

Automatic Metal, Glass and Plastic Sorting Machine

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Abstract: *Rapid urbanization and population growth have significantly increased the generation of solid waste, creating serious environmental and health challenges. Proper waste management begins with effective segregation of waste at the source. This project presents the design and implementation of an automated Waste Segregation System using sensors and a microcontroller. The proposed system automatically identifies and segregates waste into categories such as metal, plastic, glass, and paper using inductive, capacitive, and ultrasonic sensors controlled by an Arduino-based unit. Mechanical components like servo motors and rotating mechanisms are used to direct waste into separate bins. The system reduces human involvement, improves recycling efficiency, and supports sustainable waste management practices. The results demonstrate reliable segregation with minimal error, making the system suitable for smart cities and industrial applications*

Keywords: Waste Segregation, Smart Dustbin, Arduino, Inductive Sensor, Capacitive Sensor, Ultrasonic Sensor, Automation, Recycling, Smart City

