



# **Polypropylene Color Detection and Closed Loop Recycling**

AN INNOVATIVE APPROACH BY GME RECYCLING

## Today's Agenda

1

Problem Statement and Objectives

2

Overview of GME's Innovative Recycling Plant

3

Output Products and Benefits

4

Applications & Conclusion

5

Q&A and Discussion

## CHALLENGES IN RECYCLING POLYPROPYLENE:

### CONTAMINATION

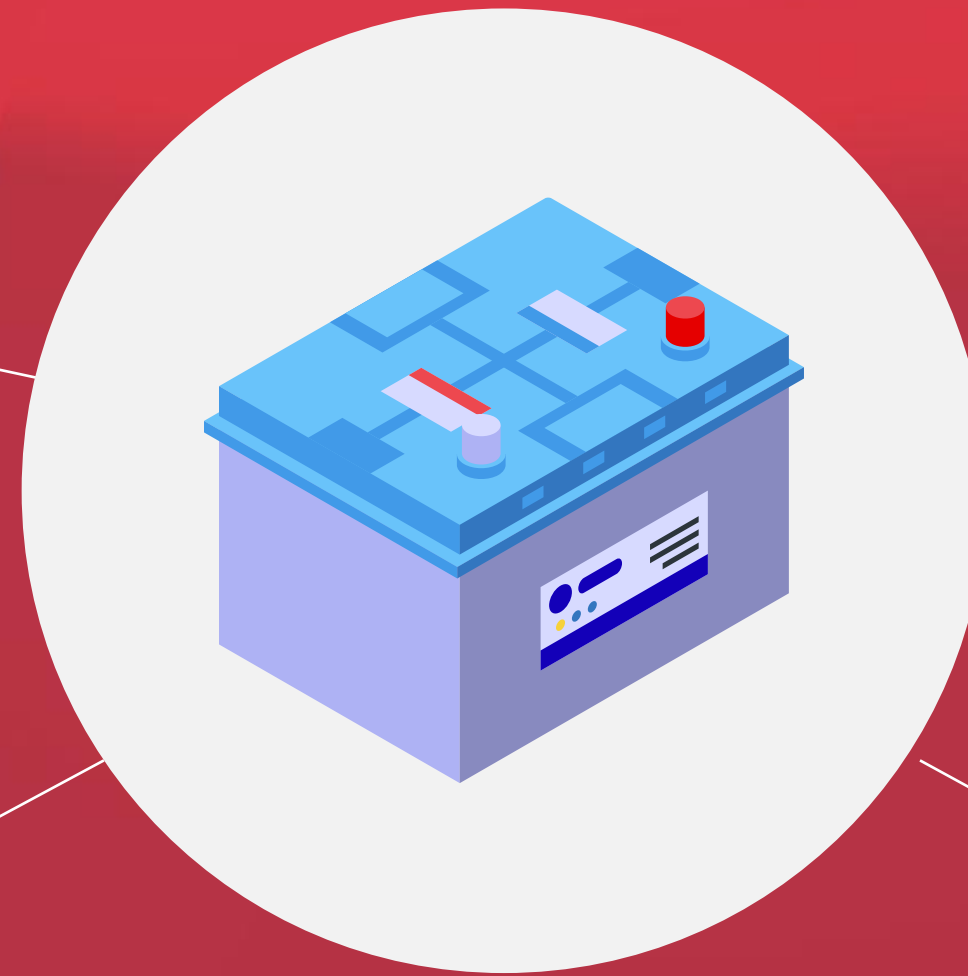


Presence of lead and impurities.

### COMPLEX COMPOSITION



Heterogeneous nature of battery casings.



### ENVIRONMENTAL IMPACT



Improper disposal leads to pollution.

### ENHANCE POTENTIAL



Enhance the potential of PP material both for recyclers and manufacturers



## GME'S GOALS

Develop an effective recycling process for PP.

Achieve high purity levels of recycled PP (<200 ppm lead).

Produce PP in various forms (chips, flakes and granules)

Produce a PP output sorted by polymer color, for diverse applications.

Contribute to a circular economy by reducing plastic waste.

