

# INNOVATIONS IN PLASTICS RECYCLING ROADSHOW INDIA FEB 2025

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*Business Unit Manager*

confidence through partnership







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

confidence through partnership



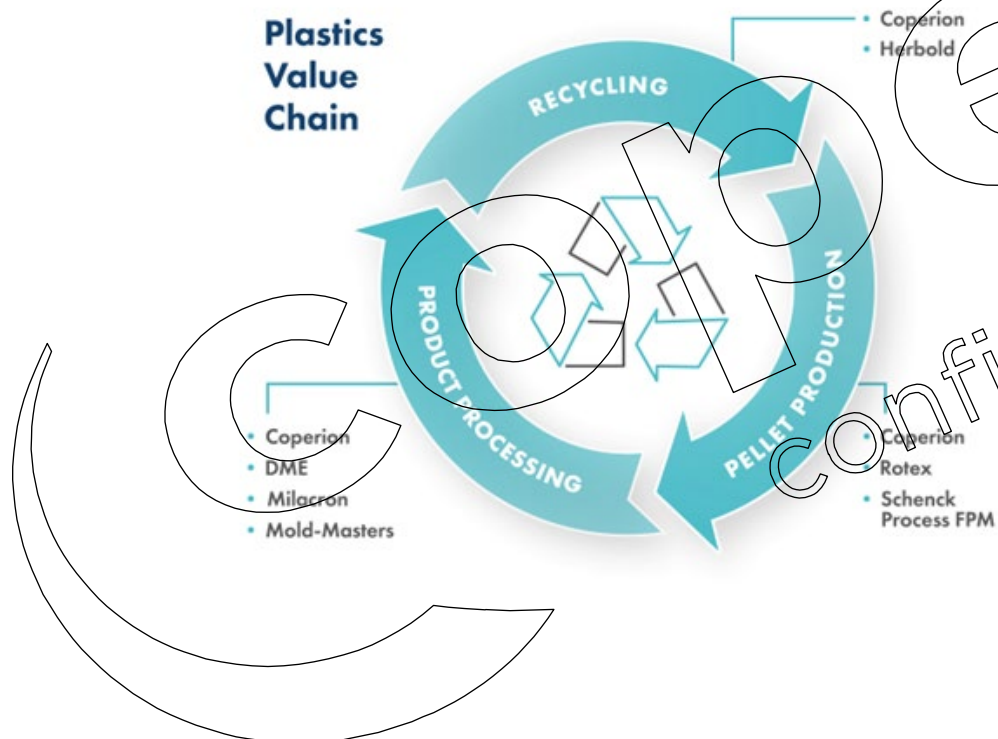


# Optimized and Closed Plastic Value Chain



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 CO<sub>2</sub> Footprint

Lowest Energy Consumption during Operation

Zero Waste Strategy during Operation

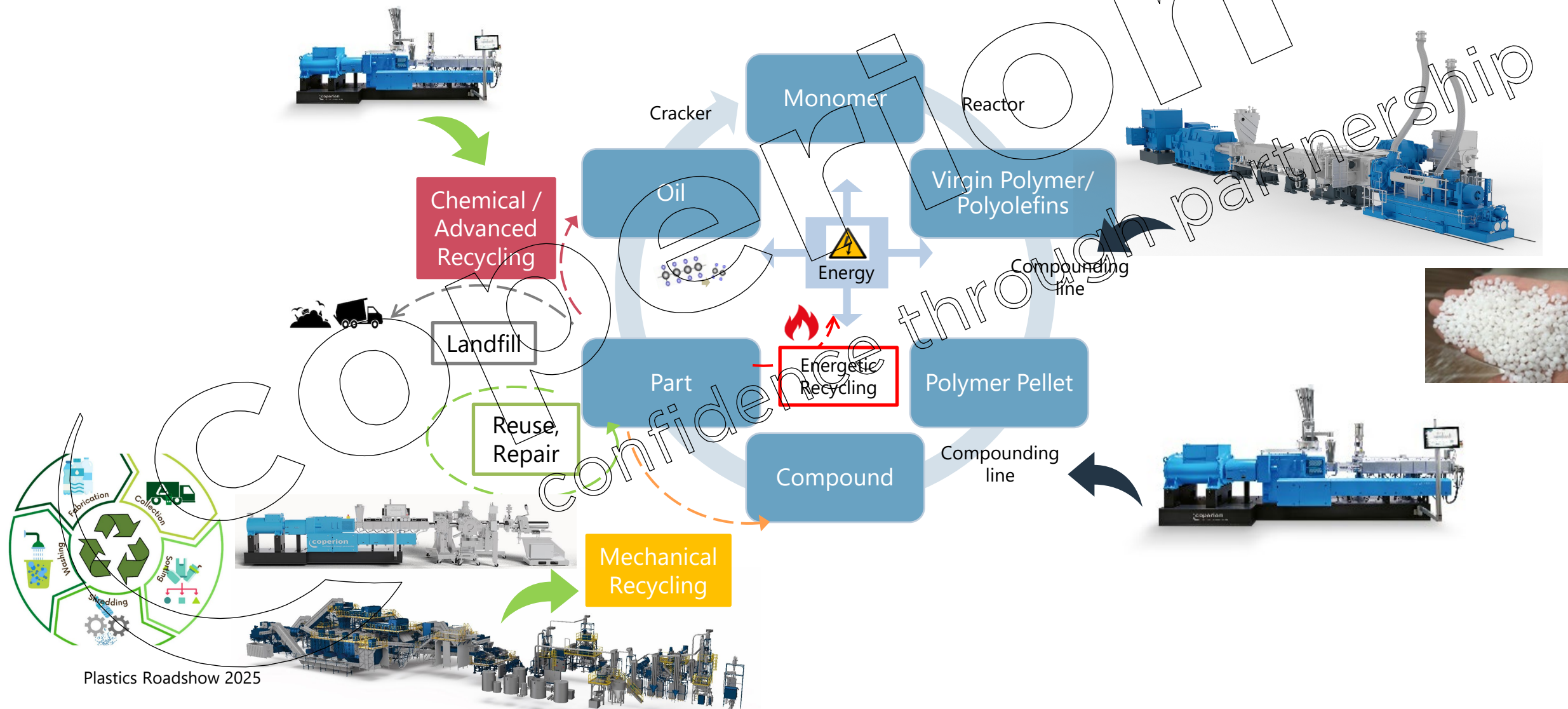
Optimized Process Chain from PCR to Pellets



