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# State of the Art

## Rigid and Foam Polystyrene Recycling

### Indianapolis, IN

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Nov., 2016

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## Our Services

- Consulting: Design & Engineering
- System Design, Fabrication, Upgrading
- Turn-Key Projects



- System Design, Fabrication, Upgrading
  - Plastics Sorting Systems
    - Float/Sink, Optical, Gravity, Centrifugal
  - Plastics Washing Systems
  - Material Handling, Conveying Systems
  - Control Automation, Remote Monitoring

# Rigid and Foam PS Recycling System

Plastics Recycling Inc, IN





# Rigid and Foam PS Recycling System

## Plastics Recycling Inc, IN

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### MATERIAL SOURCING

- Sorted at the MRF with optical sorters
- PS Collection Centers
- Baled for transportation
- Compacted into blocks





# Rigid and Foam PS Recycling System

## Plastics Recycling Inc, IN

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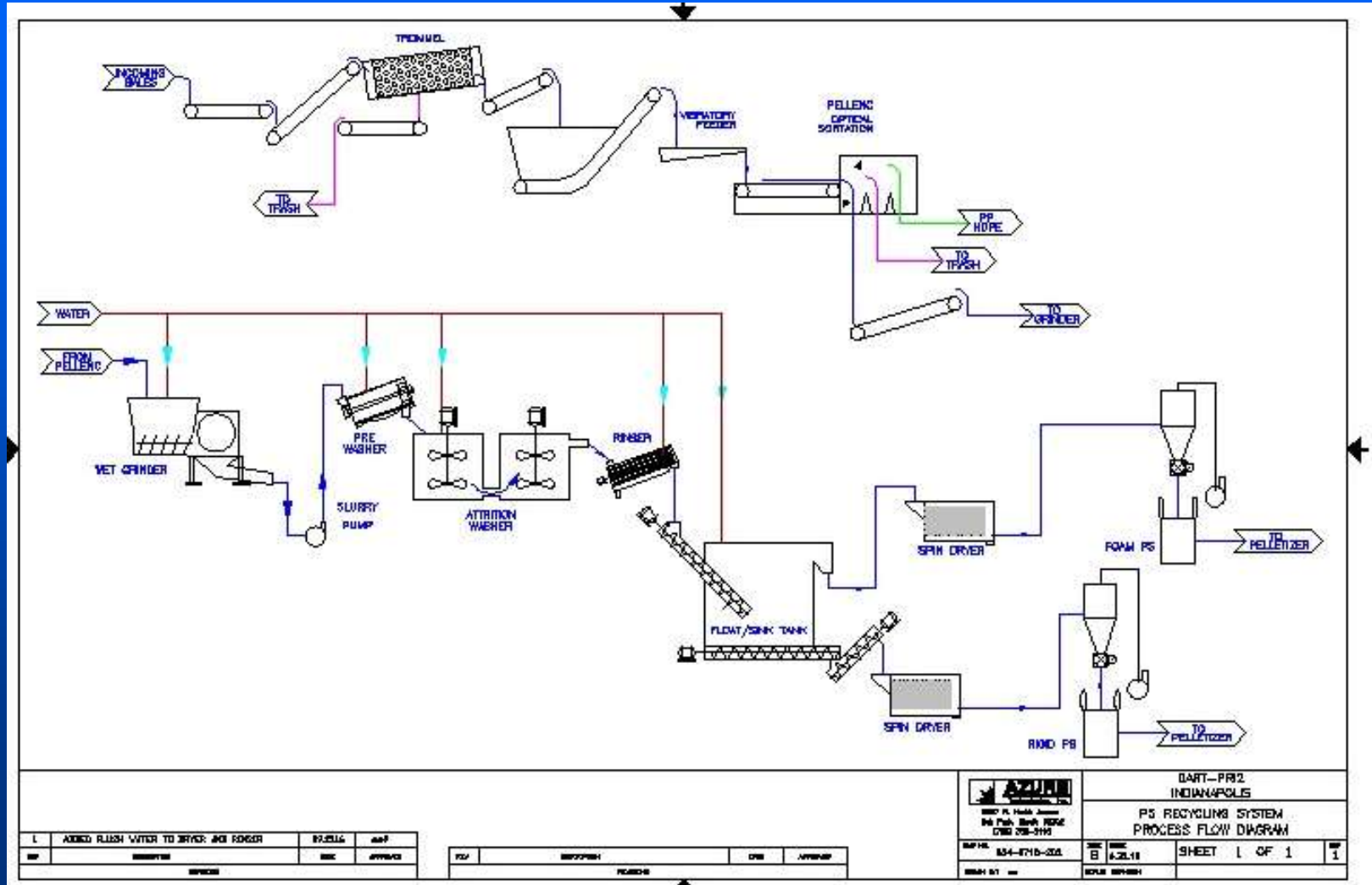
### STATE OF THE ART TECHNOLOGIES

