Cireco Park MRF – Demonstrating Processing Efficiency under Extended Producer Responsibility (EPR)

Showcasing sustainable waste processing and producer accountability

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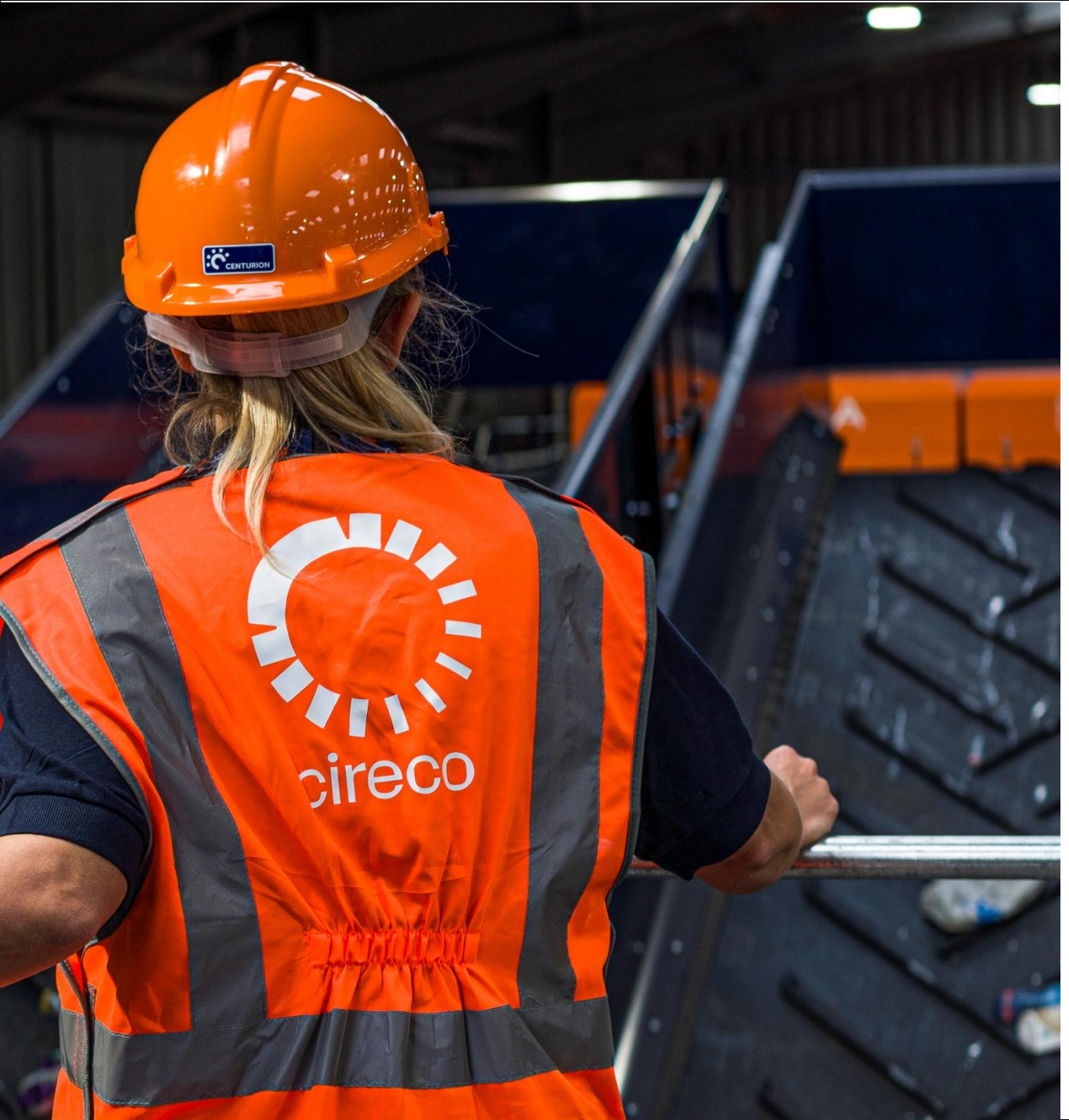
Introduction and Purpose



CIRECO PARK MRF: PROCESSING EFFICIENCY UNDER EPR

Policy-Driven Facility Design

Cireco Park MRF is designed to meet EPR goals by integrating advanced technology for effective recycling processing.

Processing Efficiency Importance

Processing efficiency is crucial under EPR, linking 20% of payments to recycling performance outcomes.

Transparency and Auditability

The facility provides transparency and auditability to validate recycling outcomes for producers and regulators.

