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Today's Agenda



Introduction

- 1. Circularity
- 2. MRF Data
- 3. Technologies
- 4. Possibilities

Wrap up/ Contact
Info

Our Story

GBB is an international solid waste management consulting firm that helps public- and private-sector organizations craft practical, customized and technically sound solutions for complex solid waste management challenges.

Since 1980, GBB has been a trusted resource at the forefront of the industry, creating success stories that integrate smart planning with effective management of solid waste services.

Our staff enables our clients to do more with less.



Our Vision

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We believe in a world where discarded materials are used as resources rather than wasted – for the benefit of communities and the environment.



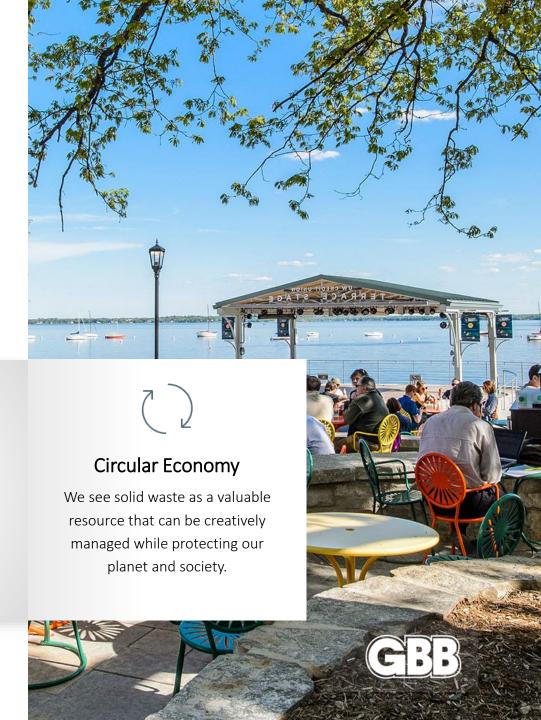
Communities

We are guided by our principles of quality, value, ethics, and results to help communities of all shapes and sizes.



Environment

We believe effective management of solid waste is an imperative that directly affects our planet- both today and far into the future.



Our Comprehensive Services

Solid Waste Management Planning Technical
Evaluation &
Planning

Business & Financial Planning

Admi & Red Curbside Collection &

Route Optimization System
Administration
& Receivership

Sustainability,
Circular Economy
& Disaster Debris
Planning

Expert Witness

GE

Circularity and MRFs

"Like all major transitions in human history, the shift from a linear to a circular economy will be a tumultuous one. It will feature heroes and pioneers, naysayers and obstacles, and moments of victory and doubt. If we persevere, however, we will put our economy back on a path of growth and sustainability. Many years from now, people will look back on it as a revolution."

Frans van Houten (CEO of Philips Healthcare)