- Pellenc Optical Sorter
- Herbold Wet Granulators
- Hi-Friction Attrition Washer
- Ettlinger Continuous Melt Filtration

# Rigid and Foam PS Recycling System

Plastics Recycling Inc, IN

## PS SYSTEM PFD



L	ADDED FLUSH WATER TO BRICKS AND RINGER	07.25.16	as of
REV	REVISION	DATE	APPROVED

DESIGNED BY	DESIGNED	DATE	APPROVED
PLANNED BY	PLANNED	DATE	APPROVED

**AXIUM**  
 8800 N. Health Avenue  
 144 Park North, #200  
 CHICAGO, IL 60632

MAP NO. 834-8715-20A  
 SCALE 8/11

DART-PR2  
 INDIANAPOLIS

PS RECYCLING SYSTEM  
 PROCESS FLOW DIAGRAM

DATE: 8.2.18  
 SHEET 1 OF 1



# Optical Sorter Technology

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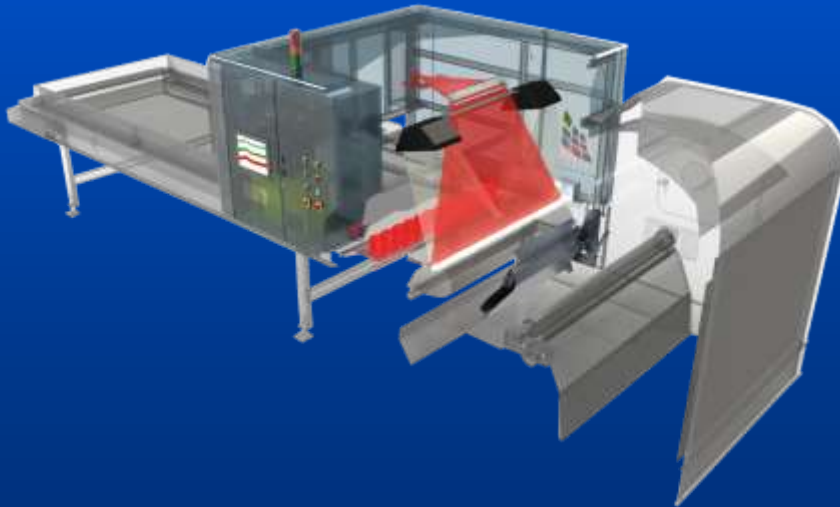
Today's technologies meet most demanding needs of any MRF

- Optical Sorting Fiber and Plastics
- Plastics Sorting by Resin and Color
- Metal detection
- Tertiary Sorting
- High Throughput



## Pellenc Mistral +

- NIR Spectrometry,
- Visible Spectrometry,
- Inductive Sensing



- Dual Eject
- 30 mm Particle Detection
- Split Sensing, Re-sort option
- 4.5 Tons/Hr. PET

# POST - CONSUMER BALES

American Plastics Council - Salem, OR- 1992

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Bales of mixed plastic containers are sorted into:

- HDPE Nat
- HDPE Color
- PET Clear
- PET Green
- PP
- PS
- PVC



Automated Plastics Sorting Facility



# PS Rigid and Foam Grinding

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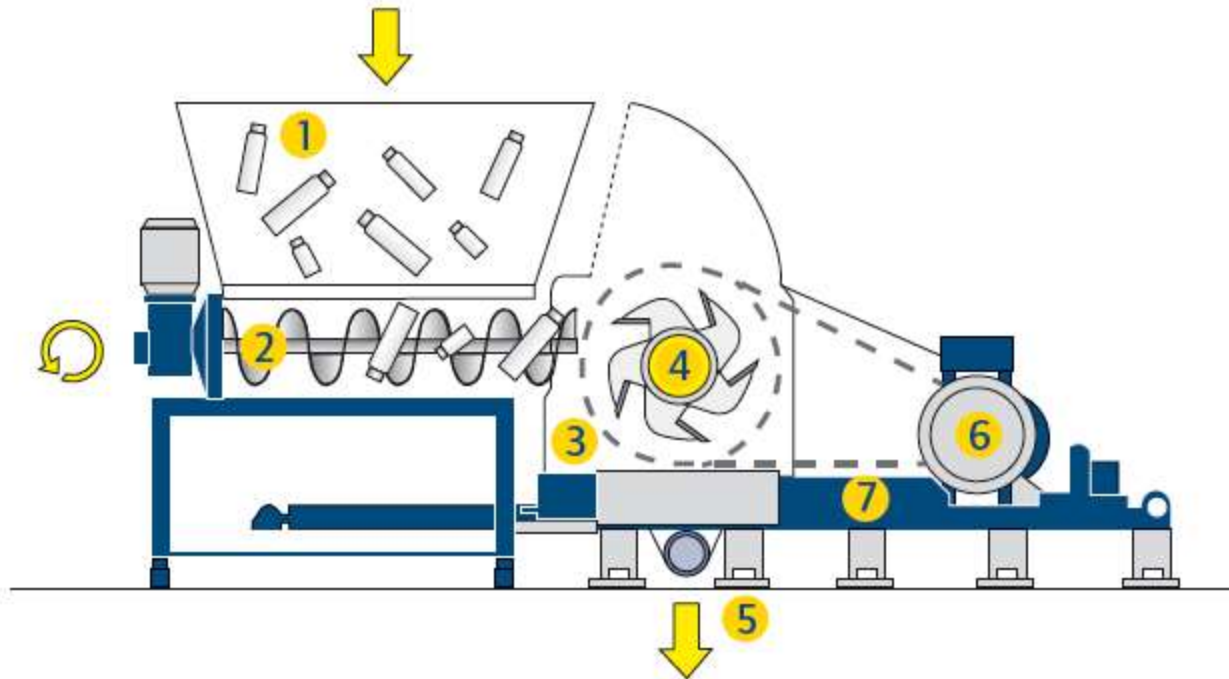
## Challenge:

- Low Density Material
- Attached Contaminants
- Static Clinging
- Consistent Throughput

## Solution:

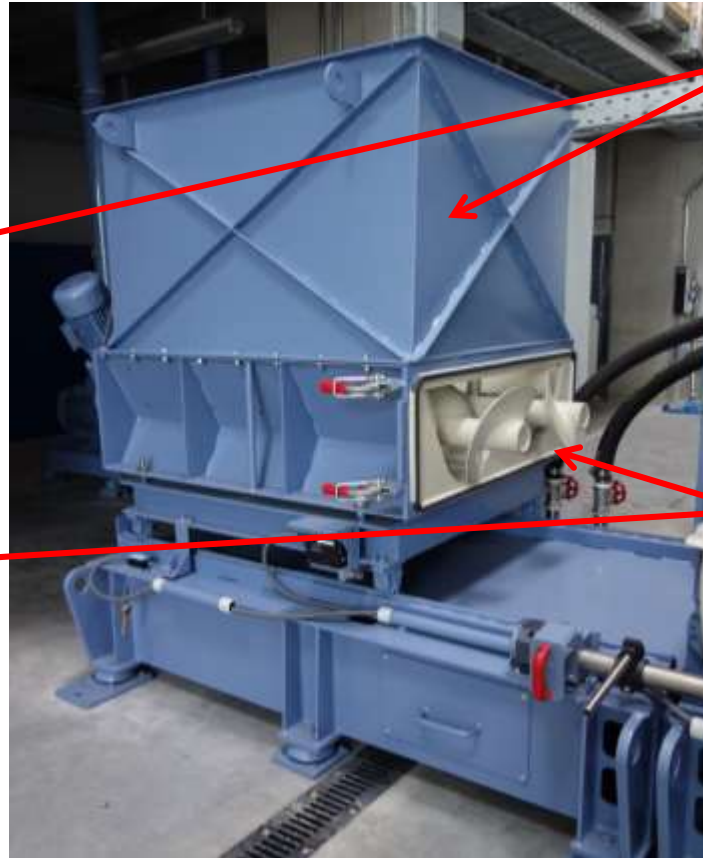
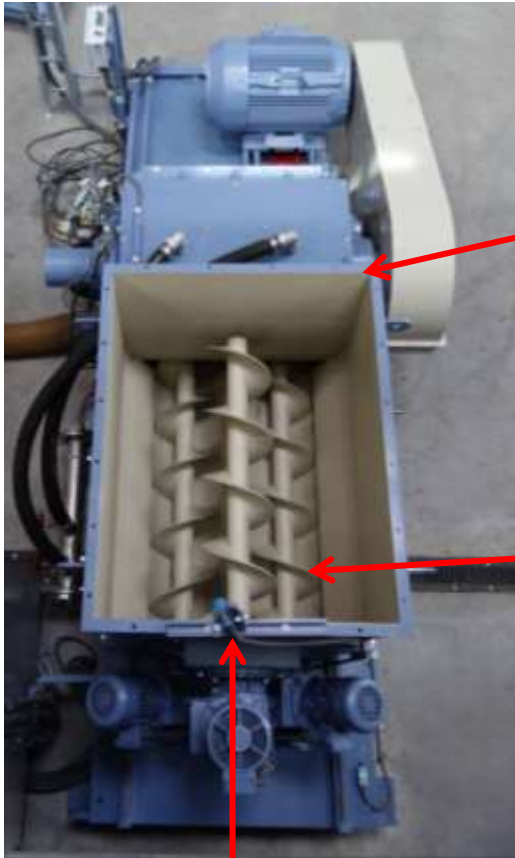
- Force Material Feeding
- Wet grinding