Future-Proof EPR Solution

Cireco Park offers a future-proof solution aligned with EPR, supporting continuous improvement and stakeholder confidence.

PURPOSE OF TODAY'S DISCUSSION

Meeting and Exceeding Standards

Fife Council and Cireco working in partnership to deliver a MRF designed to meet and exceed Processing Efficiency criteria with direct measurable evidence.

AI-Enabled Data Capture

Advanced AI data capture ensures targeted, effective producer funding with detailed, auditable performance metrics.

Transparency and Continuous Improvement

EPR funding supports transparent investment in infrastructure that drives system improvements and policy alignment.

EPR Context and Current Sector Infrastructure Limitations

LIMITATIONS OF TRADITIONAL MRF SAMPLING

Sampling Size and Frequency

Traditional MRF sampling uses small, infrequent samples representing about 0.05% of throughput, limiting data confidence.

Limited Insight on Capture Efficiency

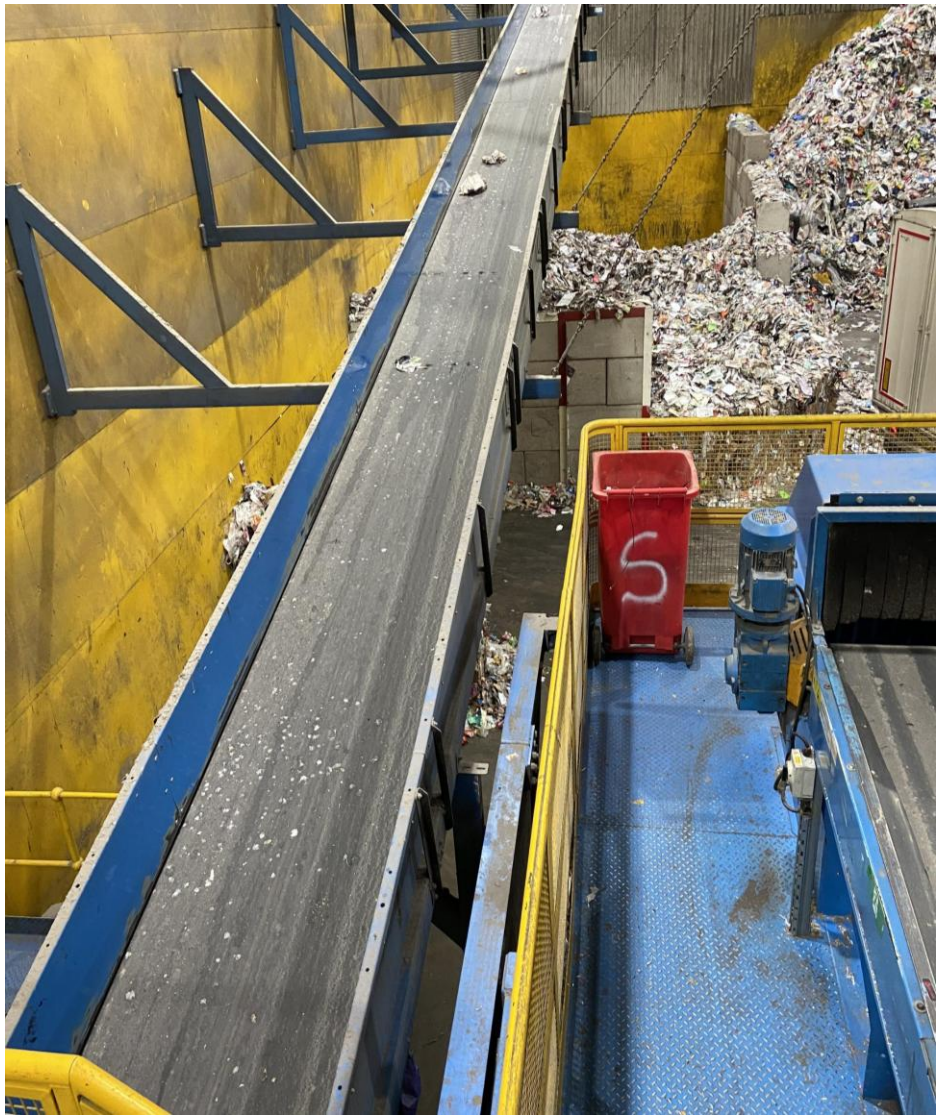
Sampling focuses on polymer type over packaging format, failing to reveal capture efficiency or material loss points.

