymers, **discharging** the melt from the twin screw and **returning** the filtered melt
- **Adding** of coarse fillers, fibers or cross-linking additives such as peroxide after filtration

Two-time
Innovation
Award Winner



Coperion's FilCo was voted
"Product of the Year" in the
category "sustainability"



» patent pending



FilCo – Energy Efficient – High Quality – Less Space



Process setup

Filtration

- Installation of filters with different fineness and manufacturers

Discharge and return of the melt

MegaFeed

- Addition of flakes and fiber with different sizes, bulk densities and moisture contents

First **degassing**

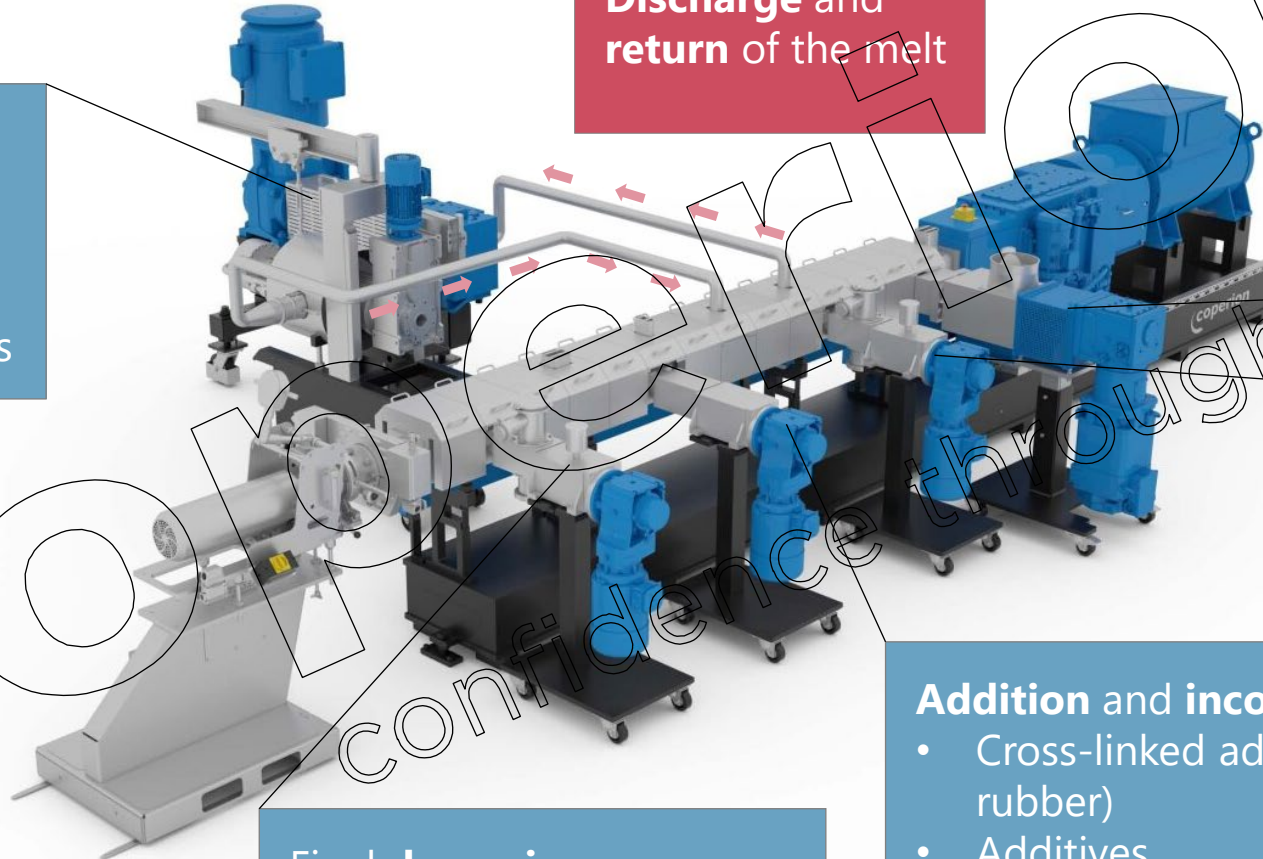
- of moisture, VOC etc.

