Young Environmental scientist

Solid waste management

G-Picker

Senior

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By,
S.Anjali devi,B.Sivathmika (Amrita Vidyalayam)

Mentor's name-B.Manjula

OBJECTIVE:

G-Picker

To bring in effective waste collection and storage by installing vacuum sucking techniques in a device that moves on transmission of signals on road sides by selectively collecting the paper and plastic waste that account for the major proportion of waste produced.

MATERIALS REQUIRED: 1.5V DC motors-3,3 Rotating Fans, Connecting wires,Switch

Suitable container, Stationery, Remote control base.

CHRONOLOGICAL PROCESS AND THE BRIEF DETAILS OF THE EXPERIMENT:
Development of prototype model with a single rotating fan.
Development of the final model that has:

3 rotating fans,(2 connected parallel to each other increasing the suction power of the device, and the 3rd fan connected in the opposite direction to that of the others to push out the collected waste on to a collection chamber, through a rectangular receptacle on the surface of the container). The low power DC Motor used acts as a density sensor that selectively collects the plastic and the paper waste that is accumulated along with the other wastes accounting for the major proportion of the total waste produced . The locomotive mechanisms are achieved by the remote control basis, involving the transmission of signals where the instalment of an infrared sensor can sense the obstacles and can add to the efficiency of the device.

Methodology adopted to overcome the failures faced in
prototype model:
- The low voltage DC motor can be used as a density sensor,
- that picks up mostly paper and plastic, the major constituents
- of wastes produced.
- to increase the suction power, we used

      a. 2 fans.

      b. Parallel placement of fans(to decrease the surface area of the container)

    c. Parallel connection of batteries.

    d. Placement of fans that has opposite terminal connection that enables the fan
    To push out the waste collected to the storage can.

    e. As prototype model could pick up waste only when the device as a whole was inverted on
    the waste. The final model was successful in sucking in the waste through a tube.

Result:
➢ The low voltage DC motor used, acts as a density sensor, that picks up mostly paper and
    plastic, the major constituents of wastes produced.
➢ The final model was successful in sucking in the waste through a tube.

➢ G-Picker picks up the waste of the density range: 39-76 Kg/cubic meter

G-Picker

Conclusion:

➤ It is an innovative proposal in the field of solid waste management.

➤ As an alternative to the complicated procedures involved in a density sensor, simple usage of a low voltage motor will be an easy process minimizing the process of manual solid waste segregation.

Benefits to the environment and others:

➤ Clean, safe environs.

➤ Prevention of contamination of the soil by the plastic wastes.

➤ Avoiding the spread of contagious diseases through accumulation of waste.

➤ Easier means of processing plastic and paper waste as they are selectively collected by G-Picker.

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