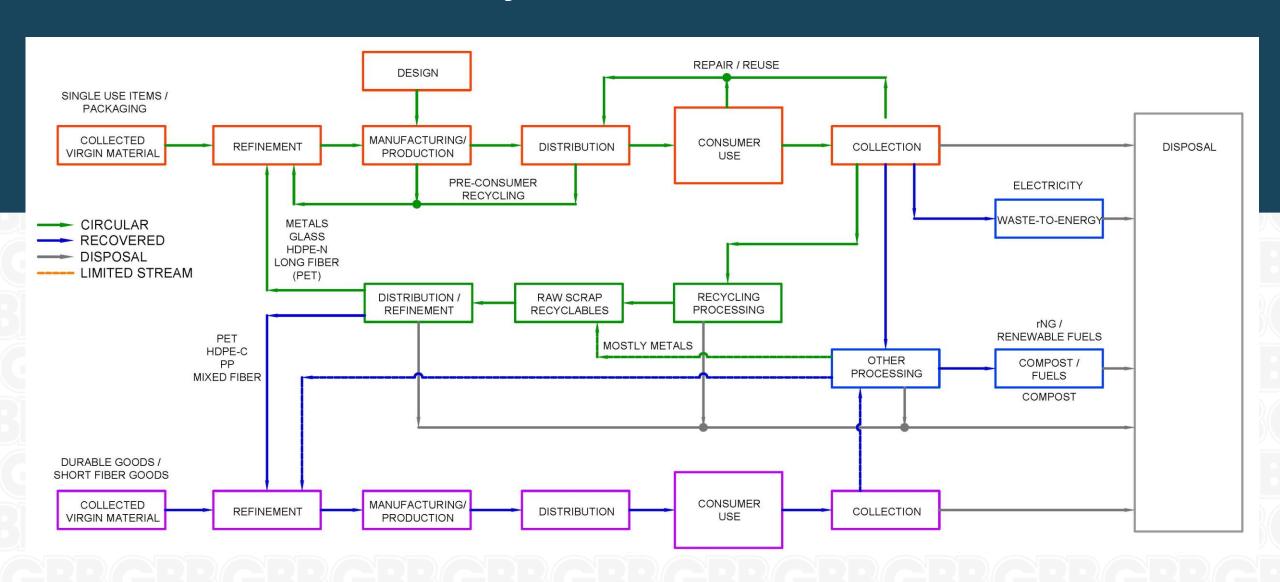


Circular Economy and Recycling

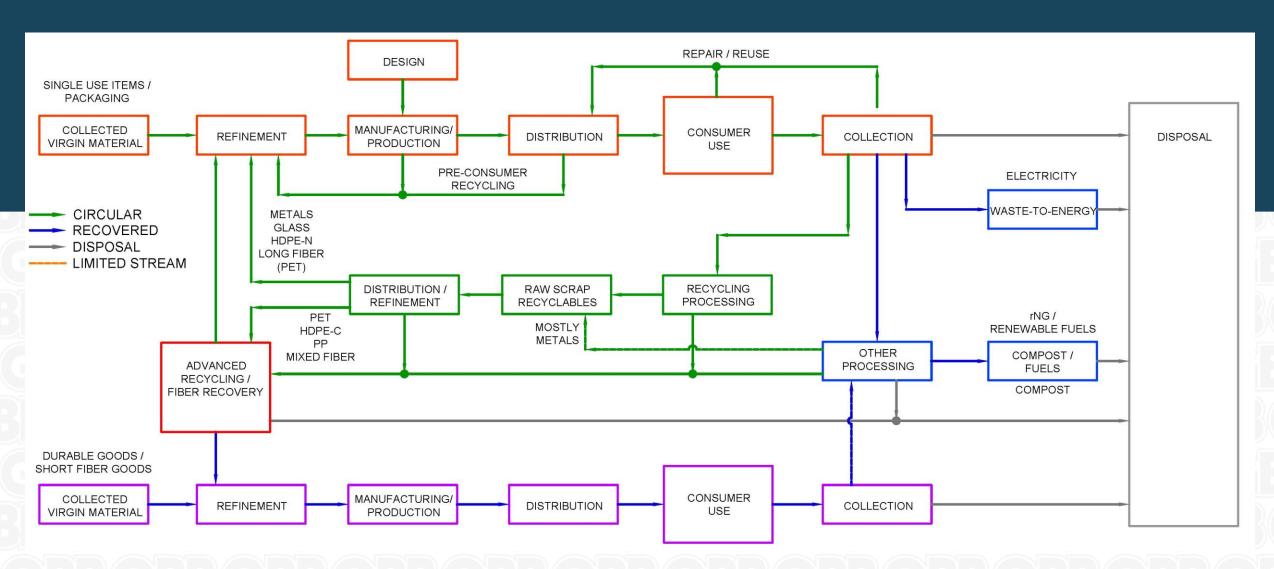
The Idealized Goal



Circular Economy and Recycling Current Infrastructure and Process

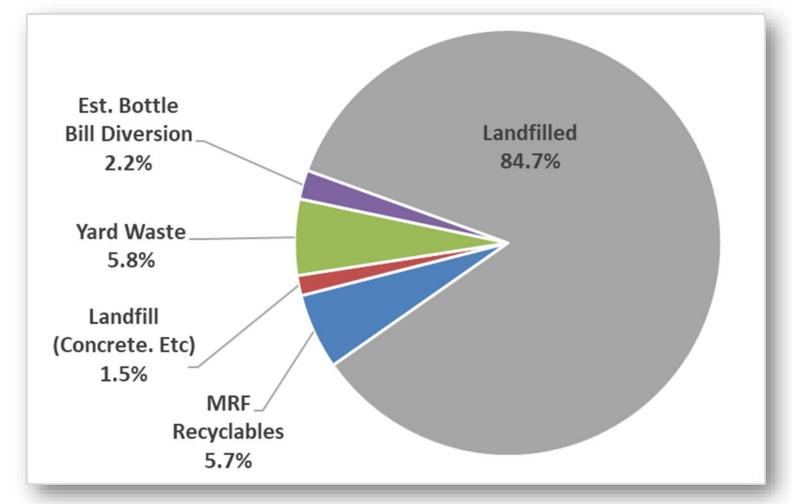


Circular Economy and Recycling Future Infrastructure and Process





Current Collection and Processing



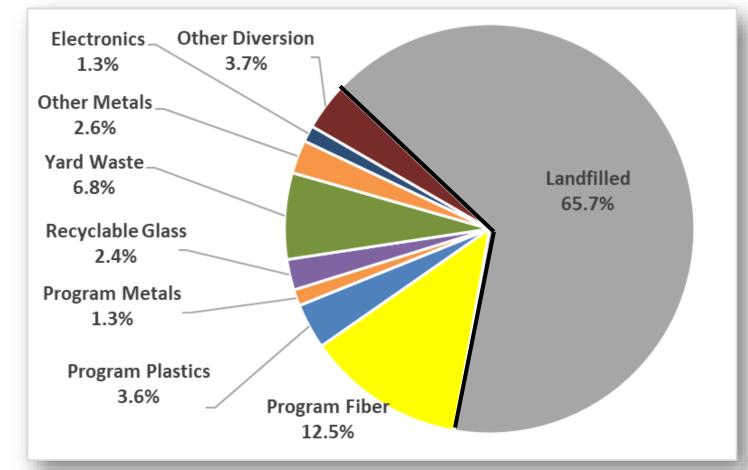
Source: GBB – Kent County, MI 2021





Ideal Collection and Processing

What is All Program Materials (MRF) Were Recovered



34.3%

Source: GBB – Kent County, MI 2021

MRF Data

"We are drowning in information but starved for knowledge."