Challenges in Verification and Auditability

Manual analysis restricts auditability and external verification, reducing transparency and defensible evidence for EPR.

Inadequacy for EPR Requirements

Current traditional sampling methods do not meet Extended Producer Responsibility needs for processing efficiency insights.



THE CORE QUESTION FOR EPR

Challenges of Conventional MRFs

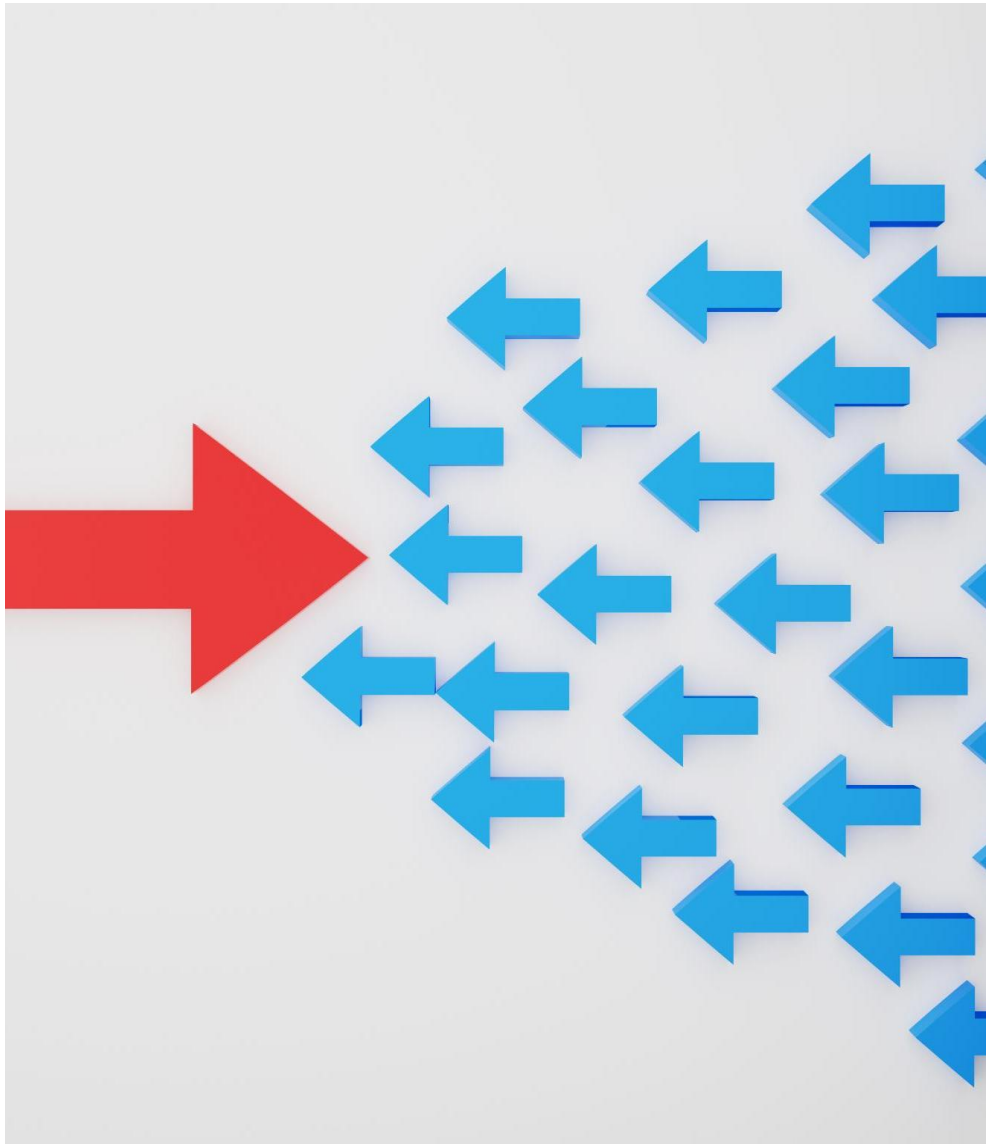
Traditional MRFs struggle to demonstrate processing efficiency and meet EPR data requirements due to limited visibility of material flows.

Evidence Gap in Reporting

Lack of continuous, plant-wide visibility creates a gap between EPR expectations and actual reporting capabilities.

Innovative Facility Design

Fife Council sought for Cireco Scotland to design a new MRF that addresses EPR processing and reporting challenges directly.



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Cireco Park MRF Design and Technology

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DESIGN PHILOSOPHY OF THE CIRECO PARK MRF

Extended Producer Responsibility

MRF design focuses on EPR requirements, prioritising accountability beyond traditional output metrics.

