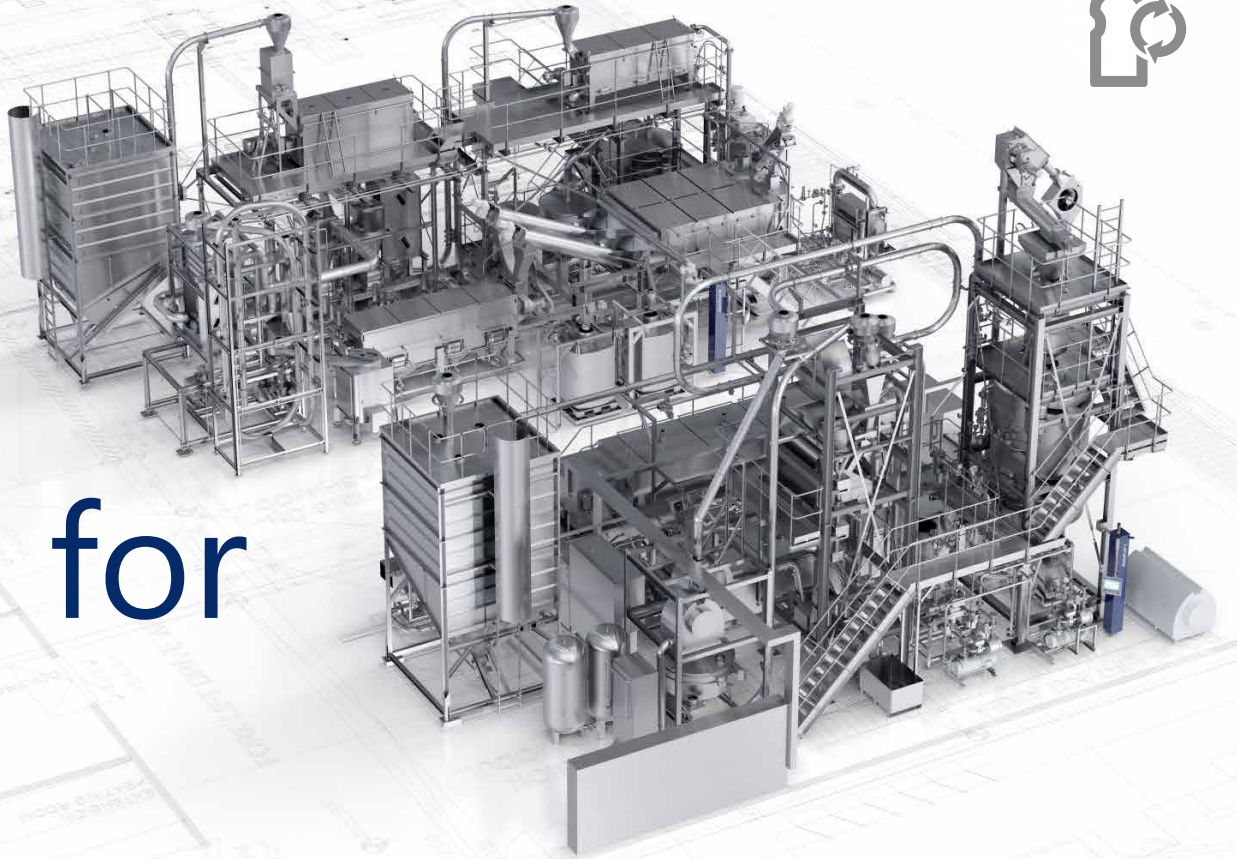




# Krones solutions for PET recycling

MetaPure W and S



# Sustainability and economic efficiency

## Our contribution to circular economy

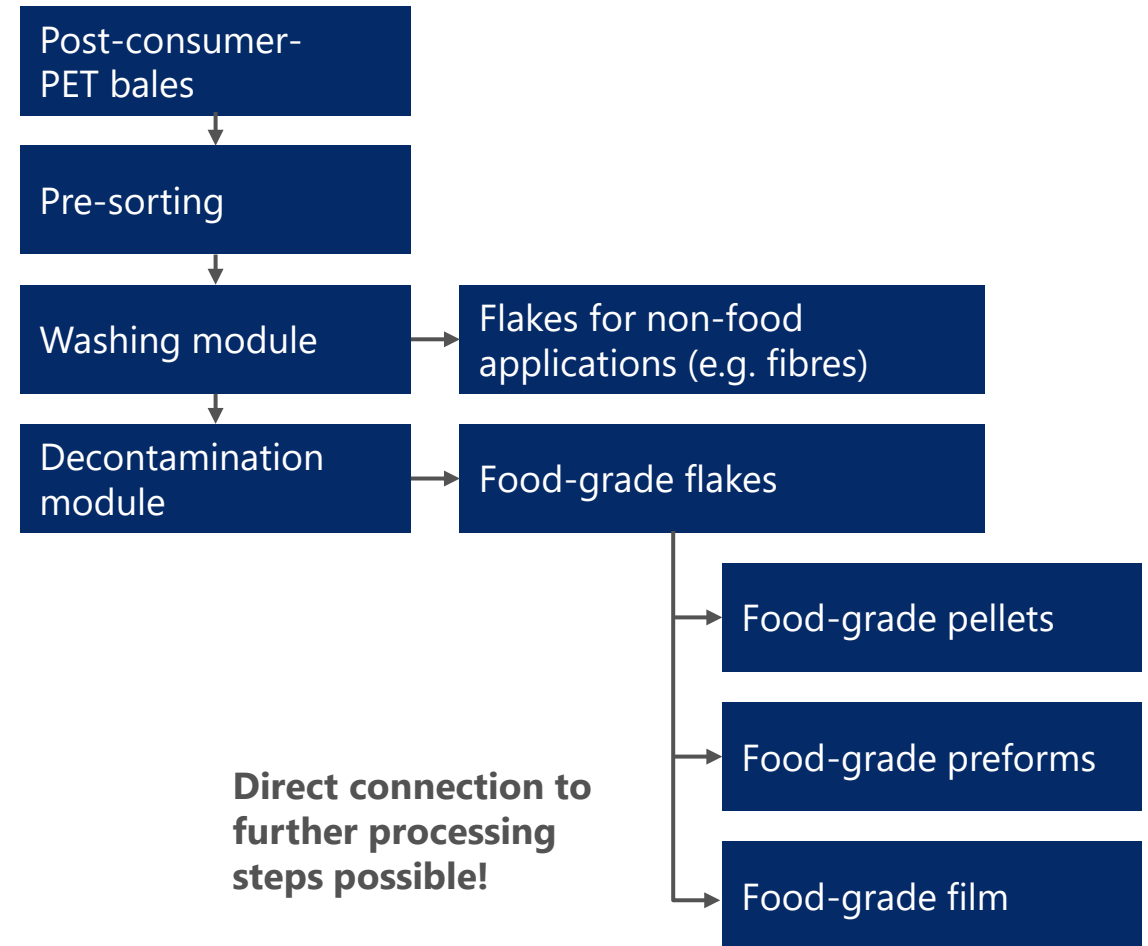


Can plastic packaging be sustainable? Yes, if its production is gentle on resources and it can be kept in a closed loop – and Krones makes both possible. From a material-saving packaging design through to low-energy container production and the recycling of used plastic materials: We give PET bottles and other packaging the chance to have a sustainable and environmentally friendly life – not only once, but multiple times.

Recycling plays a key role here. On the one hand, Krones provides its own washing and decontamination modules and, on the other, also takes on the overall responsibility for entire recycling factories.

### At a glance

- Recycling of PET containers into flakes or pellets
- Energy-saving, direct further processing (optional)
- Individually adjustable intrinsic viscosity (IV)
- Production of different material qualities – up to food-grade PET standard according to FDA, EFSA and other certificates
- Available as a complete line or in the form of individual machines



# Three system types for PET recycling



System type	MetaPure (complete system)	MetaPure W-PET	MetaPure S
Field of applications	Recycling of containers pressed in bales/as pressed containers <ul style="list-style-type: none"> <li>– into PET flakes or pellets for use in direct contact with foodstuffs</li> <li>– or inline directly into preforms or film</li> </ul>	Recycling of containers to form PET flakes for use in non-food products or for further processing for direct contact with foodstuffs	Decontamination and SSP** of washed PET flakes to PET flakes or pellets for use in direct contact with foodstuffs
Output	<b>1,000 kg/h to 6,000 kg/h</b>	<b>1,000 kg/h to 6,000 kg/h*</b>	<b>500 kg/h to 1,500 kg/h*</b>
Space requirement	600 – 4,500 m <sup>2</sup>	250 – 1,000 m <sup>2</sup>	250 – 500 m <sup>2</sup>

## Who can use MetaPure?

- Brand bottlers
- Private label bottlers
- Converters
- Recyclers

\* Several modules can be combined with each other in order to achieve higher outputs. | \*\* SSP = Solid State Polymerisation