## 2

## GME's Innovative Recycling Plant

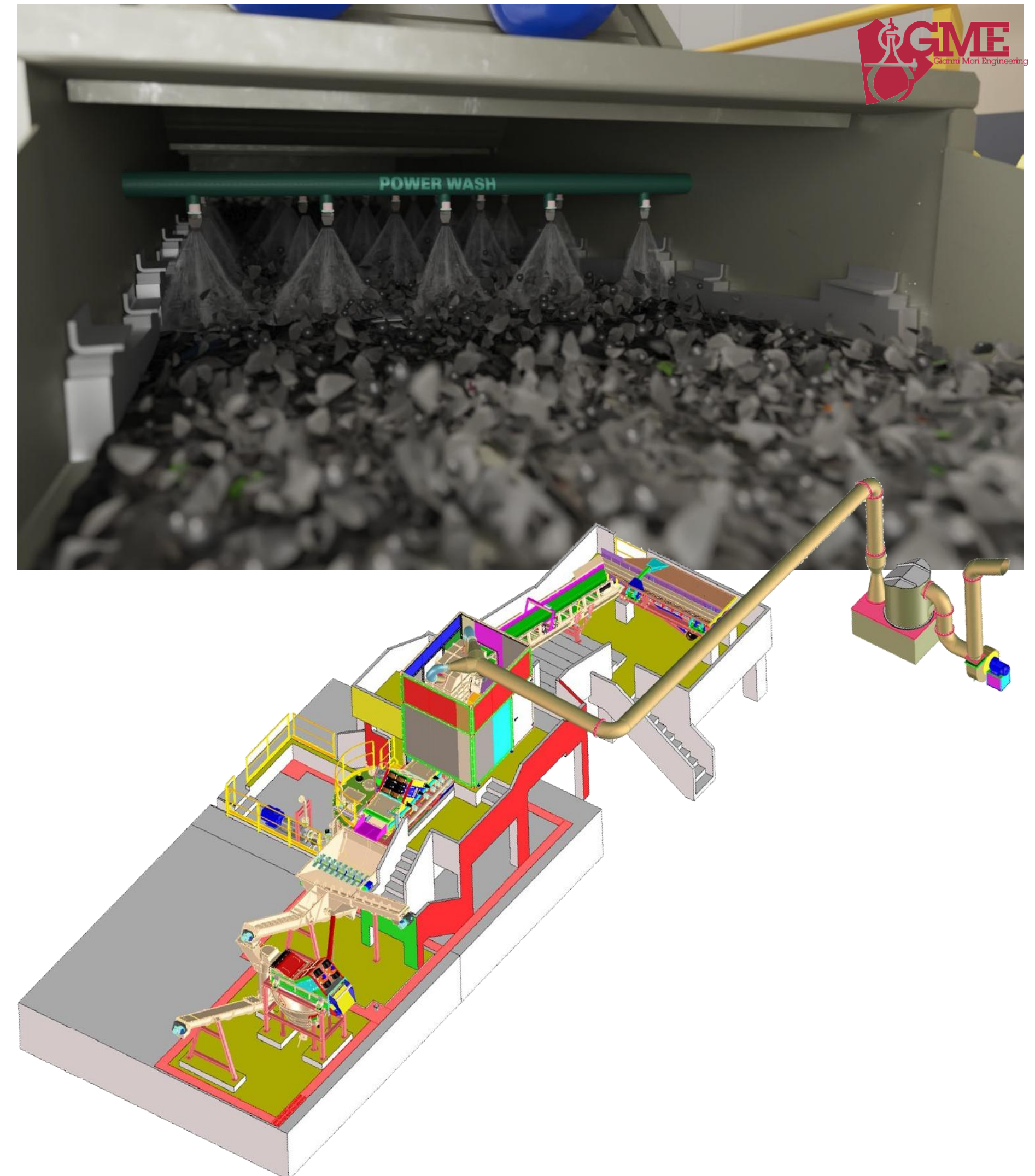
### STEP 1

#### Shredding, Washing, and Decontamination

- Battery casings are shredded to dimensions ~ 1 cm
- Dried by a dedicated an innovative infrared light system, preventing overwhelming, melting and/or pollution.

#### Benefit already from The Gravity Breaker:

- PP in Chips dimensions ~ 10 cm
- PowerWash achieves <3/400 ppm lead contamination.