Integrated Data Capture

Continuous data collection throughout the facility enables transparent evaluation of material processing efficiency.

Advanced Sorting Technologies

Optical sorting combined with AI vision ensures precise material identification and optimal sensor presentation.

Physical and Digital Integration

The facility links physical processing with digital insights to meet evolving MRF expectations under EPR.

Designing to optimise capture

Process design to ensure materials are presented in the best format possible to achieve maximum capture performance for any given throughput.

Integrated AI and Optical Sorting Technology

Real-Time Packaging Identification

AI vision systems identify packaging by material and format continuously throughout the plant.

Precise Optical Sorting

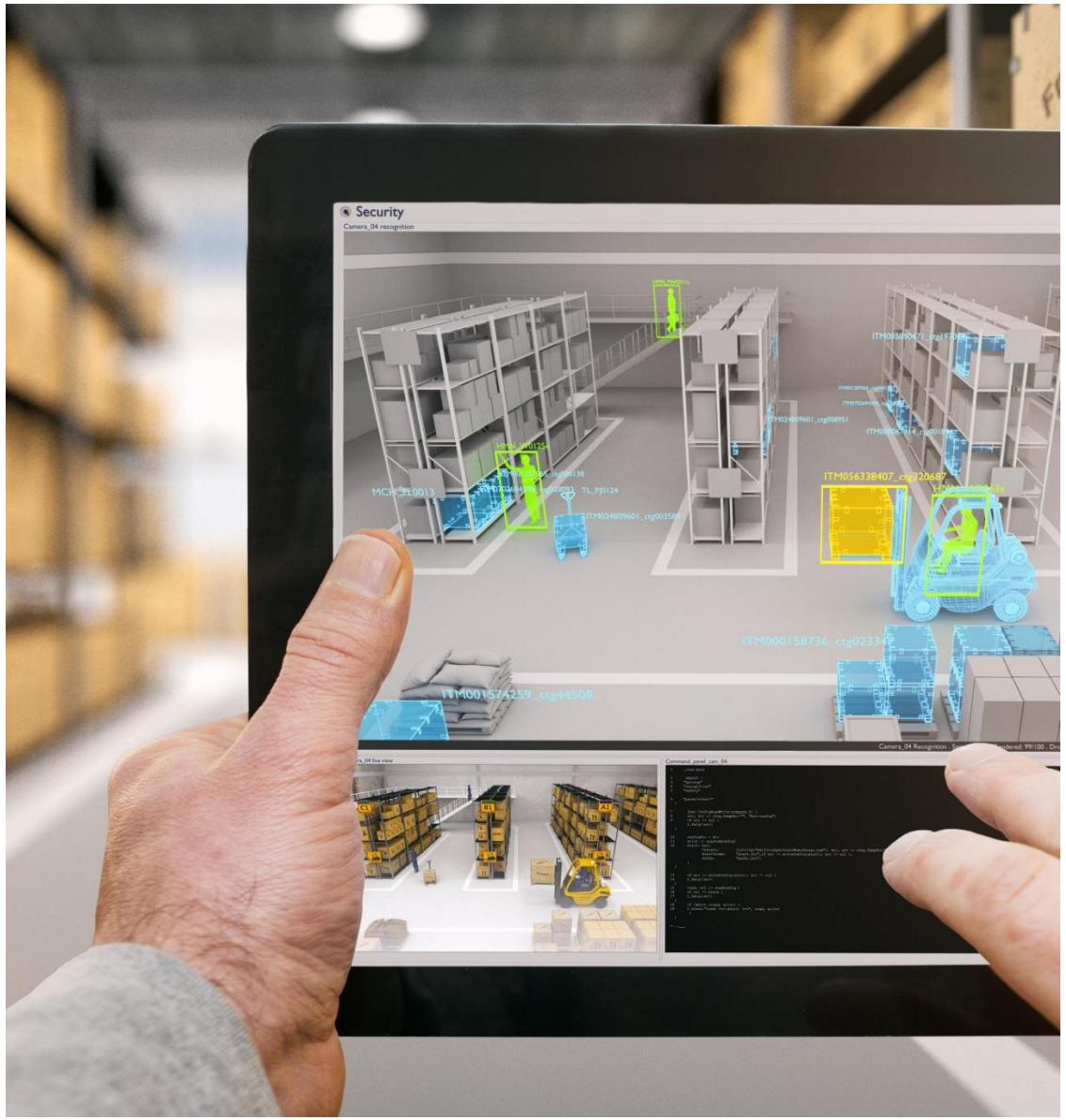
Smart optical sorters separate materials precisely based on real-time compositional data.