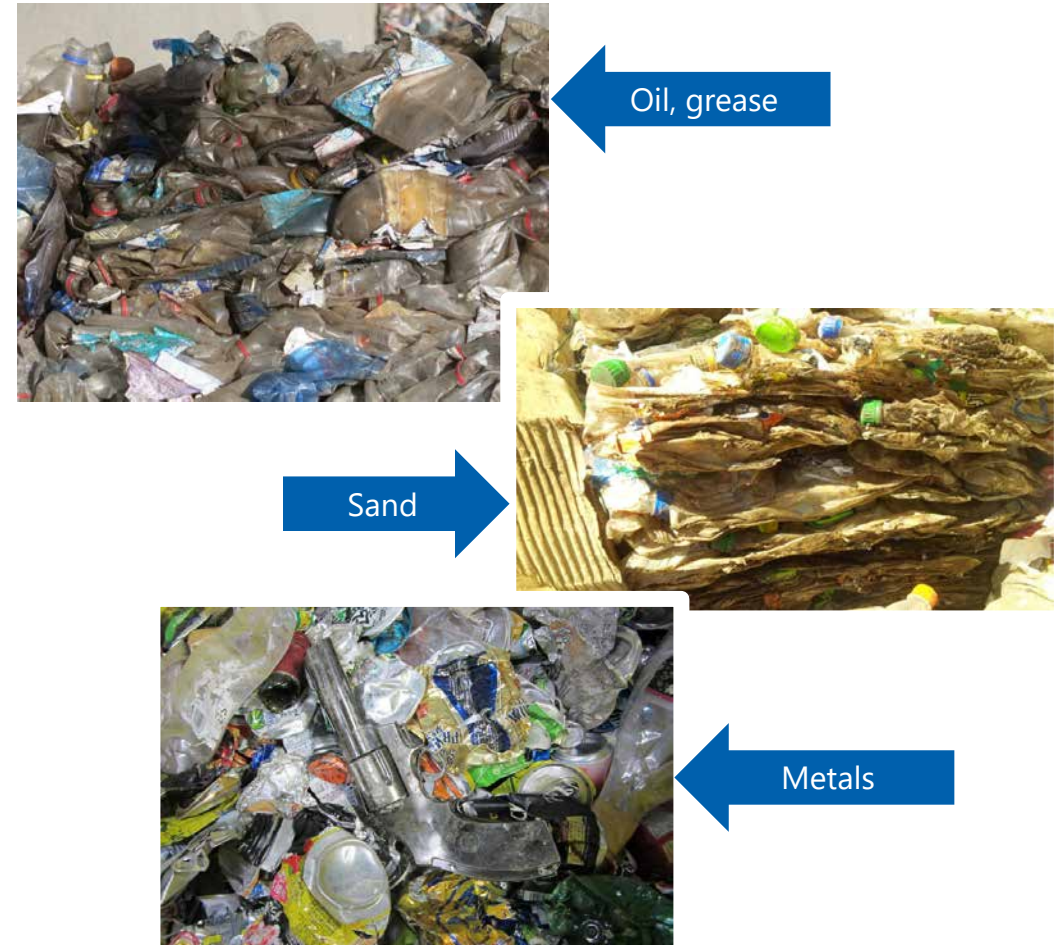
# The front end

## Pre-sorting of the incoming material

### Separation of foreign matter and impurities and sorting of the input material

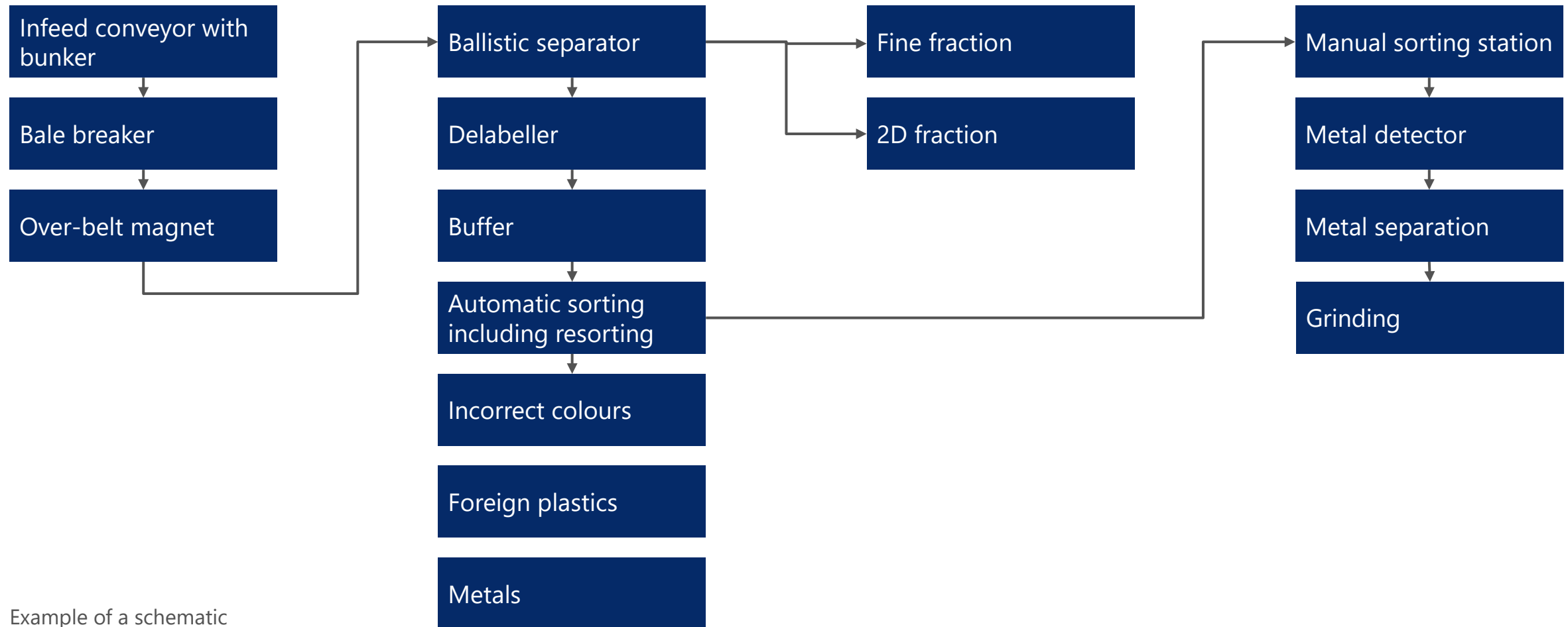
- Separation of the containers
- Removal of undesired foreign matter and impurities such as wood, sand, glass and metal, as well as coloured plastic materials and foreign polymers
- Removal of labels