# Plastic Value Chain



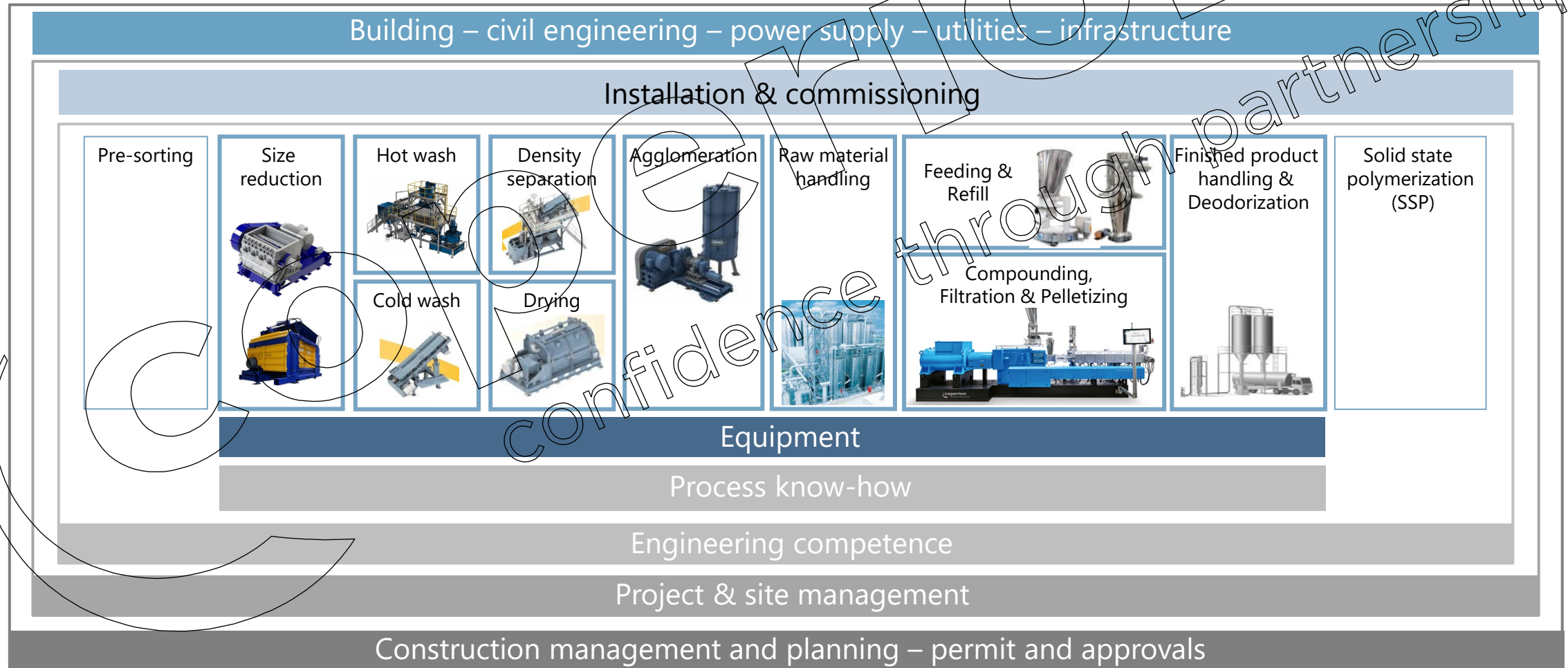
Coperion covers the entire process chain from raw material to final high-quality pellets



# Recycling Business Unit – New common product range



The integration of Herbold and former Schenck Process FPM 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.

