VIEW POINT

INNOVATIVE WASTE PROCESSING

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It is estimated that the United States generates approximately 250 million tons of waste every year. Unfortunately, only about 34% of trash is recycled. One of the reasons for this abysmal record of extracting value from waste is that segregation and sorting of waste is a complex process.

After all, the segregation must be done twice over, first by the consumer and then by the waste management company at their sorting facility, making waste segregation a time consuming and prohibitively expensive process. For instance, only plastic waste can be segregated into 15 or 20 different types of waste depending on their thickness (microns), color, state of hygiene, etc. Human intervention at the enterprise level makes segregation slow and often hazardous. But as consumers become increasingly environment -conscious, they are demanding that industry follows suit.

Fortunately, segregation of waste need not be a difficult, expensive task any longer. Powered by smart and emerging technologies, an increasing amount of waste can be recovered, recycled, and upcycled rather than getting added to the heap of waste for combustion. In both instances of segregation – consumer and enterprise-level - technology can better manage the process.

Smart segregation for consumers

Artificial intelligence and machine learning-enabled optical sorters can recognize waste objects and alert users when waste items are in the wrong bin. For large community customers, a portable robotic segregator mounted on or near a dumpster ensures effective segregation.

Further, an app informs consumers how much recyclable and organic waste has been segregated for the day, week, month, quarter, or year. This information can be gamified to reveal the carbon footprint. Based on customer data, such as segregation of waste, the quantity of waste generated, type of waste generated, content on the app can be customized to increase awareness.

Smart segregation of waste at waste management facilities

The sorting of waste at sorting centers presents several challenges. To begin with, it requires multiple sorting stations for different materials, such as plastic, paper, glass, and metal. Even after multiple conveyor belts, 100% sorting is not assured. Waste management companies need to adopt digital technologies to increase the speed, accuracy, and efficacy of sorting. AI/ML-powered visually enabled sorting robots learn patterns quickly. 'Positive material' identification in automated sorters can further segregate materials into subcategories, for instance, various types of metals or plastics.

Connected technologies such as IoT sensors can distill deep insights into the type, quantity, and frequency of waste generated by different customers, communities, and industries at different locations. For instance, certain locations generate higher cardboard waste while others generate higher metal waste. This data helps the waste management company plan the routing of this waste to the correct sorting center or belt instead of aggregating it with other kinds of waste.

Finding a market for recycled goods

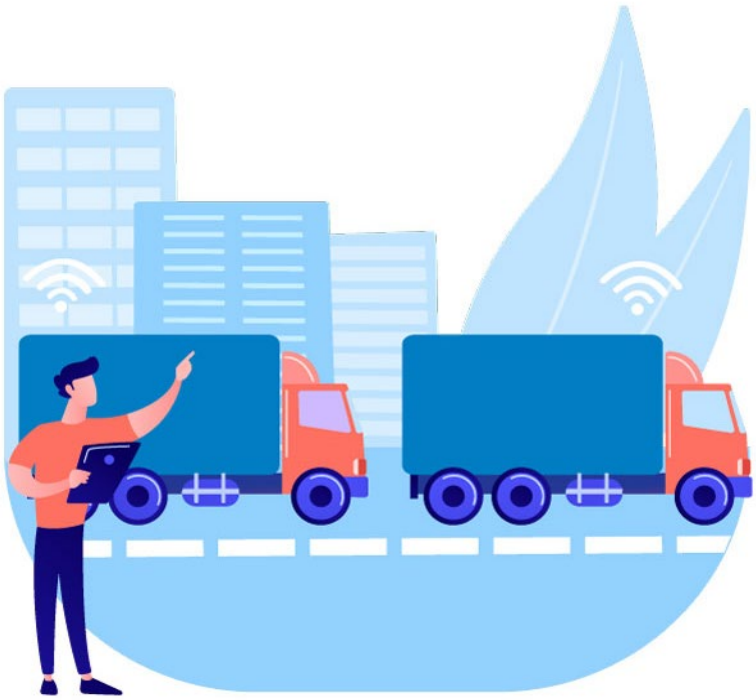
After segregation, the next phase is recycling the waste. There are two challenges in the recycling process. First, the high cost of recycling, and second, the limited market for recycled goods due to the steep price.

Effective segregation at source, automated sorting using AI/ML-enabled robots, and data-driven sorting can help reduce the cost of recycling over the long term. The effective use of technology optimizes sorting infrastructure and avoids the installation of multiple conveyors while saving time for sorting.

The waste management industry needs to create awareness about using recycled goods to pivot to a circular economy. Digital campaigns maximize reach and influence environment-friendly lifestyles. Industries, institutions, and non-governmental organizations can also spread awareness about responsible consumption and waste management.

Demographic data can be analyzed to assess the market for recycled goods and evaluate the feasibility of sales channels.

Communities and governments are cognizant that access to finite resources means that we need to extract maximum value from waste. The situation demands that we adopt digital technology to ensure that we live in a low-waste habitat.



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