Operational Transparency

Integrated systems provide continuous, automated monitoring of material flow and sorting efficiency.

Data-Driven Efficiency Reporting

High-frequency data enables accurate processing efficiency reports for regulatory compliance.



FROM SAMPLING TO NEAR-100% VISIBILITY

Shift from Sampling to Continuous Monitoring

Transition from periodic sampling to near-100% continuous monitoring improves data accuracy and coverage.

Enhanced Statistical Relevance

Continuous data capture reduces uncertainty by providing comprehensive operational insights around the clock.

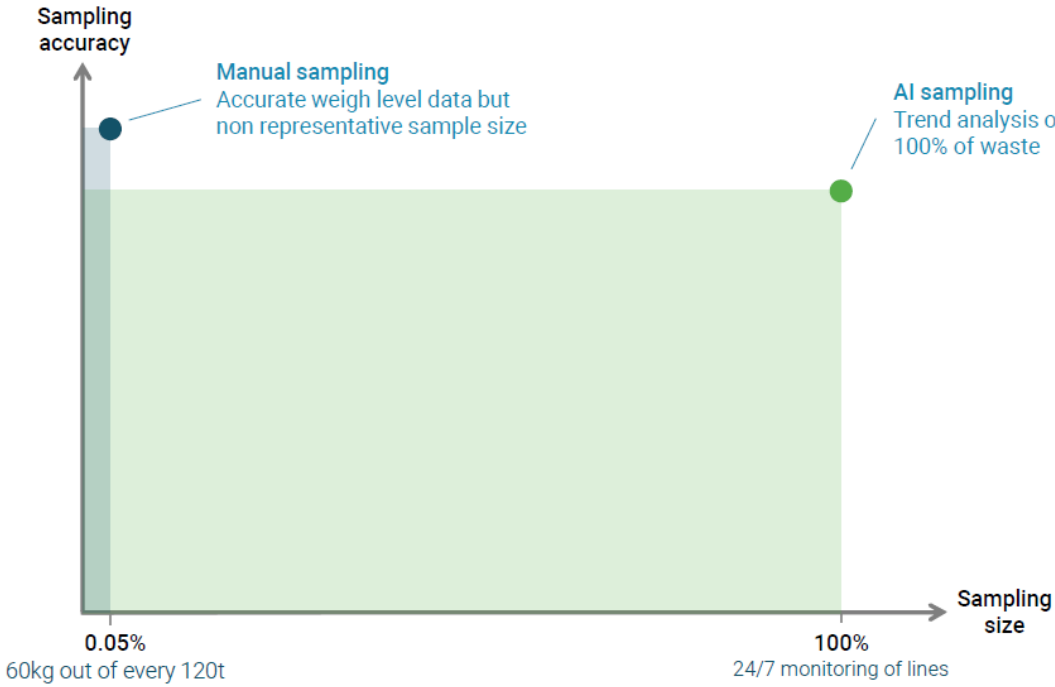
Improved Processing Efficiency Understanding