## 2

## GME's Innovative Recycling Plant

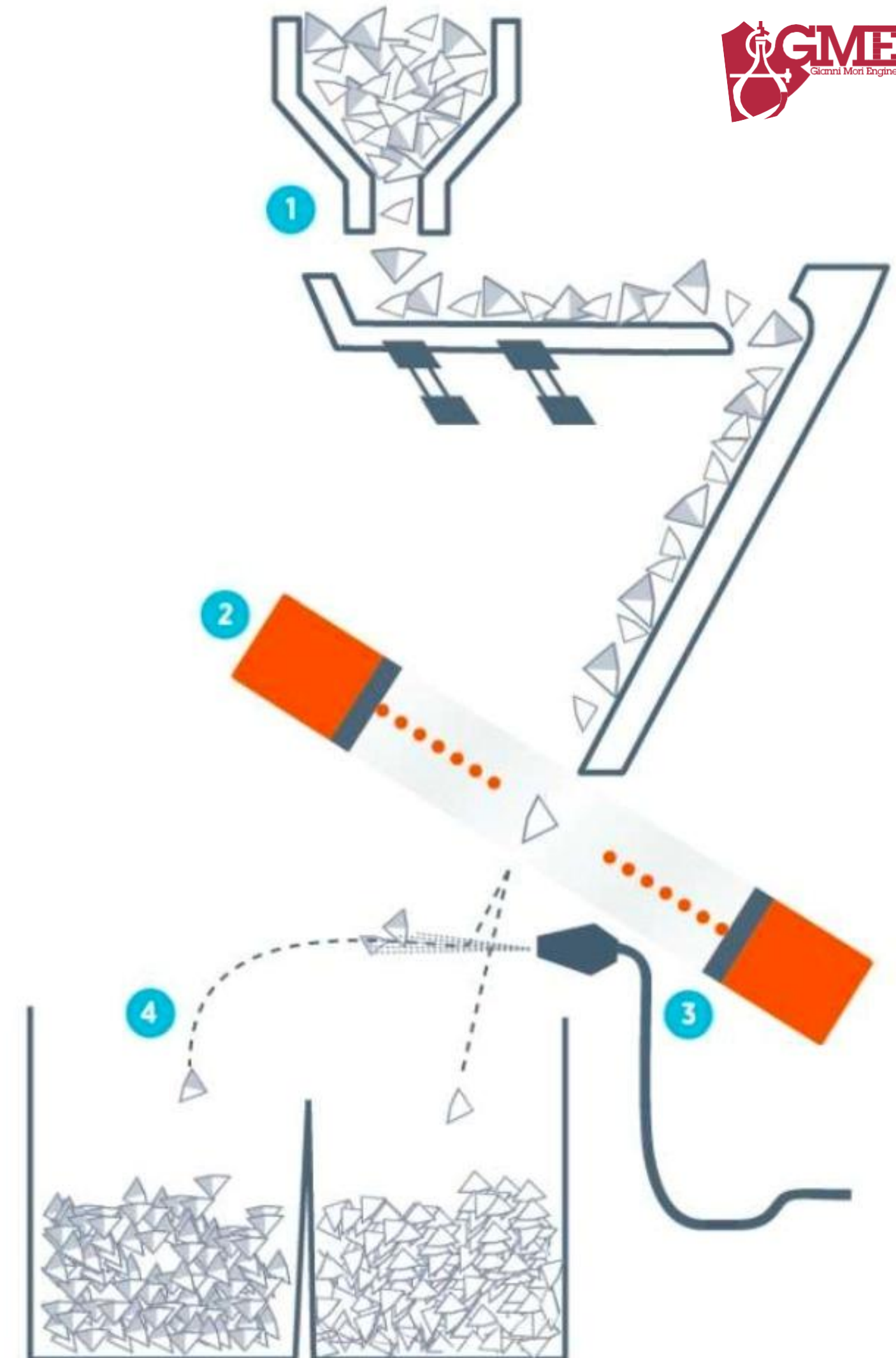
### STEP 2

### Advanced Sorting and Separation

- Wavelength-based color detection for precise sorting.
- Ensures high-quality polypropylene recovery.
- PP sorted by polymer color.



- 1 Infeed hopper & shaker
- 2 Sensors
- 3 Eject valves
- 4 Accept/Reject









A photograph showing two bowls of crushed candy canes. On the left, a silver metal bowl is tilted, spilling bright red crushed candy canes onto a white surface. On the right, a clear glass bowl is tilted, spilling bright green crushed candy canes onto the same white surface. The candy canes are broken into small, irregular pieces. A red rectangular banner with white text is centered over the image.