- Grinding into flakes

**The pre-sorting system can be individually adjusted to the quality of the infeed material, the local conditions and the required levels of purity.**



# The front end

## Pre-sorting of the incoming material



Example of a schematic representation

# The MetaPure W-PET washing module



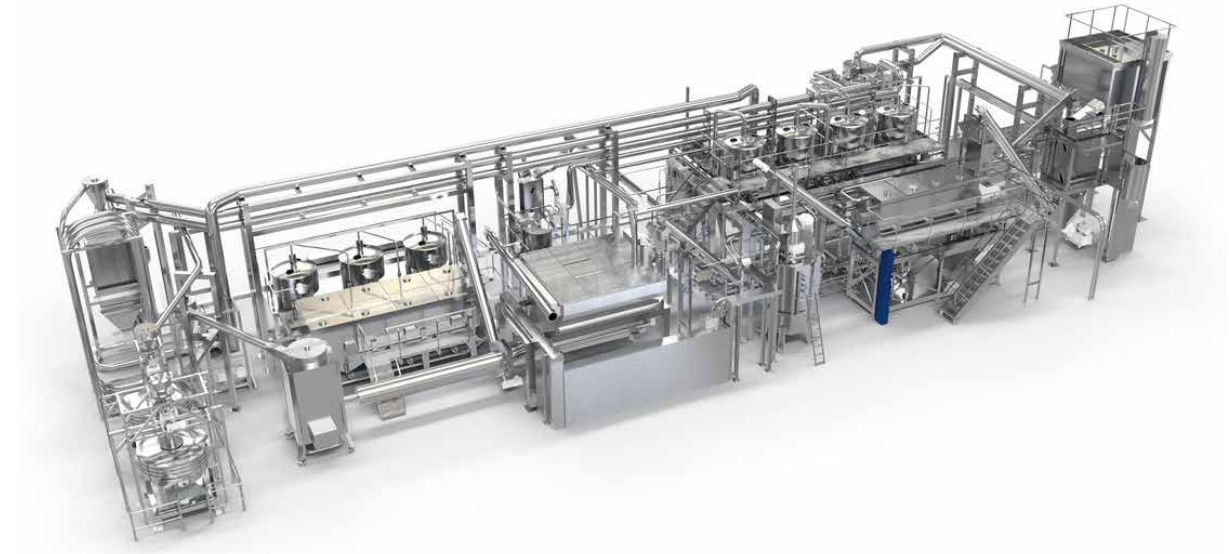
## Excellent cleaning results with the Krones washing technology