# Material feeding and functionality



- 1 Feeding hopper
- 2 Feeding screws
- 3 Grinding chamber
- 4 Rotor
- 5 Suction trough/  
discharge trough
- 6 Motor
- 7 Machine ground plate

# Series SML SB – Horizontal forced feeding



Feeding hopper approx.  
2,5 cbm  
Larger volumes possible,  
Monitoring of level via  
ultrasonic sensor

Feeding screws  
Overload controlled  
and depending on  
filling level

Ultrasonic level sensor

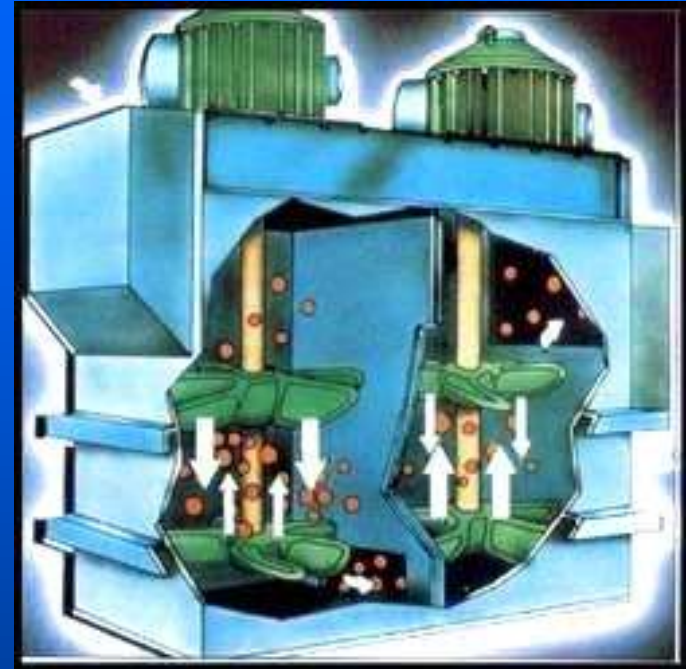




# Hi-Friction Attrition Washer

## Azure Technologies

- Flake to Flake High Friction
- Continuous Operation
- 10 to 20 Min. Retention Time



