Polypropylene Color Detection and Closed Loop Recycling

AN INNOVATIVE APPROACH BY GME RECYCLING

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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

1 Problem Statement and Objectives

CHALLENGES IN RECYCLING POLYPROPYLENE:

CONTAMINATION

Presence of lead and impurities.

ENVIRONMENTAL IMPACT

Improper disposal leads to pollution.

COMPLEX COMPOSITION

Heterogeneous nature of battery casings.

ENHANCE POTENTIAL

Enhance the potential of PP material both for recyclers and manufacturers

1 Problem Statement and Objectives

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.

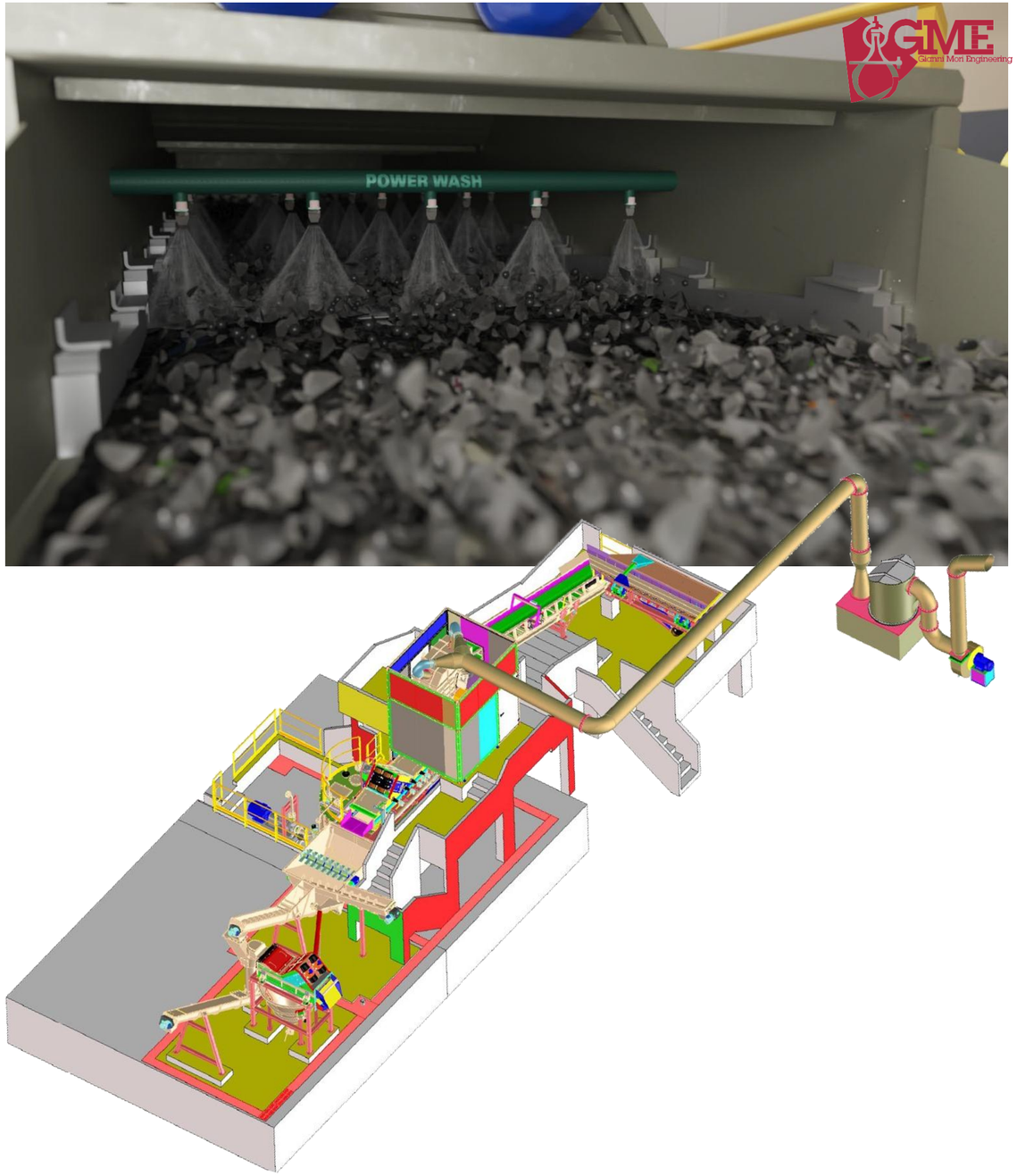
2 GME’s Innovative Recycling Plant

STEP 1
Shredding, Washing, and Decontamination

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

Benefit already from The Gravity Breaker:

