

**Project or team name:** Sortonics

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**Project category:** Consumption

### **Potential for impact**

With legal frameworks forcing EU countries and thus recycling companies to recycle all municipal waste by 55% at the end of 2025, 60% at the end of 2030, and 65% at the end of 2035. European countries need to on average, up their recycle rate by 1.6 times in the next to two years. It is important that recycling companies invest in sorting lines that can keep up with these demands.

Waste sorting companies are currently requiring detailed measurements of materials inside their plastic waste stream, to improve their sorting processes. Current existing measurement systems have issues such as (1) Long implementation times, (2) Through object scanning, and (3) updates to stay relevant. This leads to the price of a system to be an estimated €70,000,-.

### **Novelty**

Sortonics makes use of integrated photonic circuitry that combines multiple existing techniques for recognition. This creates a more robust material recognition system. A photonic integrated circuit is a chip that contains photonic components, which are components that work with light (photons). PICs offer advantages such as miniaturization, higher speed, and compatibility with existing processing flows that allow for high yield, volume manufacturing, and lower prices.

The main aim is provide a system that can recognize 100% PVC, be implemented within a maintenance window, with a cost below €50,000,-.

### **Feasibility**

The proposed system uses already proven existing technologies, by including a new implementation system, it is feasible to combine these existing technologies to create a more robust system.

Together with our partners, PIC experts, at The Center for Integrated Photonics Eindhoven, a leading R&D center in the field of Integrated photonics, the circuitry will be developed. Furthermore, we will codevelop the solution package with Renewi, one of the biggest recycling companies in Europe.

Our ambition is to extend our partnership with Renewi. Further we are looking for an investment for a proof of concept prototype. A manufacturing partner to initiate discussion with to explore the way forward should be produced in a larger scale.

### **Inclusivity (industry, potential users, multiple disciplines engaged)**

We are currently in discussions a potential customer, one of Europe's biggest recycling companies, Renewi. About the adoption of new technology within their processes. Furthermore, we are in contact with a potential manufacturing of PIC, smart photonics. Finally we heavily involve our key development partner, The Center for Integrated Photonics Eindhoven. Once concepts has been proven we will involve leading sorting machine manufacturer, Tomra. For production and logistics of the product. We are in contact with them, but would like to have a proven concept.