

Domestic Waste to Biodegradable Manure

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Abstract: -

Roughly, one third of the food produced in the world for human consumption every year — approximately 1.3 billion tonnes — are lost or wasted. Food losses and waste amounts to roughly US\$ 680 billion in industrialized countries and US\$ 310 billion in developing countries. Every year, the average citizen of a developed country produces about half a tonne of waste, thus waste management is an essential industry. Old waste management systems based on the collection of mixed/ sorted waste and transporting it a long way to disposal sites has a significant negative impact on the environment and humans. Biological methods (such as composting or anaerobic digestion) and physicochemical methods (such as burning or pyrolysis) of waste utilization will be considered from the householder's point of view. Municipal waste management systems for domestic use could eliminate or significantly reduce the stage of waste collection and transportation. Additionally, they should not require special infrastructure and at the same time should allow garbage to be changed into safe products or energy sources with no harmful emissions. The aim of the work is to design and fabricate a machine to convert wet waste to manure. Therefore, we have to design a machine, which can convert this waste into any useful form.

I. INTRODUCTION

Food waste is over 50 % of the other waste generated in the world. These waste along with all the other wastes are dumped in dump yards which takes many years to degrade. Due to this the land becomes a waste land and cultivation is not possible on this land.



The waste is segregated in the dump yard into biodegradable and non-biodegradable waste. The wet waste segregated is used in agriculture. However, the money invested for the segregation and conversion of this waste into manure is a lot. Therefore, the aim of our project is to design a machine, which converts wet waste into biodegradable form for household purpose, which will help to reduce land pollution.

II.COMPOSTING

Compost is an organic matter

that has been decomposed in a process called composting. This process recycles various organic materials otherwise regarded as waste products and produces a soil conditioner (the compost).

Compost is rich in nutrients. It is used, for example, in gardens, landscaping, horticulture, urban agriculture and organic farming. The compost itself is beneficial for the land in many ways, including as a soil conditioner, a fertilizer, addition of vital humus or humic acids, and as a natural pesticide for soil. In ecosystems, compost is useful for erosion control, land and stream reclamation, wetland construction, and as landfill cover (see compost uses).

At the simplest level, the process of composting requires making a heap of wet organic matter (also called green waste), such as leaves, grass, and food scraps, and waiting for the materials to break down into humus after a period of months. However, composting also can take place as a multi- step, closely monitored process with measured inputs of water, air, and carbon- and nitrogen-rich materials. The decomposition process is aided by shredding the plant matter, adding water and ensuring proper aeration by regularly turning the mixture when open piles or "windrows" are used. Earthworms and fungi further break up the material. Bacteria requiring oxygen to function (aerobic bacteria) and fungi manage

the chemical process by converting the inputs into heat, carbon dioxide, and ammonium.

III. MATERIAL THAT CAN BE COMPOSTED

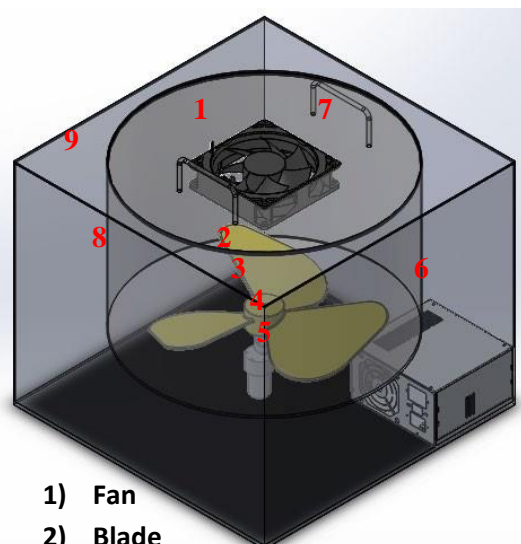
Composting is a process used for resource recovery. It can recycle an unwanted by-product from another process (a waste) into a useful new product. A large compost pile that is steaming with the heat generated by thermophilic microorganisms.

Composting is a process for converting decomposable organic materials into useful stable products. Therefore, valuable landfill space can be used for other wastes by composting these materials rather than dumping them on landfills. It may however be difficult to control inert and plastics contamination from municipal solid waste. Co-composting is a technique that processes organic solid waste together with other input materials such as dewatered fecal sludge or sewage sludge.



Industrial composting systems are being installed to treat organic solid waste and recycle it rather than landfilling it. It is one example of an advanced waste processing system. Mechanical sorting of mixed waste streams combined with anaerobic digestion or in-vessel composting is called mechanical biological treatment. It is increasingly being used in developed countries due to regulations controlling the amount of organic matter allowed in landfills. Treating biodegradable waste before it enters a landfill reduces global warming from fugitive methane; untreated waste breaks down anaerobically in a landfill, producing landfill gas that contains methane, a potent greenhouse gas.