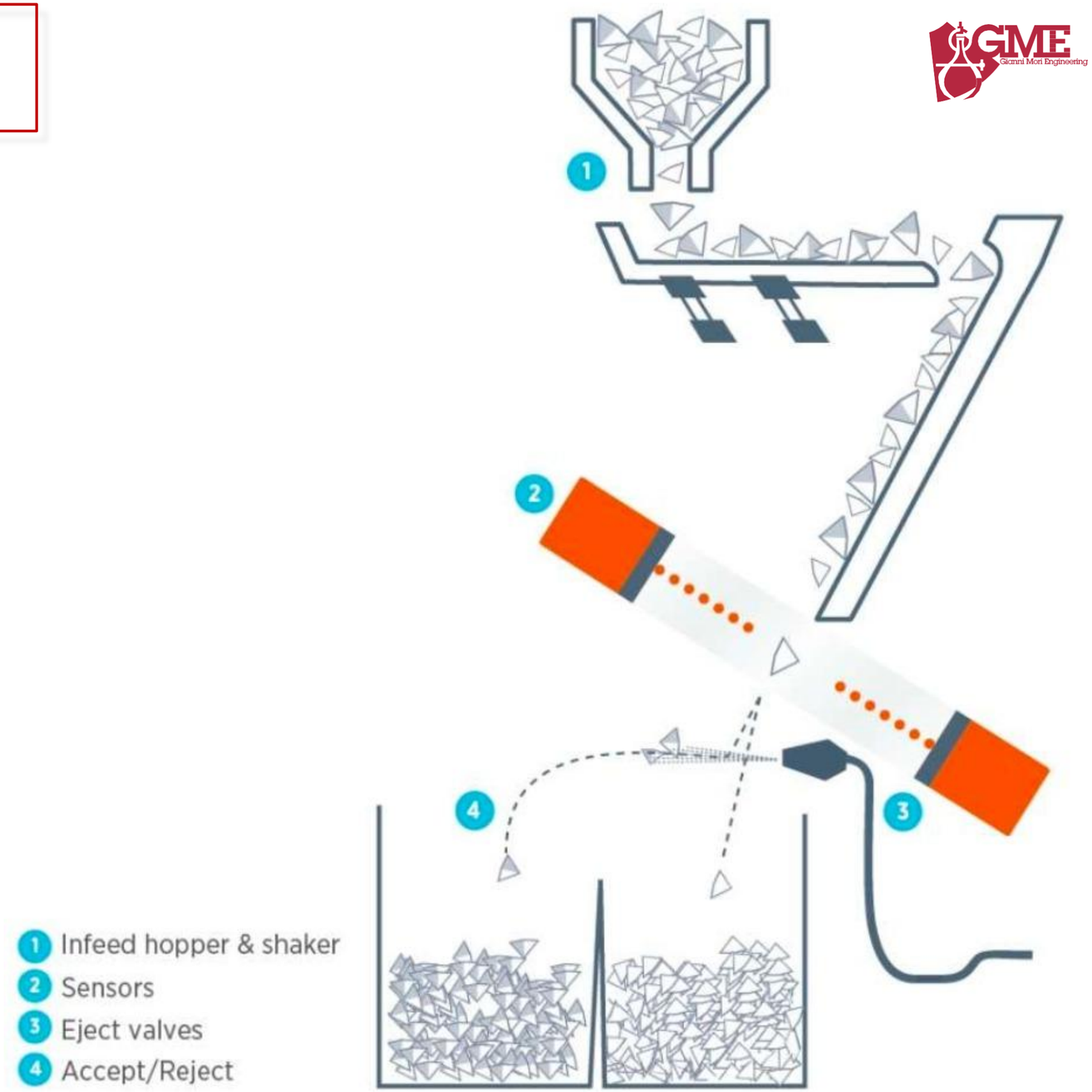
- PP in Chips dimensions ~ 10 cm
- PowerWash achieves <3/400 ppm lead contamination.



