

ARTIFICIAL VISION SYSTEM FOR INTELLIGENT SORTING AND COUNTING OF PACKAGING IN RECYCLING PROCESSES



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RESUMEN

The *Lucentia* research group at the University of Alicante has developed a technology for the identification, sorting and intelligent management of waste packaging in industrial recycling environments, based exclusively on optical techniques and Artificial Intelligence (AI) algorithms. The solution enables the automated, real-time recognition of packaging materials and their components (such as caps), the detection of chemical contaminants regardless of labelling, and the accurate counting of processed items, even in highly variable and densely packed scenarios.

The system can be easily integrated into industrial production lines through communication with programmable logic controllers (PLCs), using standard protocols, and does not require an internet connection. By processing video sequences using optimised neural network models, the technology analyses the optical properties of packaging to classify items and support decision-making, ensuring high accuracy and operational speed.

This innovation helps optimise recycling processes, improve waste traceability, ensure regulatory compliance and reduce operating costs. It is therefore an ideal solution for waste treatment companies.