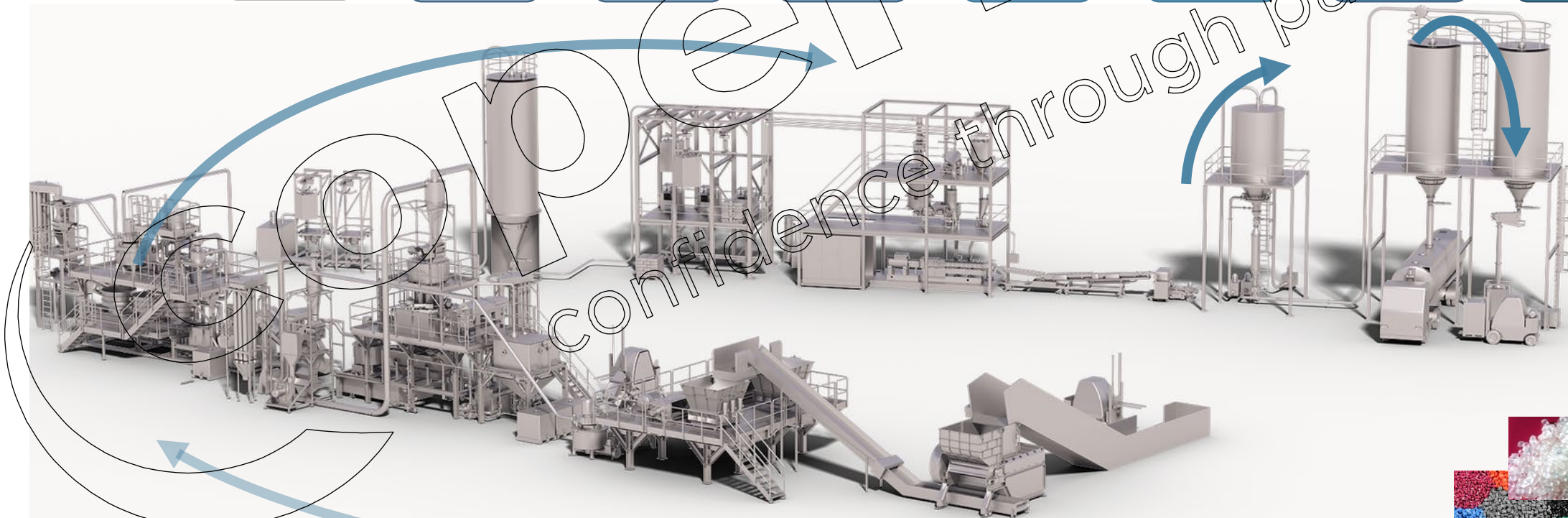
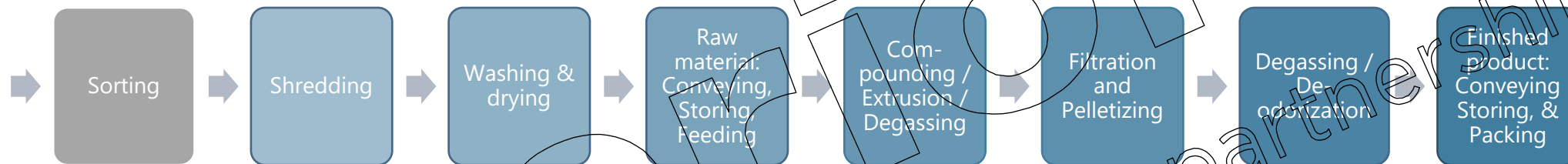






