Multipurpose Plastic Sorting

Publieke samenvatting / Public summary

Aanleiding

In current plastic sorting facilities, the overall process is focused on highest throughput and designed to retrieve acceptable output quality with high yield and minimum process losses. These standard sorting facilities are designed to process household waste streams, which consist of many items with a large variety in size, shape, and material. Typically, the streams are separated based on material type and shape using near-infrared (NIR) sensors and RGB cameras, where the output streams are delivered according to predefined, national specifications (e.g. DKR standards). These streams are not sorted according to their intended use specifications, which may require higher output quality or a more specific output stream. Additionally, waste streams exist containing valuable, plastic packaging that currently do not enter a sorting facility as input. Providing a novel mechanical sorting solution that is more efficient and flexible contributes to the European goals, and therefore also of The Netherlands, for increasing the use of recycled plastic in the plastic production.

Doelstelling

The goal of this project is to improve the efficiency, flexibility, of the conventional plastic sorting process in order to improve the output quality through the application of radically different technologies for mechanical sorting. More specifically by: • Developing innovative and original radical solutions for mechanical sorting by cross-fertilization between technology providers that operate inside and outside the plastic recycling industry. • Establishing

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Algemene informatie / General information

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Publicaties en materialen / Publications and attachments

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multiple novel mechanical plastic sorting concepts which are composed of existing but not used techniques for plastics sorting and target current post-consumer waste plastic streams as well as valuable streams that are currently not recycled. • Demonstrating the functionality by designing and constructing novel, flexible, compact, and modular prototypes. With this, by targeting sorting input and output streams that are currently not recycled, the deliverables of this project will reduces incineration and landfill, contributing to lowering the CO2 impact of plastics as well as improving circular carbon.

Korte omschrijving

In this project we will work with three use cases from industrial partners that address sorting of plastic waste in ways that are currently not performed but have the potential to lead to an increase in circularity of plastics. The use cases have the following characteristics in common: • use of one detection, identification, classification system for wanted or unwanted objects; • they work with bulk waste streams; • because of the two above, cross fertilisation between the use cases. We will work on the following specific use cases (between parentheses are the use case owners): Waste transfer station rejects (Midwaste). Unlocking hospital waste for chemical recycling (Sabic). Removing non-food items from plastic waste (Danone & Omrin).

Resultaat

For each of the use cases we will deliver the following: • a selected AI vision system that is capable of detecting, identifying and classifying the objects of interest, where we will build upon technologies that are under development for waste management or are used in other industries; • a prototype sorting machine that is able to either remove the classified objects or remove a part of the stream that contains those objects, where we will use existing technologies from other industries such as baggage handling, mining and crop sorting in agriculture; • where possible we will use (part of) a solution in one use case in the other use cases; • a report describing the results of the tests with the

prototypes and the potential performance of the selected & developed technology.

De data in deze applicatie is afkomstig van de Rijksdienst voor Ondernemend Nederland (RVO) en wordt in samenwerking met de Topsector Energie ontsloten.
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