Addition and incorporation of

- Cross-linked additives (PEX, rubber)
- Additives
- Fiber (wood/glass/carbon fiber)
- Fillers

Final **degassing**

- of moisture, reaction components, VOCs etc.



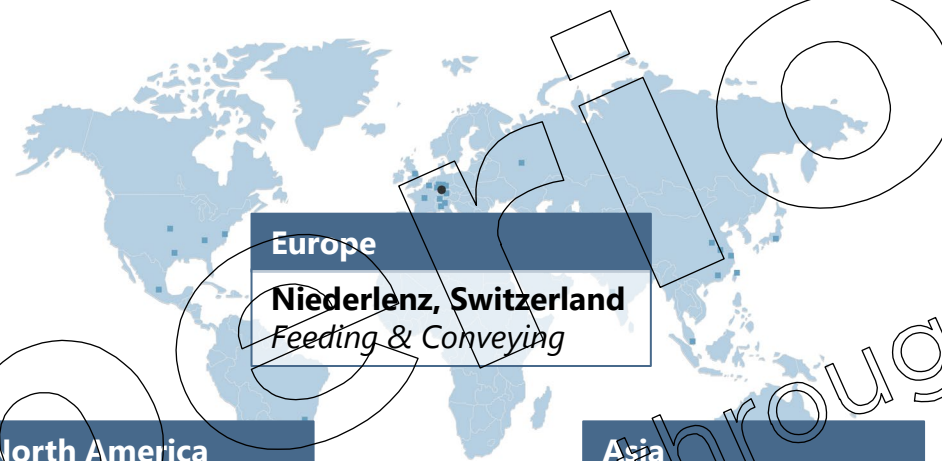
Coperion Recycling Innovation Centers



Recycling Innovation Center for Coperion Product Line Niederbiegen, Germany



- Storage and Homogenization
- Conveying and drying
- Dosing
- Compounding
- Degassing and deodorization
- Pelletizing and bagging



Europe

Niederlenz, Switzerland
Feeding & Conveying

North America

Salina, Kansas
Pneumatic Conveying
Pitman, New Jersey
Feeding & Extrusion

Asia

Nanjing, China
*Extrusion, Pneumatic
conveying & Feeding*

**Test facilities for the full product line are
available worldwide to prove the working
principle of Coperion and Herbold
equipment with our customer's products.**

Recycling Innovation Center for Herbold Product Line Meckesheim, Germany



- Size Reduction
- Washing
- Drying
- Separation
- Agglomeration

Business Unit Recycling – Why we are the right partner



Coperion, Schenck and Herbold – a new level of expertise in plastics recycling

What makes Coperion Recycling unique and the best partner:

- We are **bringing strong brands** in size reduction, washing/drying, compounding and materials handling **together** to offer the recycling industry best in class processes.
- We **serve you globally** with strong sales, engineering, production and service capabilities.
- Our **high in-house production** rate allows for targeted product development.
- Long lasting **experience and process know how** in plastics and plastics recycling.
- **One stop shop** starting from equipment up to entire turnkey plants.
- **Provider of tailor-made** solutions for all recycling processes.
- **Food-grade PET bottle-to-bottle references** with brand approval with our SSP partner (Coca Cola)
- **Recycling Innovation Centres** in Europe and testing facilities around the world to support our customers.

Industry leading technology

Best Total Cost of Ownership

Worldwide support

Our unique selling points include high throughput, high end product quality, high yields, low overall resource consumption, design for 24/7 operation at highest availability

FOR TOMORROW

➤ We constantly learn and improve! To better support our customers and partners

coperion

coperion
confidence through partnership

THANK YOU VERY
MUCH FOR YOUR
ATTENTION.

You're very welcome to follow us.



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