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.



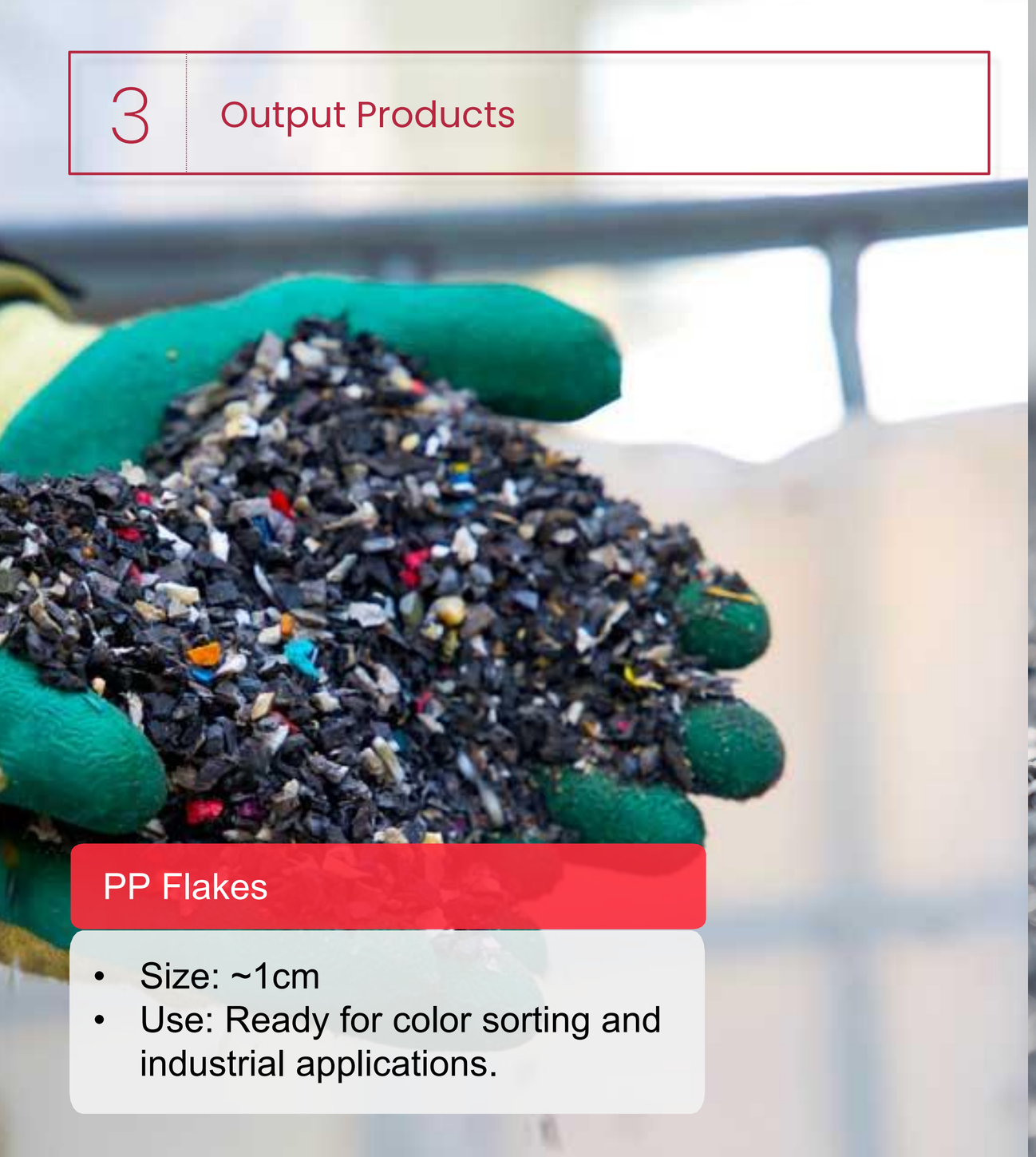

A PICTURE IS WORTH A THOUSANDS WORDS

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



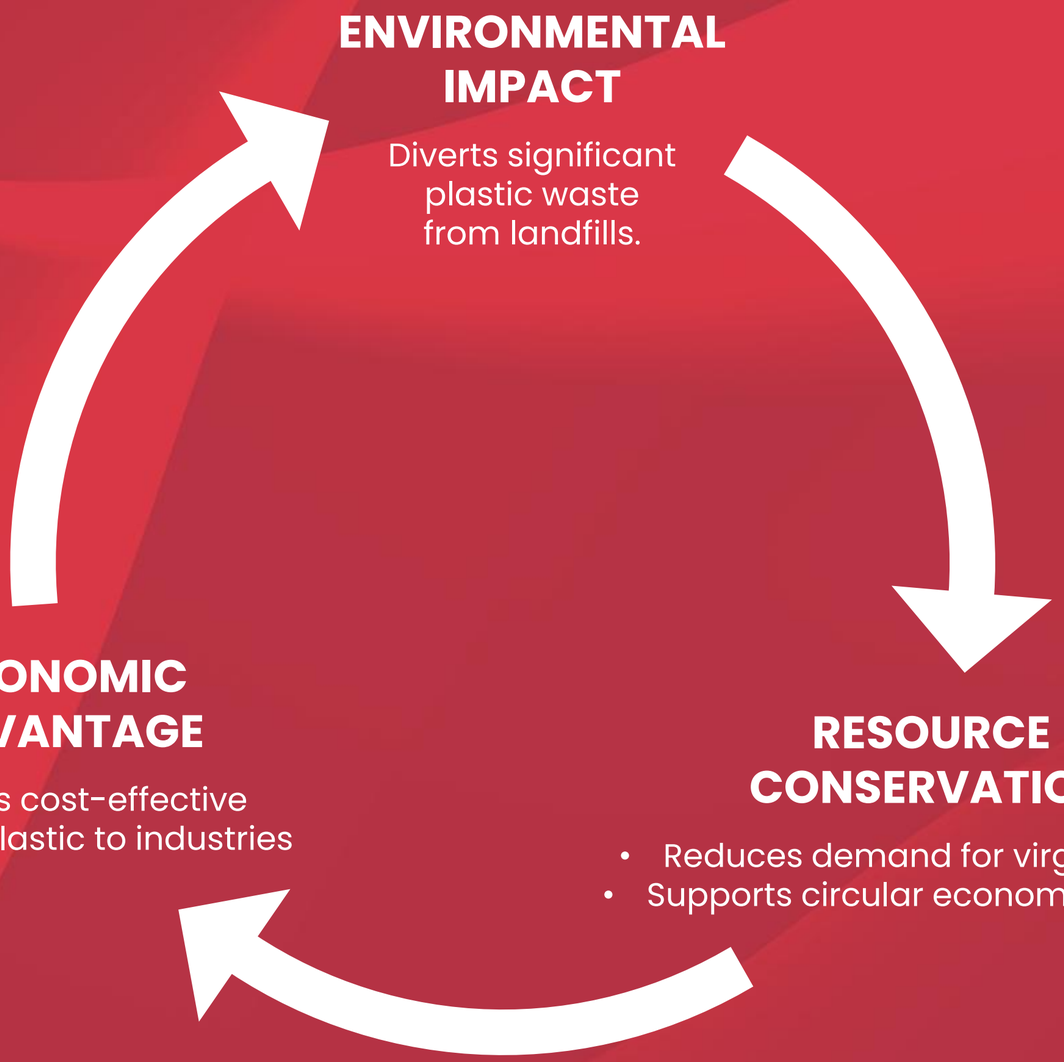
PP Flakes

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

PP Granules

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

3 Benefits of GME's Recycling Plant



4 Applications & Conclusion

- **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.**

GME
Gianni Mori Engineering

YOUR **RECYCLING** MANUFACTURER EXPERT.