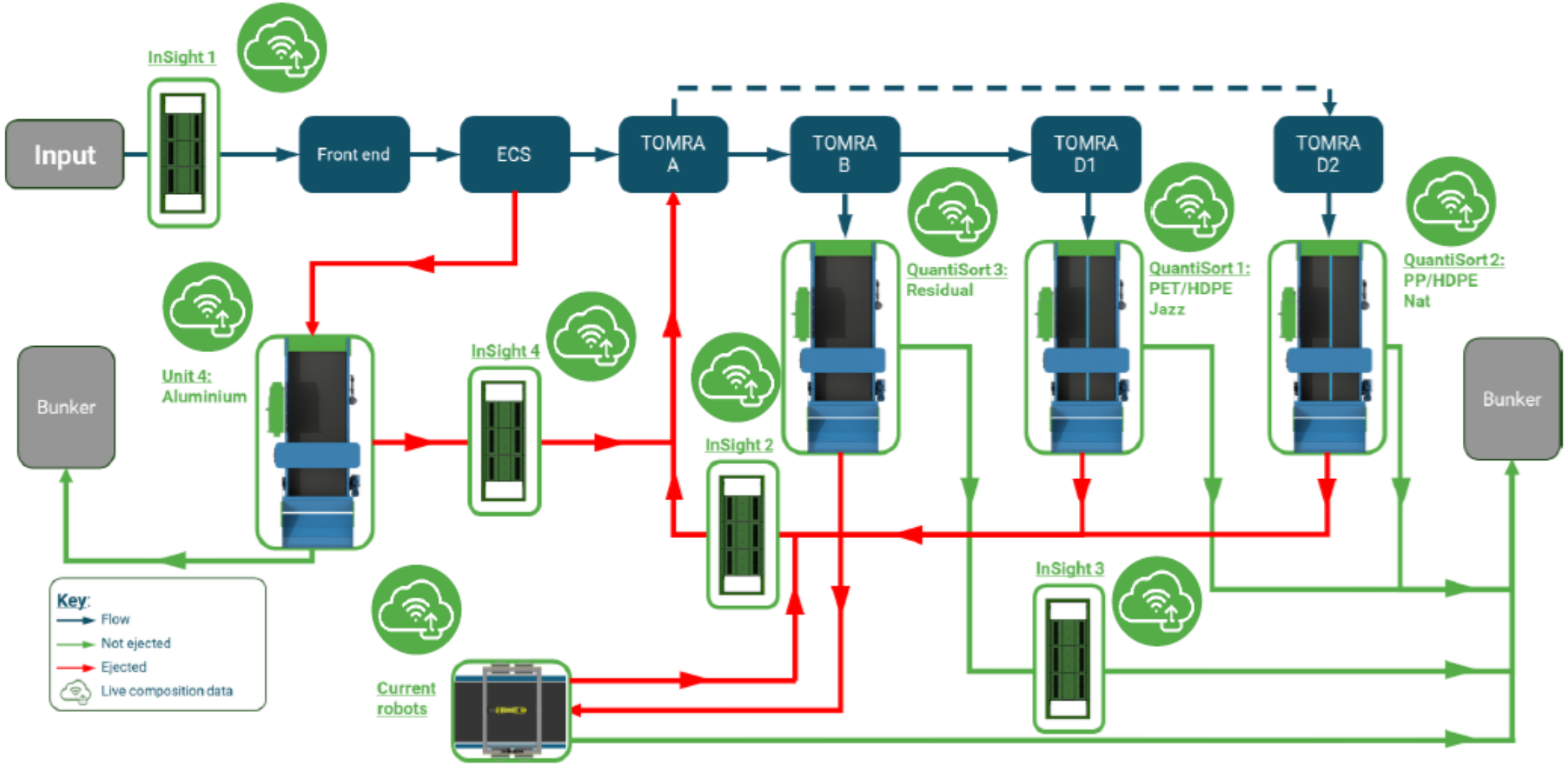
Full monitoring enables detailed analysis of performance variations by input type and operational conditions.

Step Change in Evidence Quality

Move from indicative sampling to rich, continuous data empowers better decision-making for producers.

Visibility: AI vs Manual sampling in one picture.





