

A Readily deployable Smart Residential PET recycling and shredded flakes collector bin

Prajwal Y Maredukonda, Vishwas Tyagi, & Bharani Racharla

Email ID: prajwal@vardhaman.org & bharani.racharla@awashedupnerd.in;

Abstract

It is difficult to collect the recycled plastic as vendors were not under one umbrella. The rate of recycling regular household PET (Polyethylene Terephthalate) is quite low in India. With this product, we like to solve this problem and monetize plastic recycling for communities and families. This product will have three components, a depositor bin where a person will deposit one or more pet bottles with will be collected in a basket, a robotic arm that would remove PVC labels, and any rings. These items are then passed through a set of rotating blades to cut into small plastic pellets, which are collected in a bin. These bins are regularly weighed through sensors and the data with occupancy rates are stored in an internal database. When the weight reaches a critical point our collection agent and the respective households will be informed through our mobile application. Also, a schedule for the collection of plastic flakes and a new collector bin will be installed will be communicated. Then the bins are collected and transported to a sorting location, as the filled collector bins are reached to the sorting location, a pre-determined amount will be deposited into a wallet registered by the household. We will then sort the pellets into different categories, supply them to our network of recycling organizations that convert these flakes to a finished product like plastic tiles, roofs, and street vendor sheds. We also plan to use these pellets in manufacturing our electronic products to achieve our organization's goal of incorporating recycled plastic and eco-friendly materials without compromising product functionality. These smart collector bins, robotic arms, and crushing blades are operated using solar-powered li-ion batteries. So, they can be placed either on rooftops or in play areas within a household. They can also be installed on any street corners.

Around 22 billion PET bottles end up in landfills globally every year, In India, according to a survey 90% of PET bottles end up recycled, 65% are recycled at registered facilities, 15% in the unorganized sector, and 10% is reused at homes¹. With our product in every household and community, we can achieve 99% recycling of PET within registered facilities. We produce 700000 tons of plastic waste annually with Mumbai accounting for 7500 tons of it. The PET recycling business has a turnover of Rs3,500 crore each year¹, the end products sell at anywhere between Rs50-110 per kg¹. We believe that our product can increase the above turnover twice if we can tap into agreements with most communities in a few dozen major cities across India. The cost to manufacture the product can be recouped within six to eight months with the collector bins capacity of 12kgs. We need to understand our social responsibility to make our planet net plastic-free, as achieving a zero plastic is an improbable goal.

References

[1] Birkar, S. (2021, 04 22). *Facebook*. Retrieved from 5rcycle: <https://www.facebook.com/5rcycle>