# End-to-end plants for recycling of plastics

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

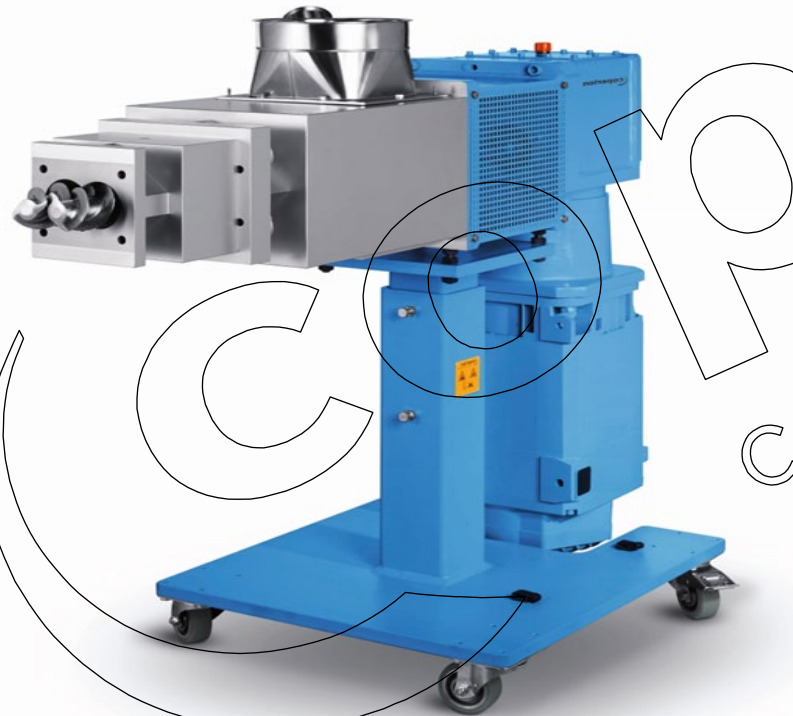






# Raw Material Handling

Raw Material Properties and Challenges

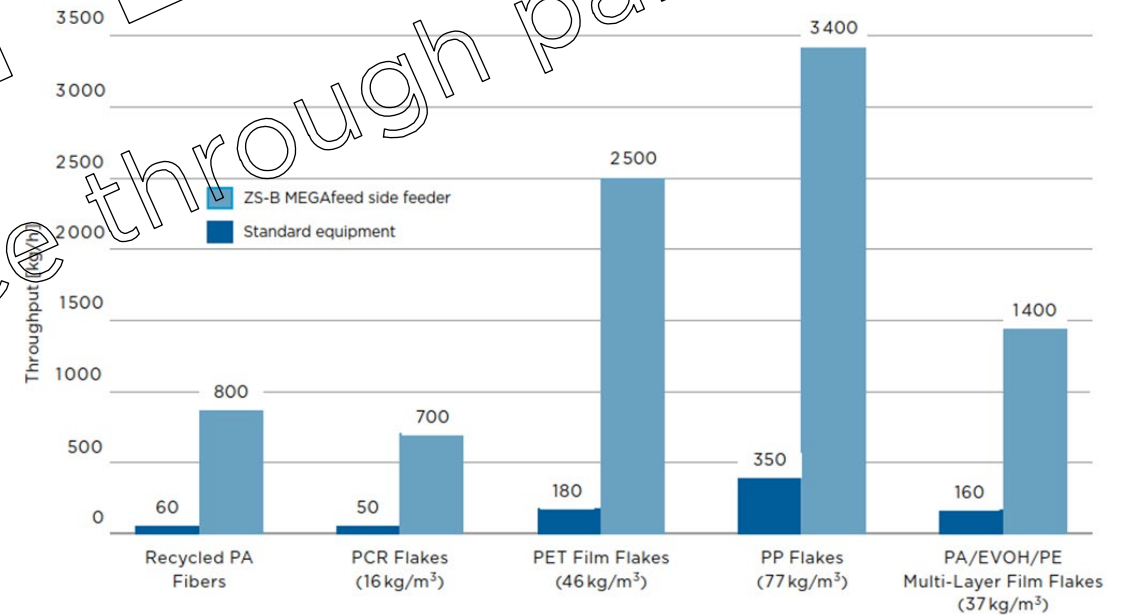


## New innovative feeding device

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





# FilCo – Energy Efficient – High Quality – Less Space

Filco = Filtration Compounder



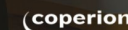
**Filtration and Compounding** of pre-washed and sorted PCR streams in **one** process step

- 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**

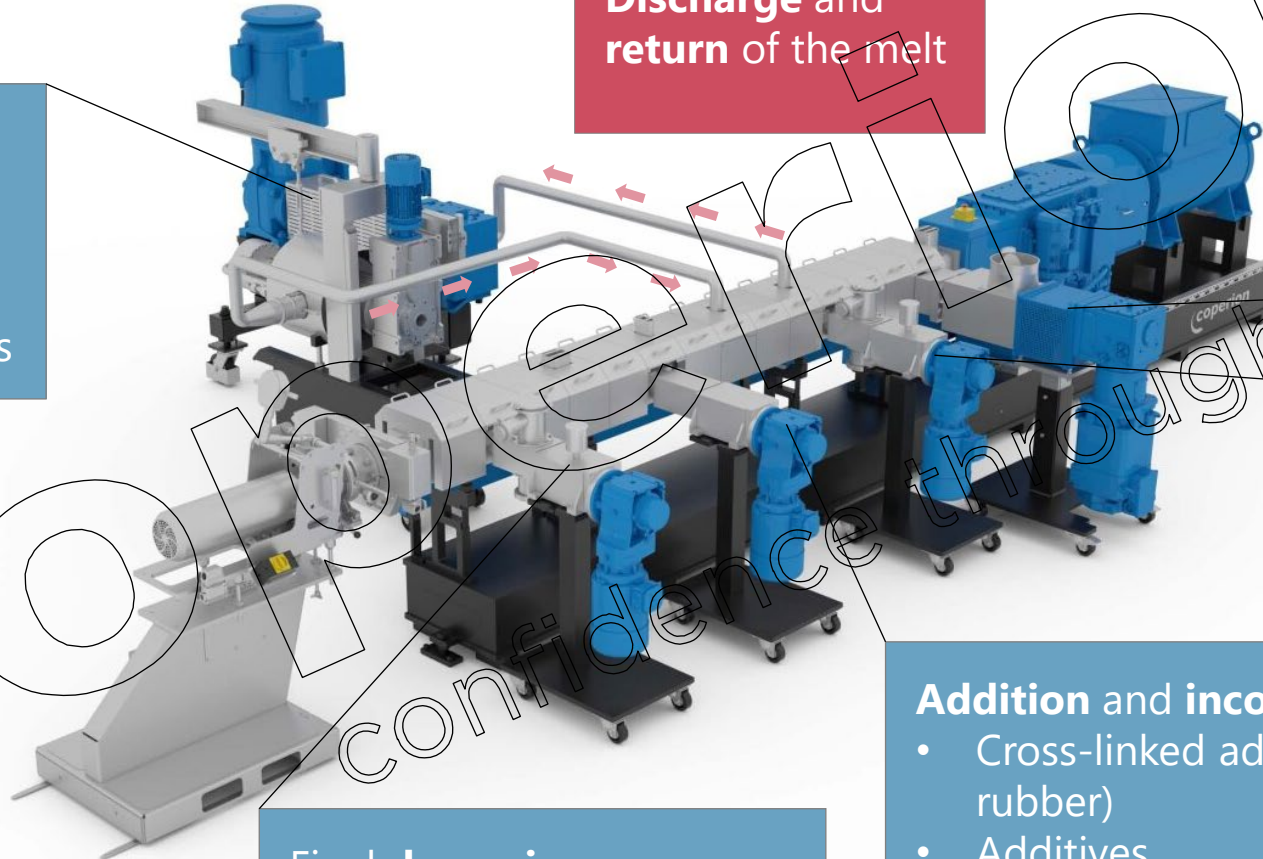
- of moisture, VOC etc.