- John Naisbitt (Autor of Megatrends)



























Basic MRF Operating Data

Daily Operating Report

- i. Throughput (Daily Deliveries)
- ii. Commodity Production (tonnage, bale counts)
- iii. Residual (tonnage, disposal or rerun)
- iv. Uptime/Downtime (reasons for downtime)
- v. Labor Utilization (number and location)
- vi. Maintenance (regular, unscheduled, lock-out/tag-out)
- vii. Pictures (feedstock, residual, bales, maintenance)



Technologies

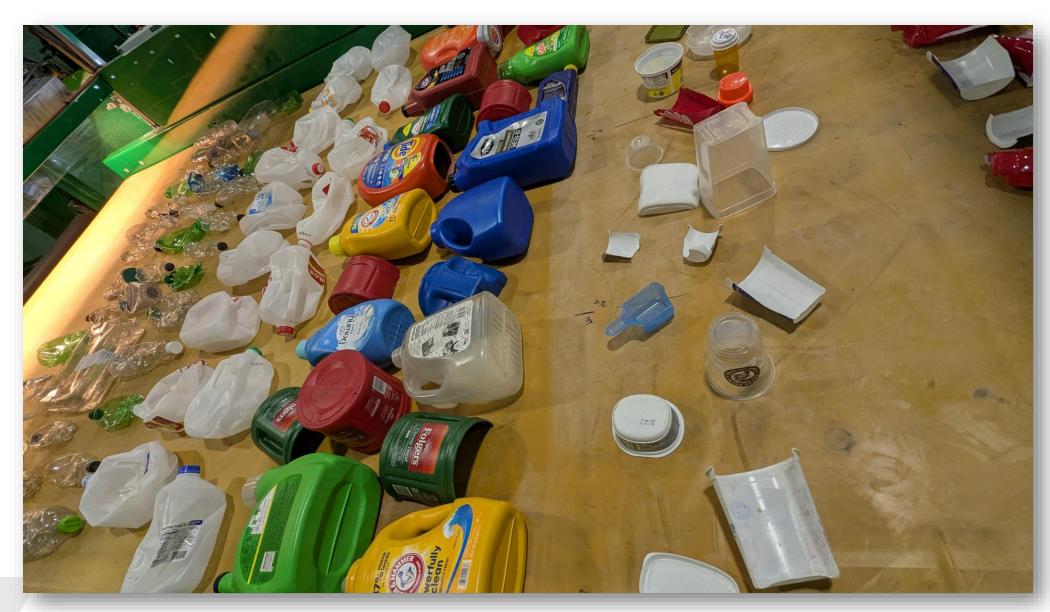
"Any sufficiently advanced technology is indistinguishable from magic."