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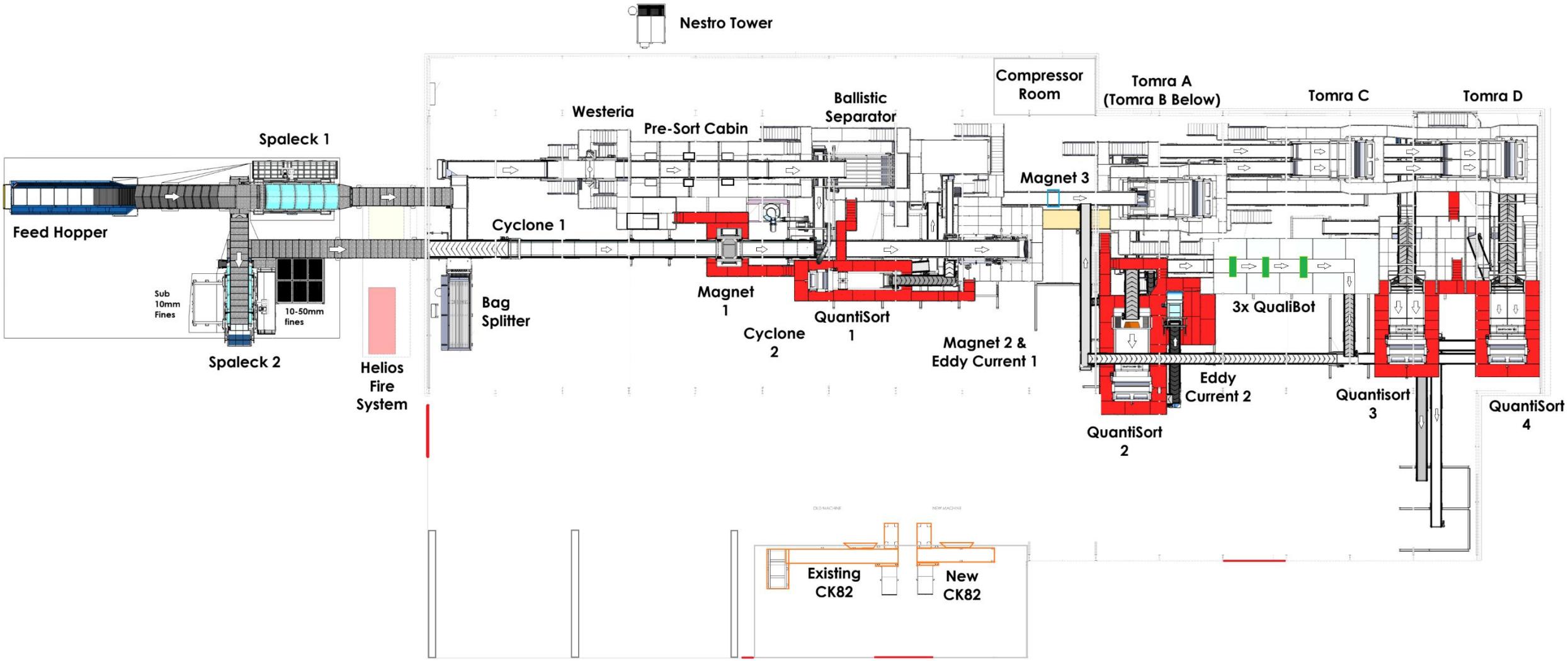
Nestro Tower
Compressor Room
Tomra A (Tomra B Below)
Tomra C
Tomra D
Ballistic Separator
Westeria
Pre-Sort Cabin
Spaleck 1
Magnet 3
Feed Hopper
Cyclone 1
Sub 10mm Fines
10-50mm fines
Bag Splitter
Magnet 1
Cyclone 2
QuantiSort 1
Magnet 2 & Eddy Current 1
3x QualiBot
Spaleck 2
Helios Fire System
Eddy Current 2
Quantisort 3
QuantiSort 4
QuantiSort 2
Existing CK82
New CK82

Processing Efficiency, Auditability and Value

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What This Enables for EPR

Direct Measurement of Capture Efficiency

The facility measures capture efficiency by packaging type, showing exact recovery versus residue loss.

Identification of Process Losses

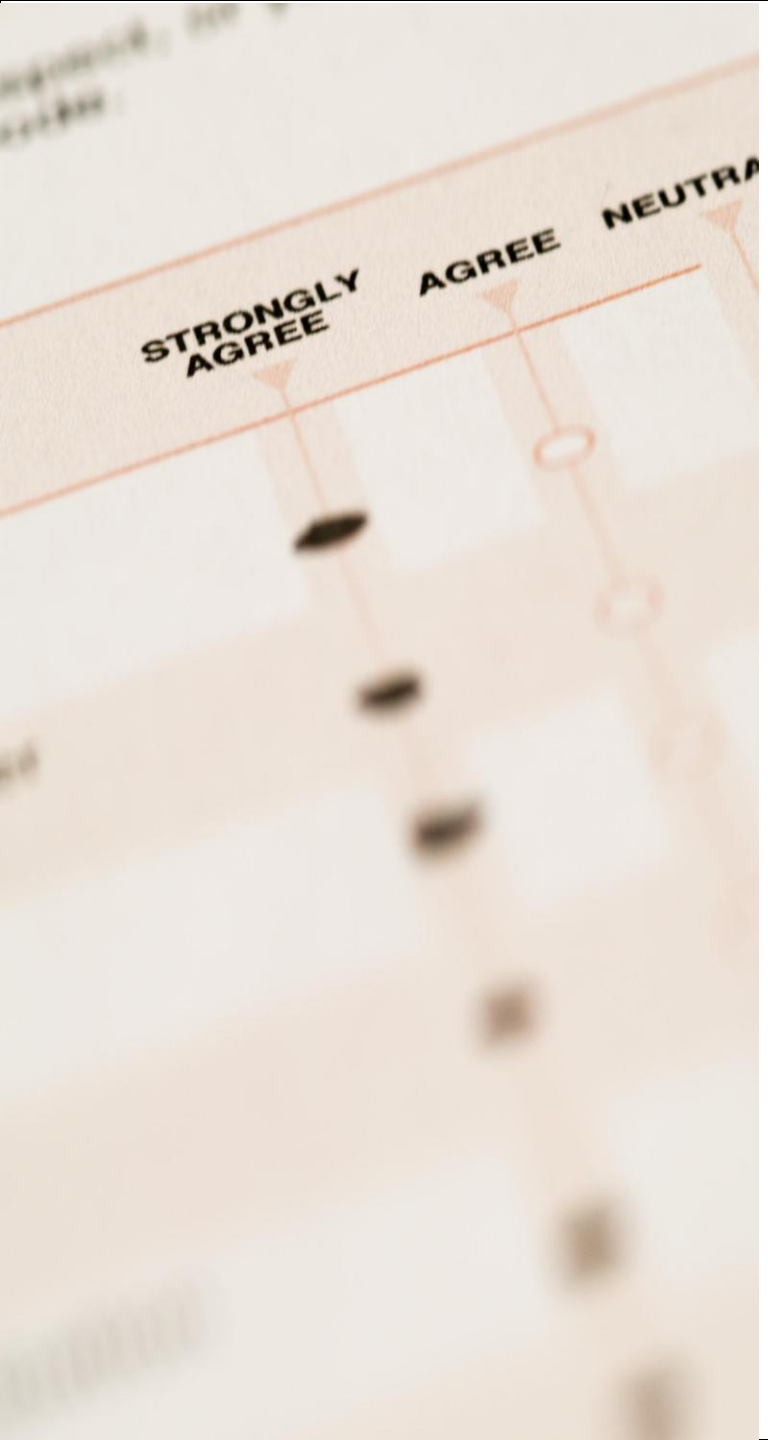
Losses are tracked and linked to specific processing stages to support targeted improvements.