## **Addition and incorporation** of

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

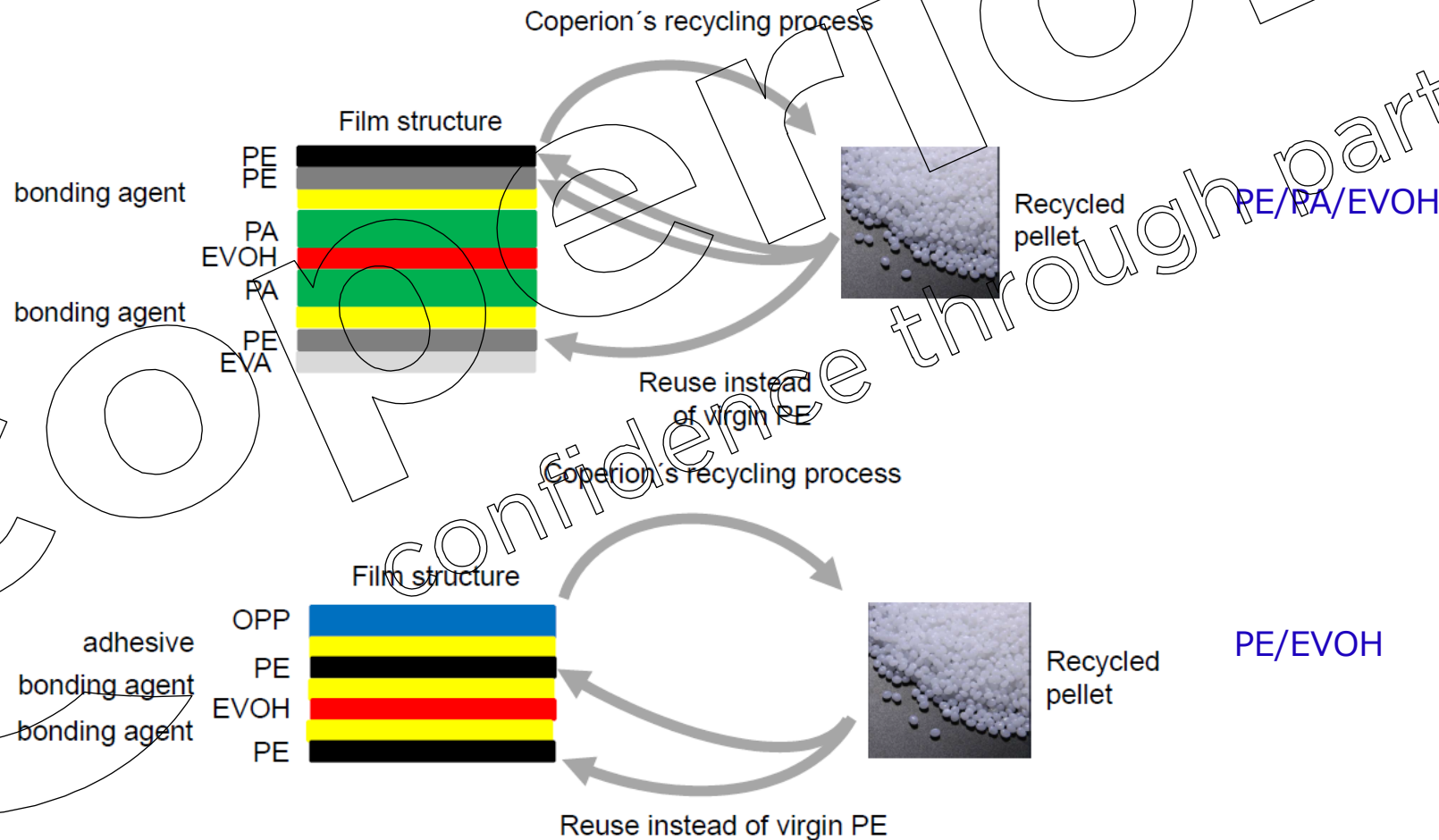
## Final **degassing**

- of moisture, reaction components, VOCs etc.



# Multilayer film recycling (In-house/zero waste)

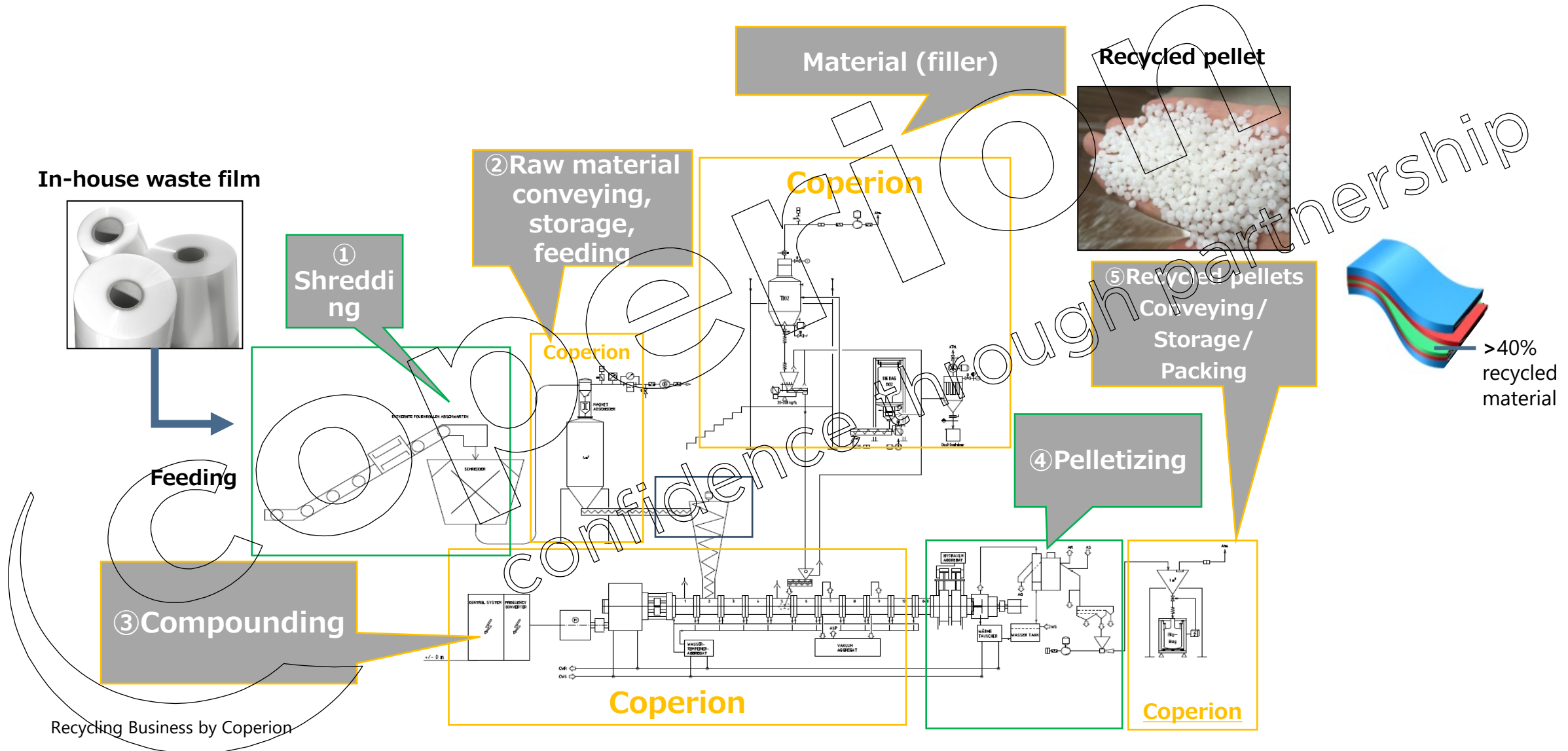
- High quality of recycled pellets from multilayer film waste and reuse of the pellet as raw material for multilayer film as a substitute for virgin PE, virgin PP materials, etc.
- Basically no compatibilizer is used.





