Design of Garbage Collecting System for Residential Application

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Abstract:

Waste is a continually growing problem at global and regional as well as at local levels. Solid wastes arise from human and animal activities that are normally discarded as useless or unwanted. Solid wastes are the organic and inorganic waste materials produced by various activities of the society and which have lost their value to the first user. Though there is a system defined to manage waste, it is challenging to operate in same manner due to many factors. User friendly products are essential for garbage collectors and residents to improve the accessibility and usability.

In this project, attempt is made to design a product which solve and improve the garbage management system for current scenario. Few main concerns are considered like garbage segregation, storage, transportation, access to residents, mobility and ergonomics. To understand more in depth primary and secondary researches were done to collect the data regarding existing products and processes. Quality Function Deployment (QFD) was done by considering customer voice and technical voice obtained as a result of research. Product Design Specification (PDS) is generated based on QFD. Mind mapping was used to create the ideas. Four concepts were created based on PDS from which one concept taken forward for development. Mock up model was created with scale of 1:4 for product validation.

The new garbage bin product tweaks the existing collection process. Any point of time the bins are available and provide easy access to residents to dump the segregated wastes (wet & dry). The new bins can be easily transported to compost pit by connecting existing auto tipper and can easily unload the wastes. The bins can be cleaned efficiently at designated Municipal areas and can transport back to community area. The scissor lift mechanism helps to increase the height of the bin while transferring the waste into truck compactor.

Various concepts of garbage collection

Rendered final concept **Final model**