- Arthur C. Clarke (Author)











What we do

Greyparrot Analyzer is an AI waste analytics system that tracks and reports insights on waste flows in recovery facilities







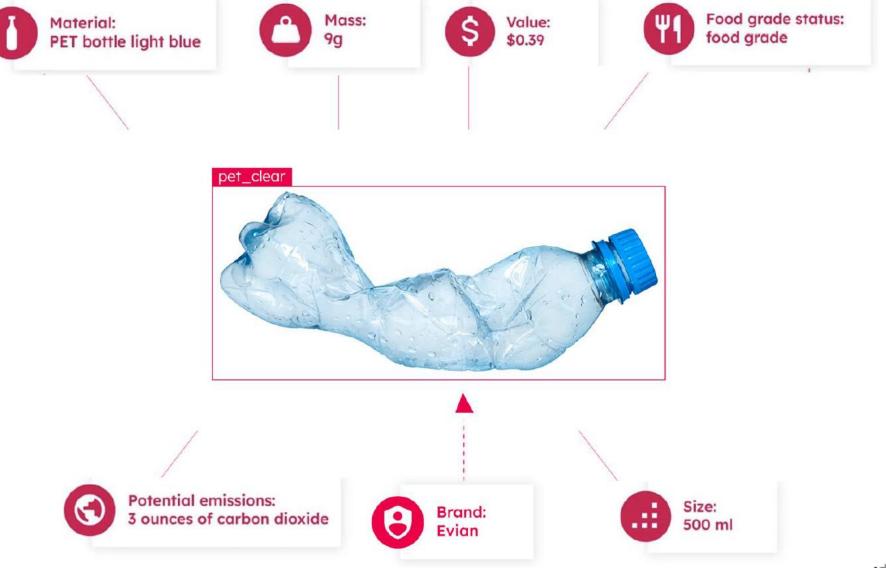


Camera unit

AI Integration Dashboard



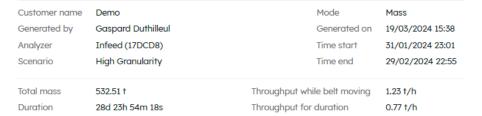
We reveal 7 layers of detail

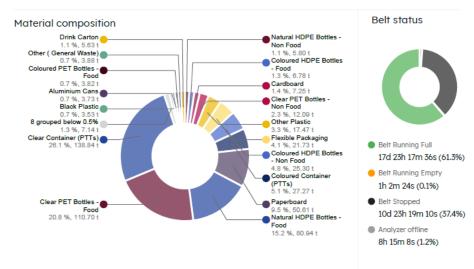




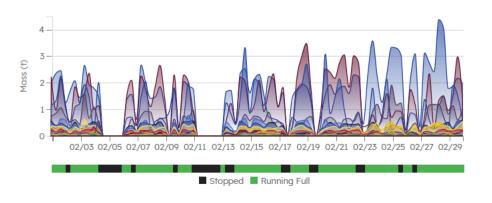
Summary report







Mass



Introduce transparency: Tracking waste packaging

Brand and SKU data are automatically detected with AI

- 1800+ SKUs, around 3m items
 - From international and local brands
 - Up to 30+ SKUs for one single brand
- Flexibility to expand by:
 - Brands
 - Waste streams
 - Geographies