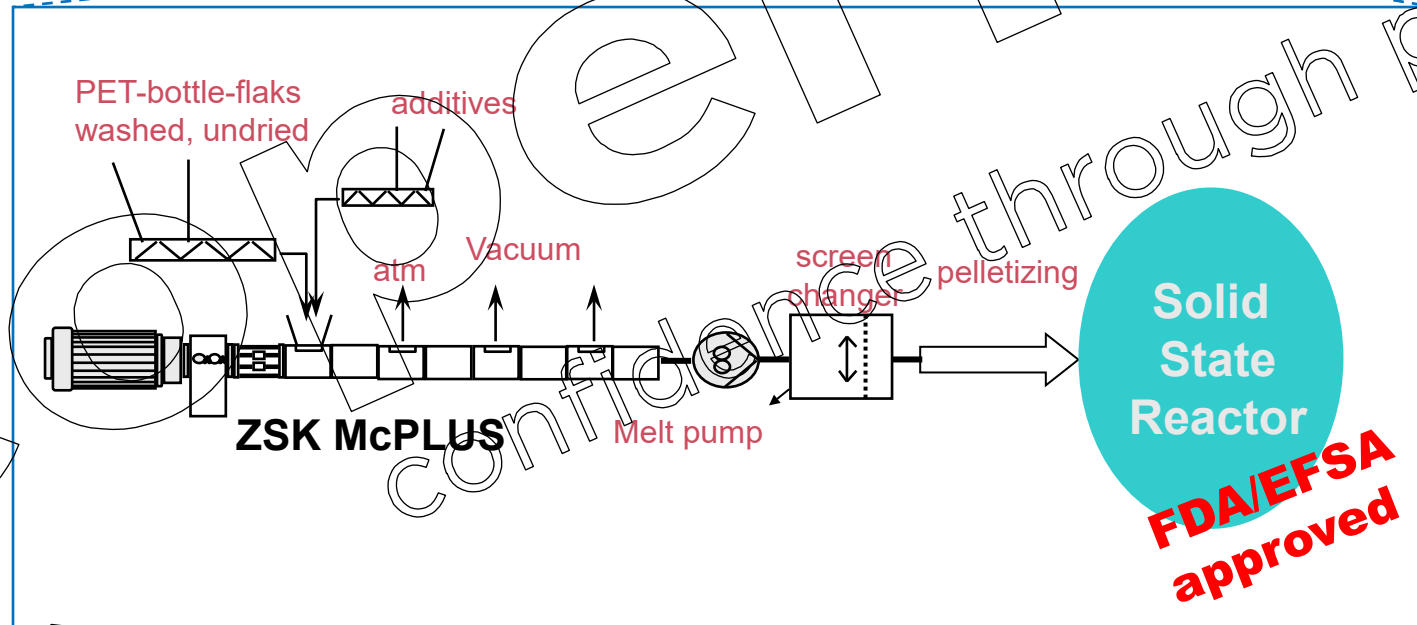
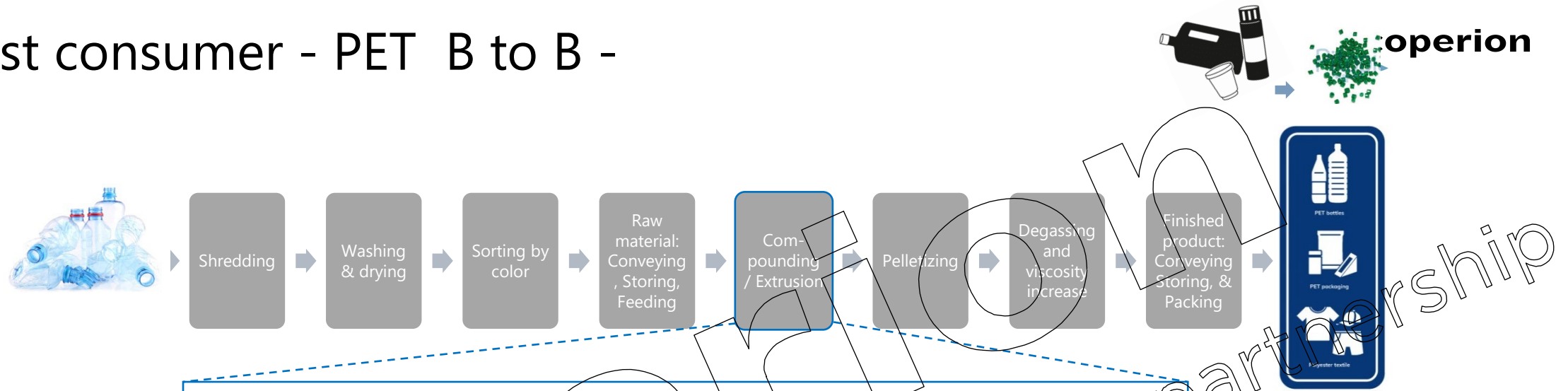