A PICTURE IS WORTH A THOUSANDS WORDS



## 2

## GME's Innovative Recycling Plant



### STEP 3

#### GME Extruding line

- PP Flakes are de-gased and extruded to dimensions ~ 0,6 cm
- Washed and dried
- Stored in Big Bags or Silos





3

## Output Products

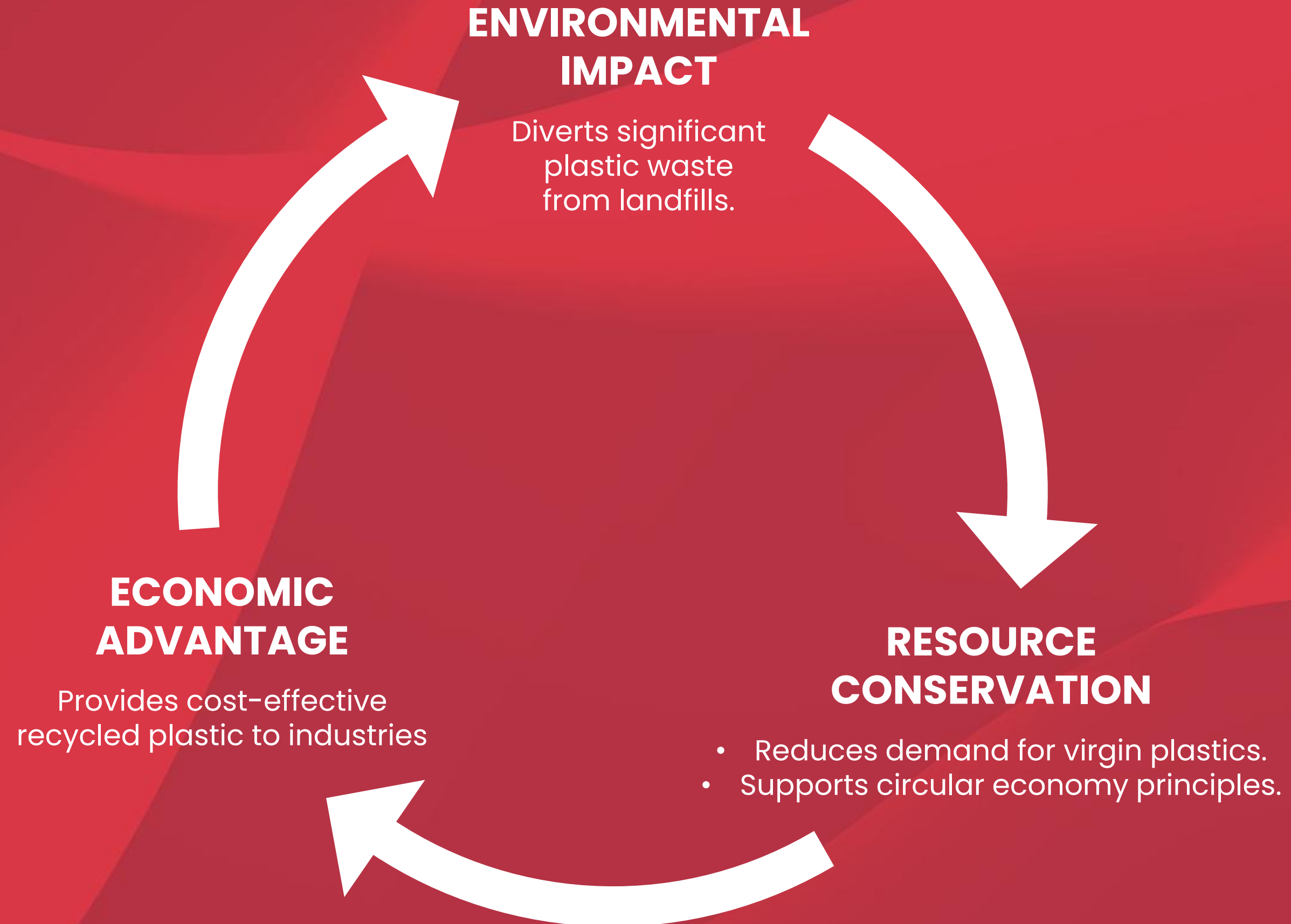
### PP Flakes

- Size: ~1cm
- Use: Ready for color sorting and industrial applications.

### PP Granules

- Size: ~0,6cm
- Use: Injection molding for new product extrusion.







- **GME'S APPROACH IS ENHANCING AND PUTTING THE PLASTIC RECYCLING AT THE SAME LEVEL OF LEAD**

Battery Casings:  
High purity makes  
it suitable for new  
casings.

Consumer Goods:  
Used in containers,  
packaging, and  
household items.

- **THE PROCESS ACHIEVES HIGH PURITY AND CONTRIBUTES TO SUSTAINABILITY.**
- **ENVIRONMENTAL, ECONOMIC, AND RESOURCE CONSERVATION BENEFITS ARE HIGHLIGHTED.**





YOUR **RECYCLING** MANUFACTURER EXPERT.

