Why data matters in Material Recovery Facilities

In recent years, demand has increased for waste sorting systems able to sort materials to greater levels of granularity. With demand also increasing for renewable resources, new innovative sorting systems are being implemented to deliver high-quality materials for re-use, as part of the strategy to deal with the issue of waste management. The availability of data from these new sorting systems is a key differentiator from what came before.

Evolution in the Waste Management Industry

The waste management industry is evolving, adapting to greater environmental awareness, the increasing value of recyclable materials and new technologies that are becoming available.

As the harm caused by landfills becomes more apparent and the impact of climate change causes global disruption, governments are taking steps to ensure businesses operate with reduced environmental impacts. Companies are also keen to make sure that as much as possible of their packaging and discarded products are recyclable and recycled, partly driven by economics, and also by demand for more sustainable business practices from their consumers.

So, the waste management industry has more recyclable materials to process *and* there is increased demand for high-quality recyclable materials. Seems like a win-win, right? It is, but it isn't quite as straightforward as that.

Why Is Accurate Sorting Of Waste So Important?

First, accurate sorting is critical if we are to stop more waste from being sent to landfills. If waste isn't sorted accurately, it cannot be successfully recycled and will be rejected by potential 'repurposers' or reprocessors. Inaccurately sorted waste fetches a lower price and can result in a significant amount of valuable materials being sent to landfills, continuing to cause environmental harm.

From a commercial perspective, the businesses that purchase recyclable materials want to ensure the materials they're buying are fit for purpose, which means as pure as possible. One manufacturing company may need PET plastic to produce new drinking bottles, while another only requires HDPE, which is typically used to make plastic milk bottles.

Whether it's a matter of complying with waste management regulations, achieving environmental goals, or maximising the resale value of recyclable materials, it's evident that every Material Recovery Facility, (MRF) or waste management site, needs to implement effective and accurate sorting protocols, but how can this be achieved?

How Is Waste Sorted?

Various technologies can be used to sort waste, including plastic, paper and cans. Eddy current separation may be used to accurately sort non-ferrous cans and tins from other types of waste, for example, while an optical sorter uses visual criteria to automatically sort objects.

But it is AI-powered waste robots that are proving to be one of the most important advancement in the waste management industry for delivering higher quality recyclates at reduced operating cost. Now, MRFs can rely on artificial intelligence to more accurately identify materials, and to pick and sort recyclables in ways that have not before been possible while also

collating data relating to each item.

How Does AI Sorting Technology Work?

Computer vision is a subsection of artificial intelligence that enables computers to 'see' the world around them. Crucially, computer vision also empowers computers to react to what they see, in accordance with established algorithms. In the context of waste sorting, computer vision technology, like [Recycleye Vision](#), can be used to identify different recyclable materials in an MRF with optimal accuracy. Analysing different elements of the materials' shape, size and surface, AI can achieve greater accuracy in material classification, and therefore sorting, than existing technologies.

With the capability of classifying items in real time and providing critical compositional data, MRFs can access accurate reporting and optimise operational performance by using the latest AI sorting technology. Recycleye Vision is capable of identifying 28 different classes of materials, and can also accurately detect food-grade and non-food-grade plastics.

Can AI Waste Robots Pick and Sort Materials?

Accurately identifying materials may be the first step, but the power of AI doesn't stop there! Once items have been correctly identified using computer vision, the data gathered can be used to employ robotic automation for picking and sorting. The [Recycleye Robotics](#) six-axis robot uses a pick-rotate-and-shoot functionality and pressure sensors that optimise 'pick paths' to maximise sorting speeds.

While waste robots and plastic sorting robots might seem like futuristic visions, they have already proven highly successful in the field. In fact, a significant number of MRFs are using AI-powered technology to enhance

their operations right now.

Data Tracking of Recyclables

Data is important in every industry and the same is true in the waste management sector. When identifying and sorting waste, data needs to be tracked and collated so that accurate information can be provided at the next stage of the recycling journey.

Of course, acquiring this information manually would be time-consuming, inefficient, and costly but AI provides an innovative solution. When scanning items with computer vision, AI grades each item while at the same time collecting accurate and complete compositional data.

This data can help waste management businesses gain valuable insights, facilitate the publication of mandatory information, and provide potential customers with transparent and traceable data regarding the type, grade, and quality of the recyclable materials available. The data can also be used to identify issues elsewhere in the MRF and to make strategic decisions about the management of waste flows.

Revolutionising Waste Sorting with AI

As the demand for recyclable materials increases, the importance of accurate data rises too. MRFs can use data generated by waste sorting robots to optimise the value of recyclables but these metrics can also be used to enhance in-house performance too.

The metrics gained through AI robots can have a direct effect on profit margins at a MRF. Knowing the amount of certain recyclable materials sorted ensures proper post-processing, providing valuable proof of the quality of the recyclates to off-takers. It can also help open opportunities to

new markets – as accurately sorted food-grade plastics such as HDPE and PET demand a higher price than mixed plastics. Computer vision enables the accurate sorting of this food grade plastic at scale, enabling a MRF to generate a better return from sorting these materials, with purity proven with data from the AI waste sorting robot.

By unleashing the power of data throughout the industry, AI has the potential to boost the value of recyclable materials and increase the volume of materials that are fully recycled.

To learn more or to talk to our team about integrating AI sorting technology at your premises, get in touch with our expert team now.