# Multilayer film recycling (In-house/zero waste)





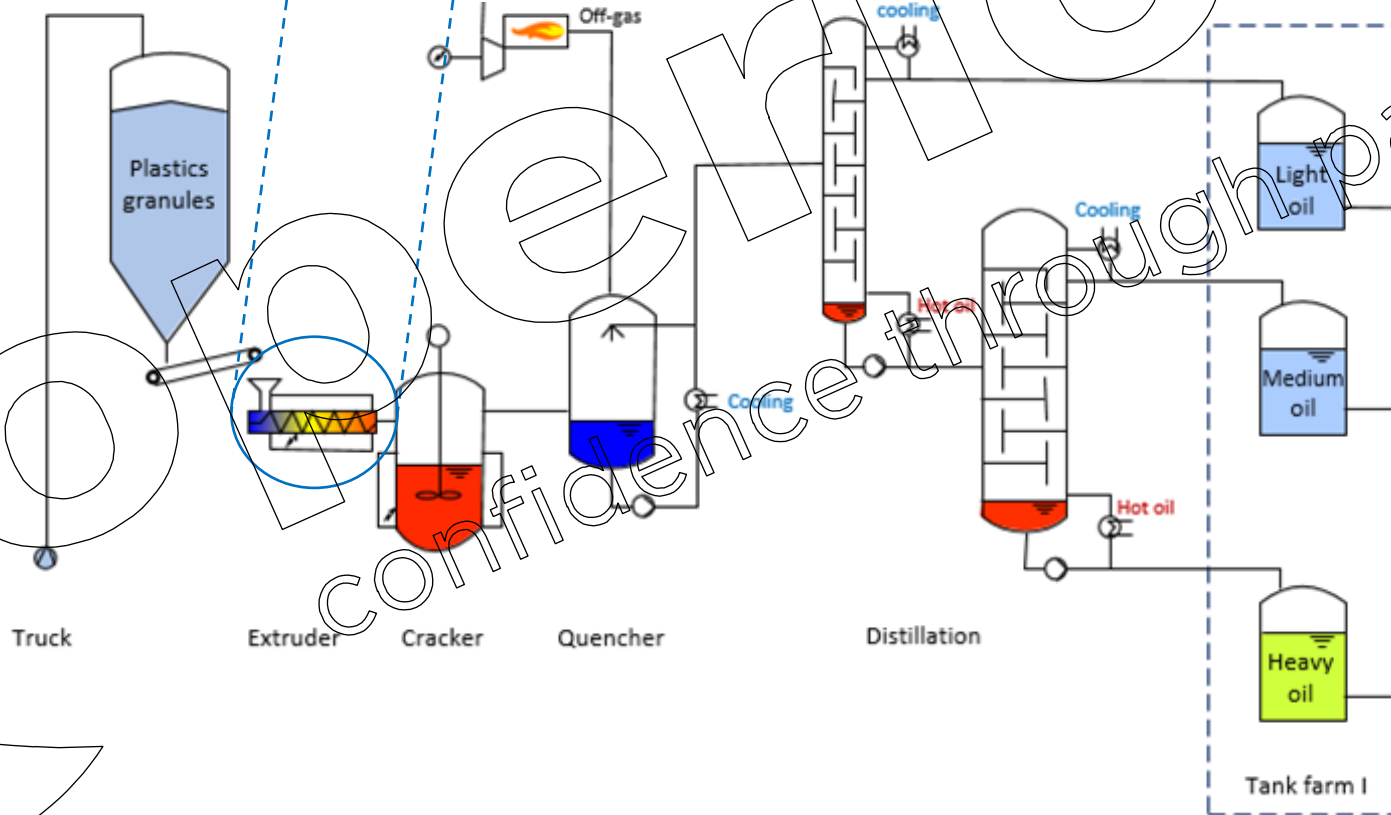
# Post consumer - PET B to B -







# Chemical Recycling - Pyrolysis

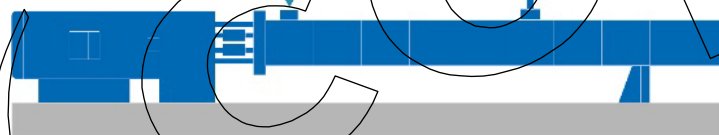




# Chemical Recycling - Pyrolysis



Dosierung von Post-Consumer-Waste



Doppelschneckenextrusion - Dispergierung, Entgasung, Einbringung von Energie

Reaktor

Destillator

(1) Throughput

ZSK => 10 ton/h more

Single extruder : max 2 ton/h

(2) Melting temperatures about 320-350 C  
within 30 seconds (depends the material)