Data-Informed Funding Decisions

EPR administrators use detailed data to make robust funding decisions instead of assumptions.

Operationalising EPR Intent

Facility makes processing efficiency visible, measurable, and improvable to support genuine recycling improvements.



AUDITABLE, DEFENSIBLE DATA CAPTURE

Smart Device Tracking

Each smart device in the facility is independently tracked with performance data collected over various timeframes.

Time-Stamped Consistent Data

Data collected is time-stamped, repeatable, and consistent, ensuring reliable reporting and audit readiness.

Automated Data Capture

Automating data capture replaces manual sampling, enhancing accuracy and defensibility of efficiency reporting.

Regulatory Compliance Support

The system supports regulatory scrutiny and future reporting needs by embedding an evidence-based approach.

DRIVING CONTINUOUS IMPROVEMENT

Data-Driven Optimisation

Live operational feedback enables proactive optimisation to identify and fix issues early, improving processes continuously.

Performance Analysis

Performance analysis by shift, season, input supplier or material supports informed, evidence-based decision-making for improvement.

Commitment to Excellence

Continuous improvement reflects commitment to recycling excellence and demonstrates effective use of EPR funding.

Conclusion

Mapping Cireco Outputs to Processing Efficiency Criteria

Capture Efficiency Measurement

Direct measurement of capture rates by packaging type ensures accurate tracking of processing efficiency.

Robust Evidence Base

Continuous AI data capture across material streams provides high statistical confidence in processing outcomes.

Auditability and Transparency

Device-level tracking with time-stamped data supports auditability and links funding to recycling outcomes.

Continuous Improvement Feedback

Live operational feedback enables optimisation across shifts and seasons to enhance processing efficiency.

TRADITIONAL SAMPLING VS AI-ENABLED MONITORING

Limitations of Traditional Sampling

Traditional sampling covers minimal material, is infrequent, labour-intensive, and lacks granular data by packaging type.

Advantages of AI-Enabled Monitoring

AI monitoring offers near 100% continuous coverage, automated data capture, and real-time granular insights by packaging format.

Impact on Recycling Systems

Comprehensive AI monitoring better supports EPR requirements and producer-funded recycling through detailed, real-time data.

VALUE FOR PACKUK, CUSTOMERS AND PRODUCERS

Innovative Processing Efficiency

Cireco Park MRF uses advanced separation technology and AI data capture to enhance processing efficiency and transparency.

Value for Customers

Customers gain confidence that their EPR funding allocation can be protected through knowing their capture rates are measurable, defensible and aligned with policy.

Benefits for Producers

Producers see their contributions driving genuine improvements in capture and recycling performance under EPR.

Scalable Future-proof Model

The facility provides a scalable, future-proof model for EPR-aligned infrastructure promoting continuous improvement and trust.

Thank you for your time and attention

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