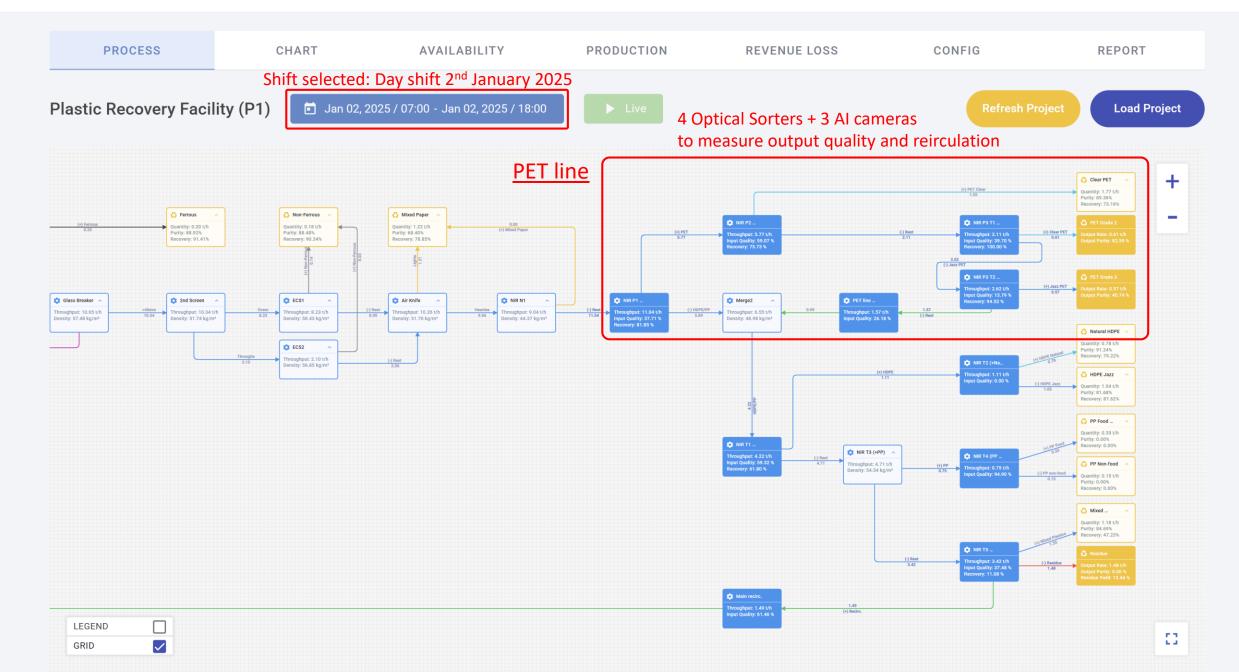


Possibilities

"We are drowning in information but starved for knowledge."

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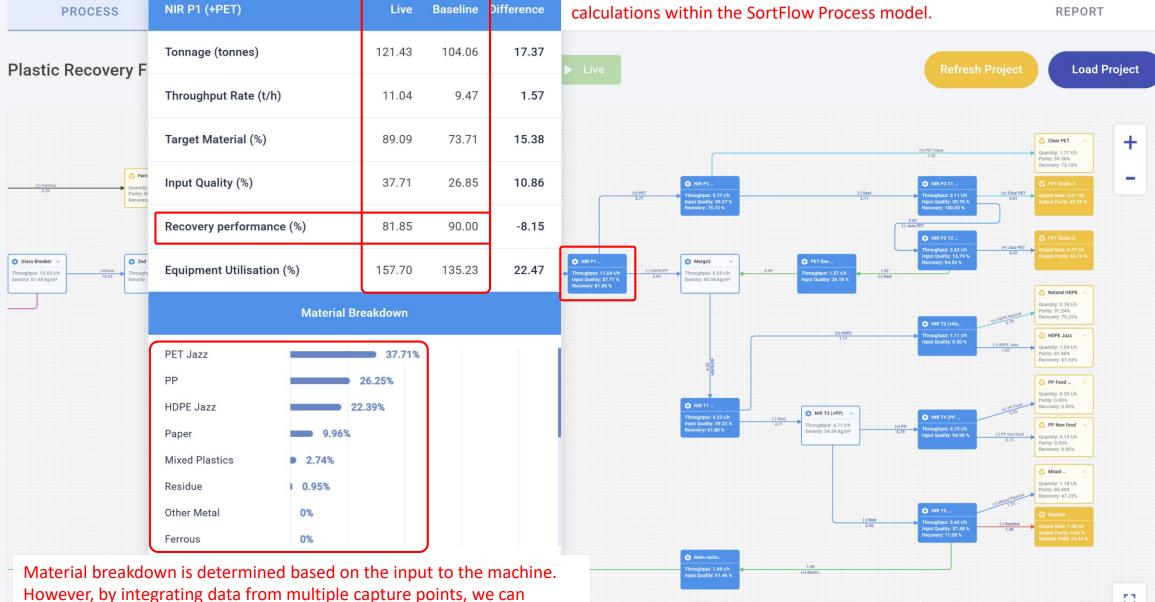