(3) Energy consumption of ZSK

33% less compared to Single extruder

(4) Degassing of water and volatile material

(5) Removal of organic PVC : 90% more





# Silo Deodorization

## Deodorization with Gas-X-Change

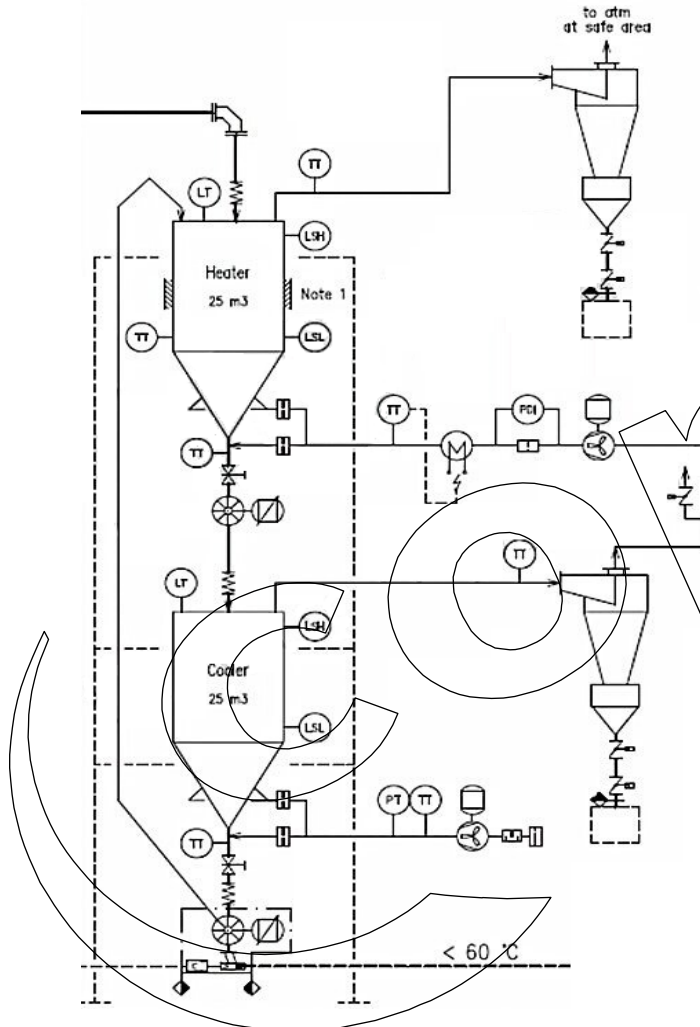
### >> VOC reduction with Gas-X-Change

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

- Energy consumption **0,05 kWh/kg**

→ **Continuous process**

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



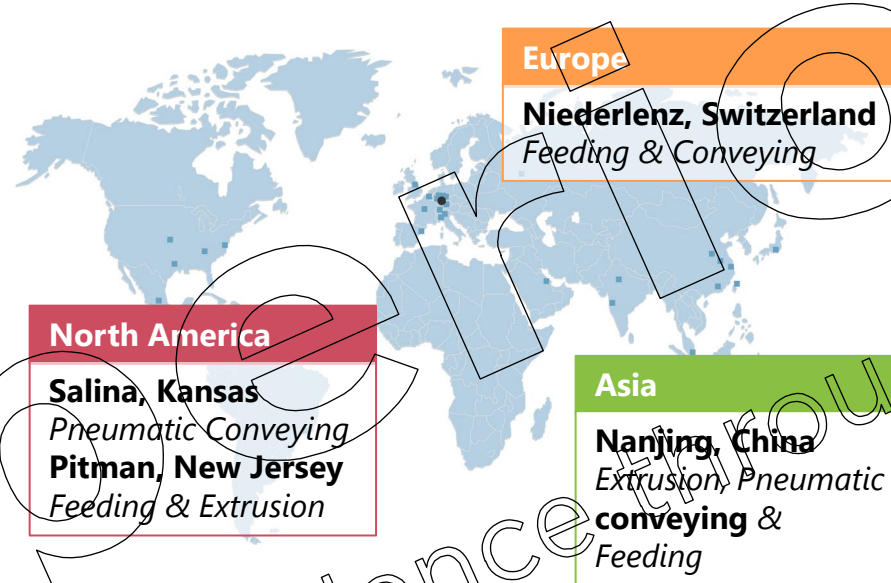
# Coperion Recycling Innovation Centers



## Recycling Innovation Center for Coperion Product Line Niederbiegen, Germany



- Storage and homogenization
- Conveying and drying
- Feeding
- Compounding
- Degassing and deodorization
- Pelletizing and bagging



**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 and Herbold – A new level of expertise in plastics recycling

## What makes Coperion Recycling unique and the best partner:

- **Bringing strong brands together** – Offering best in class process
- Serving you **globally**
- Targeted product development with **high in-house production rate**
- **Decades of experience and process know-how** in plastics and plastics recycling.
- **Tailor-made solutions** for all recycling processes.
- **Food-grade PET bottle-to-bottle references** with brand approval with our SSP partner
- **Recycling Innovation Centers** in Europe and testing facilities around the world to support our customers.

**Industry leading technology offering best quality, lower opex, maximal throughput and flexibility**

**Best Total Cost of Ownership**

**Worldwide support**



# FOR TOMORROW

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

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## CONTACT

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MUCH FOR YOUR  
ATTENTION.

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