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- Pre-cleaning
- Caustic cleaning with caustic renewal
- Multi-stage post-washer
- Drying
- Automatic waste management system reduces the operator's work
- Separation of labels and caps using a float-sink separation system and sifter

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**The Krones washing process with pre-treatment, caustic cleaning and hot post-washing ensures clean flakes with the best usability for high-quality applications (fibre, film, injection moulding).**



# Benefits to you with the MetaPure W-PET



- **Gentle treatment** of the material as the units operate with a slow rotation
- **Reliable removal** of dirt, organic residues and adhesives using a caustic washer
- **Less cleaning and more safety** for the line operators thanks to the clean design and automatic waste management system
- Possibility to **reuse the process water** with the integrated water cascade
- **Very good washing results** achieved with a hot post-washing process
- **Reliable removal** of caps and labels so that they can be reused (optional drying, separation and sack filling)
- **Constant concentration** and **low consumption** of caustic, additives and defoamers thanks to the automatic dosing equipment
- **Robust construction** and design of many parts in **stainless steel** to protect your investment



# The MetaPure S decontamination module



## The way to food-grade flakes or pellets

- Drying and heating of the flakes
- Decontamination of the flakes to remove migrated substances
- Fixed-phase post-condensation (SSP) to raise the intrinsic viscosity (IV)
- Highest flexibility after SSP: three options for the end products
  - Inline direct further processing of food-grade flakes into **preforms** or **film** possible
  - Alternatively: production of **pellets** with double the safety by degassing of the melt in an additional cleaning step during extrusion

**Due to the fact that flakes can be decontaminated quicker than pellets, the MetaPure S stands out thanks to its lower energy requirement and gentle material handling.**

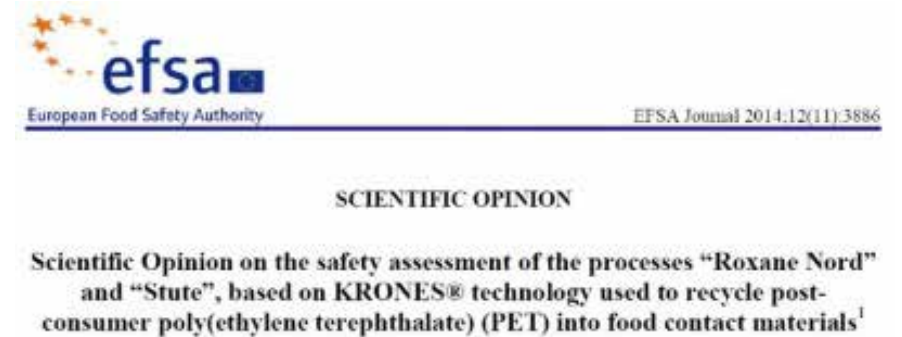




# Benefits to you with the MetaPure S



- **Quick decontamination** and IV build-up in the flake
- **FDA and EFSA certificates** awarded:  
Use of up to 100 percent rPET for food packaging
- **Higher yield** thanks to a vacuum reactor and heating conveyors as they generate fewer fine particles
- **Energy-saving option:** direct connection to machines for further processing (preform, film, fibre)
- **Double the safety** in the pellet process: extruder with FDA certification for extra clean pellets (optional)
- **Maintenance** of the vacuum system possible **during operation**



# our complete-system expertise

## Krones as turnkey supplier and integrator



### Complete recycling plant from a single source



Pre-sorting (integration)

Washing module  
(Krones MetaPure W-PET)

Decontamination module  
(Krones MetaPure S)

Necessary utilities  
(integration)

### Benefits to you: one single contact partner and fewer interfaces

# Benefits to you



Incoming material



Front end



Washing module



Decontamination module



SSP reactor

- Krones turnkey solution: Both washing and decontamination technology from a single source
  - Washing module with a well thought-out concept and excellent washing results
  - Decontamination module with a unique set-up (treatment in solid and liquid phases)
- Proven technology for PET, also transferable to innovative PO recycling technology

## Requesting a new machine

You can easily send a request for a non-binding quotation in our [Krones.shop](#).



# Everything from a single source



## KIC Krones colclean optimise the PET washing process

Only if the process and processing and operating materials fit together perfectly, the result is right. This is ensured by KIC Krones additives.

## Krones Lifecycle Service – Partner for Performance

It goes without saying that also after the purchase of new machines, Krones takes care of your lines: The Krones LCS experts are always there to help you reaching your goals and turn your wishes into optimal LCS solutions.



**SOLUTIONS  
BEYOND  
TOMORROW**