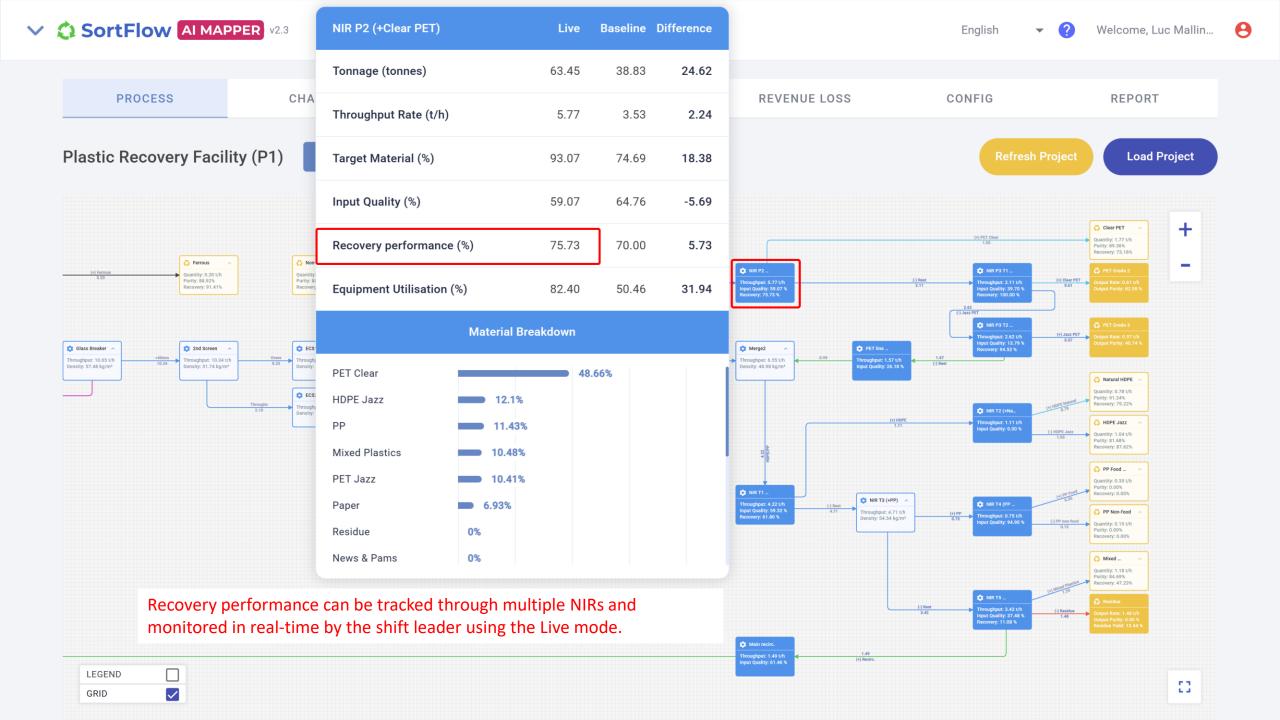


calculate performance indicators like Recovery.

"Live" refers to real-time data retrieved and processed directly from Optical Sorter P1.

