



IEA Bioenergy
Technology Collaboration Programme

Advanced Sorting Technologies in the Waste Sector

Summary Series

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Case studies compilation

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SUMMARY

The use of AI and digital tools will have an impact on the waste and energy sector. When applied to waste sorting, advanced sorted technologies should allow to increase the type and number of materials that can be separated, improve quality, optimize process in terms of efficiency, time, and costs; but they will also reduce the need for humans (manual sorting) in this work environment as they will turn into mostly automatized processes, having a positive impact on social aspects. The use of cutting-edge technology results in a double environmental positive effect: (i) material is recovered to be sent to recycling preventing the extraction of virgin material/new resources; (ii) some of the material recovered escapes from being landfilled or incinerated and avoiding incineration of waste fractions such as fossil-derived plastics leads to a mitigation of the CO₂ emissions from the WtE plants while getting closer to limiting this pathway to unrecyclable fractions.

This report is a compilation of case studies highlighting the use of new technologies in the waste management industry for increasing material recovery of waste fractions that otherwise might go to energy recovery or be landfilled. The material recovered might have sufficient quality for being recycled contributing to reach the recycling targets. The cases included in this compilation are:

SITE ZERO (Svensk Plaståtervinning i Motola AB): The smart sorting technology in Site Zero, a state-of-the-art plastic sorting plant in Sweden, aims to realize a circular economy for plastic packaging. It has capacity to receive all the plastic packaging generated by the Swedish households; and sorts mixed plastic packaging from households into 12 different fractions. The novelty of this plant relies on the combination of technologies.

AMP ONE Cleveland (AMP): This facility is a showcase for the use of AI-powered sorting to increase recycling rates and economically recover recyclables in US. It sorts all traditional recyclable products (i.e. HDPE, PP), but also sorts advanced and custom streams such as bales by colour and opacity, pyrolysis feedstock, and methanolysis feedstock.

Link to the report: [IEA-Bioenergy -Advanced-sorting-technologies-in-the-waste-sector-3.pdf](https://ieabioenergy.com/Advanced-sorting-technologies-in-the-waste-sector-3.pdf) (ieabioenergy.com)