PET Washer, Coca Cola Mx

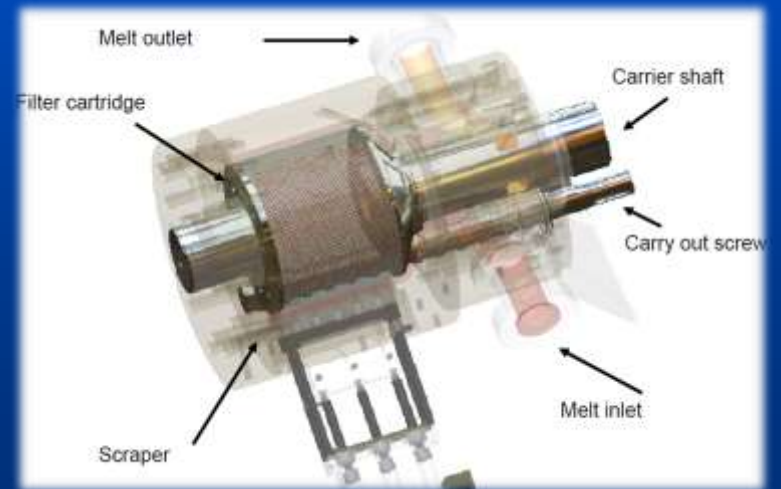
# PS Rigid and Foam Recycling

## Wash Line Recap



# Melt Filtration Technology

## Ettlinger Continuous Melt Filter



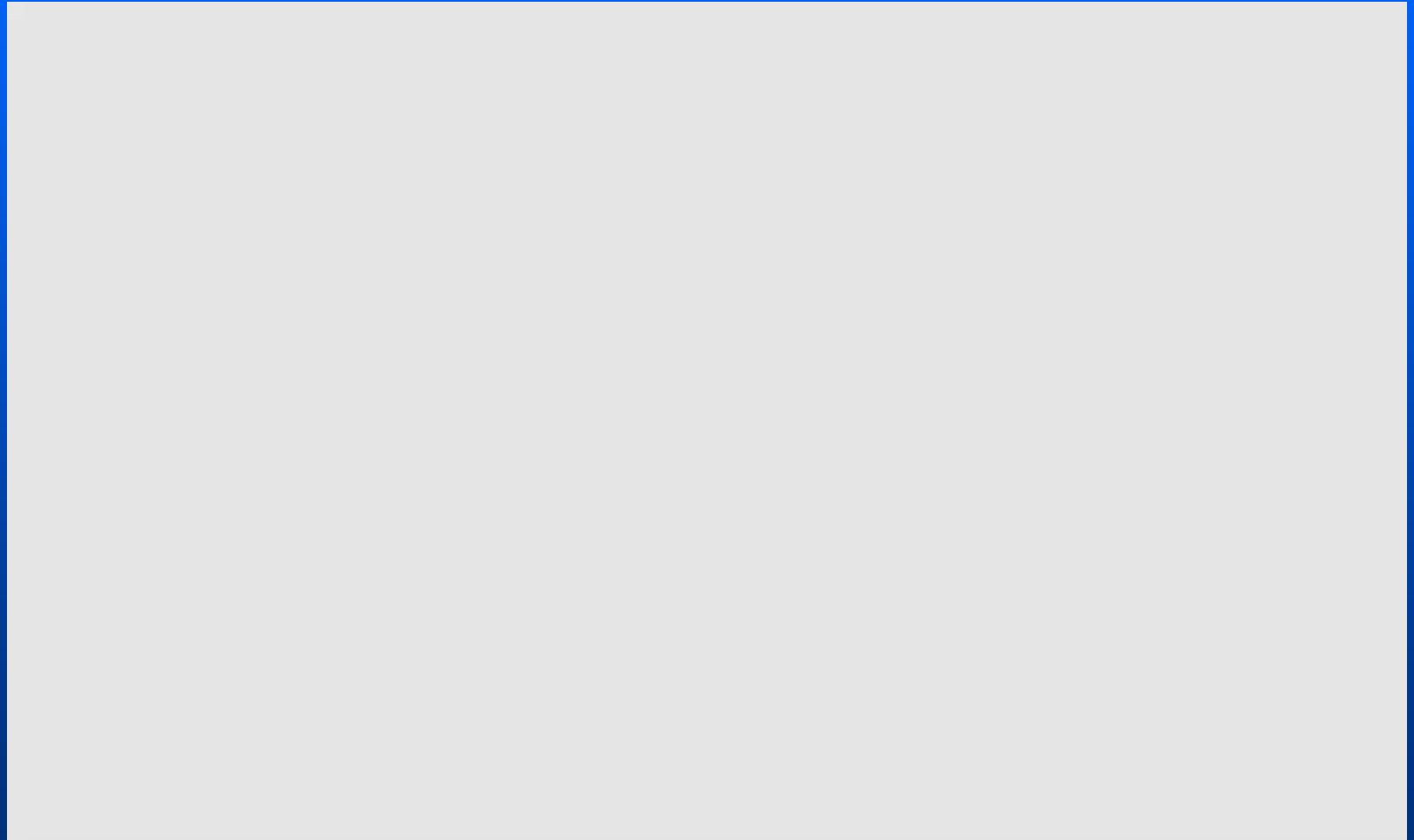




# Melt Filtration Technology

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How it really works





# PS Rigid and Foam Grinding





# PS Rigid and Foam Grinding

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## Challenge:

- Low Density Material
- Loose Contaminants
- Attached Contaminants
- Static Clinging
- Consistent Throughput

## Solution:

- New optical sorting technologies
- Screw Feed Granulators, Wet grinding
- Hi-Friction Washers
- State of the art Melt-Filtration

**-Engineer for the customer needs**



Engineering recycling  
since 1989

Thank You



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