"Baseline" represents data derived from mass balance



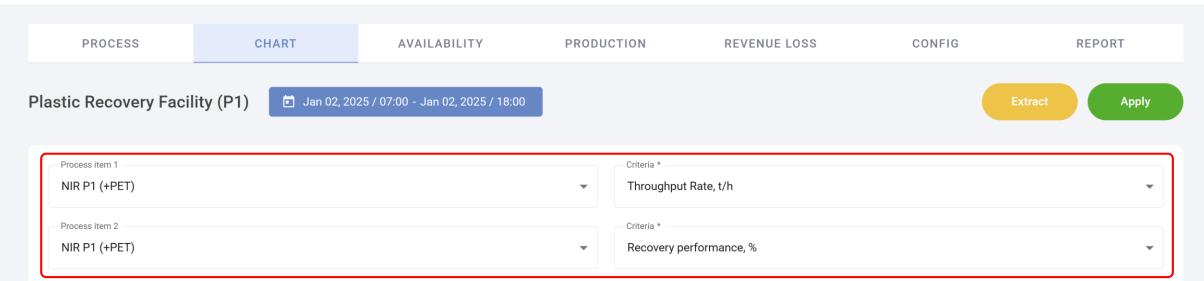




English

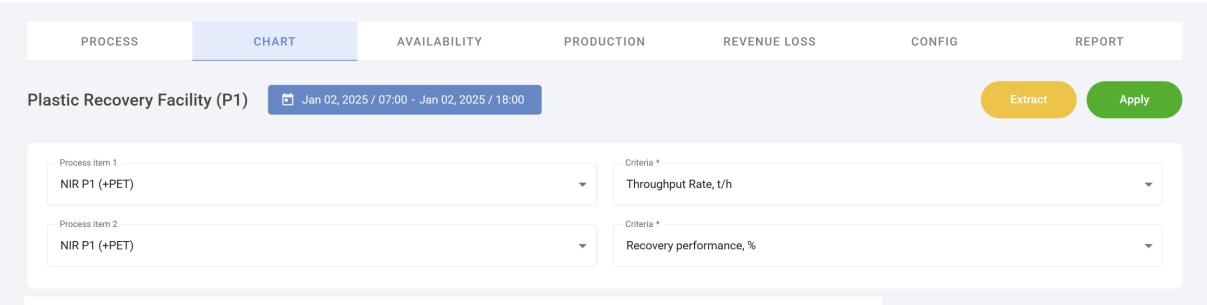


Welcome, Luc Mallin...



We can analyse the variation of performance throughout the shift. Here we're looking at the impact of Throughput on Recovery performance for NIR P1. It also possible to combine criteria from 2 different capture points on the same graph.





During the first half of the shift, we observed that the throughput exceeded the maximum recommended level, negatively impacting PET recovery performance, which dropped to the 70% range.

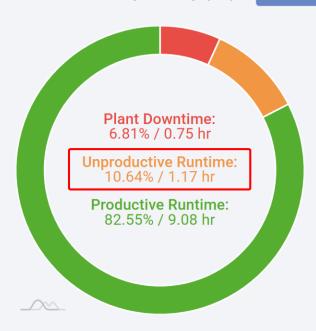


PROCESS CHART

Another approach to evaluating shift performance, enabled by leveraging live data, is tracking unproductive runtime occurrences. These occur when only some machines are supplied with material, potentially signaling infeed or performance issues. Additionally, this method can be used to detect jams when operating the application in Live mode.

Plastic Recovery Facility (P1)

☐ Jan 02, 2025 / 07:00 - Jan 02, 2025 / 18:00



	Plant Downtime	Unproductive Runtime	Productive Runtime
Number of occurrences	2	10	10
Total	0.75 hr	1.17 hr	9.08 hr
Shortest	0.33 hr	0.08 hr	0.08 hr
Longest	0.42 hr	0.33 hr	2.00 hr

Plant Availability Timeline



Unproductive Time (hours)

Here, we evaluate the quantity and quality of residue output, as well as the operational losses it represents, using data from an Al camera.

REPORT

Plastic Recovery Facility (P1)

SortFlow AI MAPPER v2.3

To determine **revenue loss**, we calculate the difference between the unrealised revenue from target material lost to residue and the associated disposal costs. **Residue yield** is estimated indirectly using NIR P1, the earliest capture point in the process.

Apply

Residue Cost (£) * Output Product* Captured Against NIR P1 (+PET) Residue 150 16.32 3 824.76 13.44 44.34 Residue Yield (%) Residue Tonnage (tonnes) Residue Purity (%) Revenue Loss (£) Proxy Capture Point Tonnage (t) Proxy Capture Point Target Material (%) 121.43 89.09

Material	Quantity (tonnes)	Breakdown %	Price per tonne	Unrealised Rev.	Disposal Cost	Revenue Loss
PET Clear	1.82	11.15	£ 300	£ 546.00	£ 273.00	£ 819.00
Non-Ferrous	0.59	3.61	£ 1178	£ 694.73	£ 88.50	£ 783.23
Ferrous	1.83	11.21	£ 178	£ 325.74	£ 274.50	£ 600.24

Thank You!



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"The multidisciplinary elements of the materials management industry inspire me with the possibility to create far-reaching change toward more sustainable, resilient, and socially just communities."