IV. Parts



- 1) Fan
- 2) Blade
- 3) Shaft
- 4) Coupler
- 5) DC Motor
- 6) SMPS
- 7) Lid
- 8) Mixing Chamber
- 9) Outer Covering

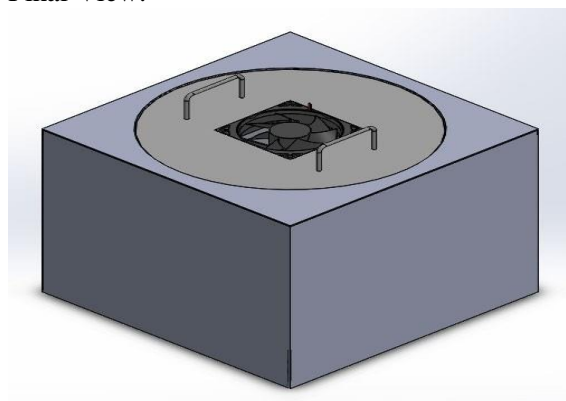
V. CONSTRUCTION DETAILS

Sl No	Components	Specifications
1	Fan	12 V Fan
2	Blade	300 mm Dia
3	Shaft	6 mm Dia
4	Coupler	6 to 6 mm ID
5	DC Motor	12V 15 kg-cm Torque
6	SMPS	12V Output
7	Lid	MS Material
8	Mixing Chamber	MS Material

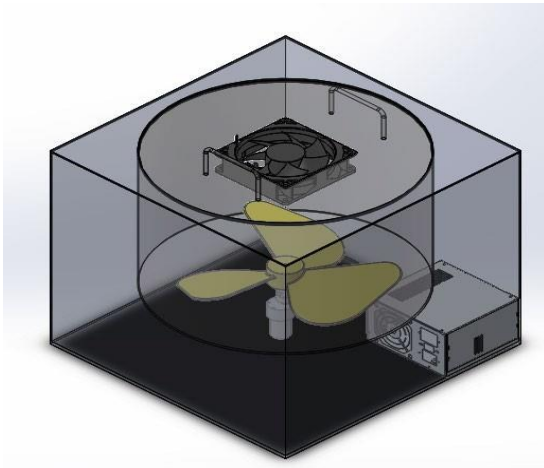
9 Outer Covering MS Material

VI. Design

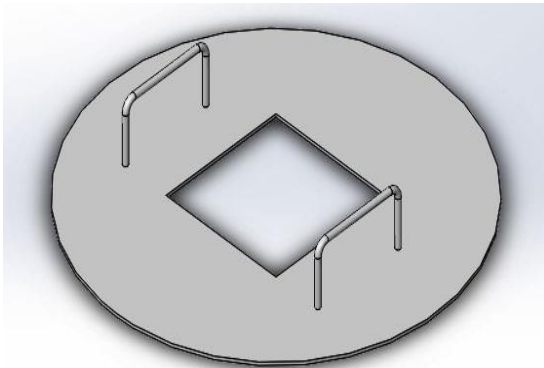
Final View:



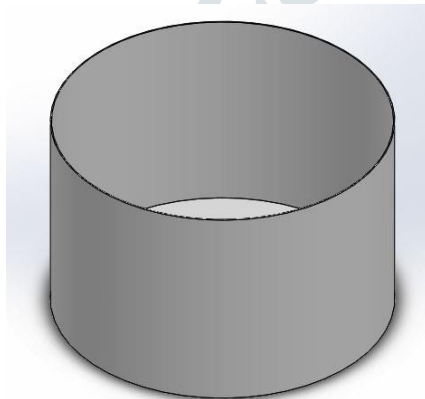
Transparent View:



Lid:



Mixing Chamber:



SMPS:



DC Motor:



Coupler:



Fan:

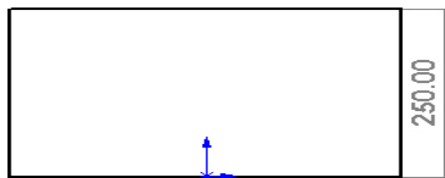
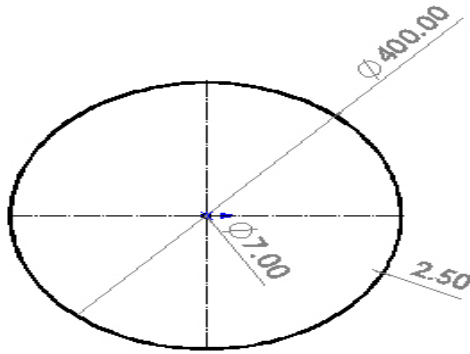


Blade:

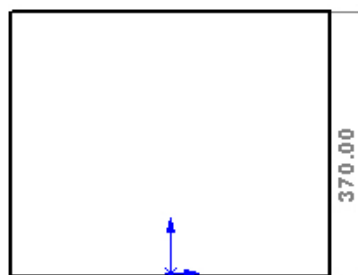
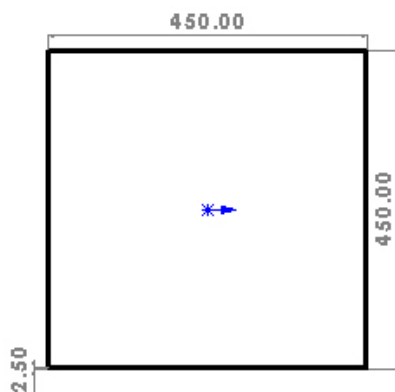


V II.DESIGN WITH DIMENSIONS

Mixing Chamber:



Outer Covering:



VIII. Working

- 1) The Biodegradable waste along with the compost maker is dumped into the mixing chamber.
- 2) The machine is started to rotate the blade.
- 3) The mixing process starts.
- 4) During this process oxygen is provided with the help of the fan.

- 5) After the competition of the composting process the manure is removed.
- 6) The manure can be used directly on plants.

IX. CONCLUSION

The main purpose of preparing this machine is to convert the organic waste materials to a finished fertilizer or manure. Due to this project, we can reduce the food

waste around 90 percent. The addition of meat waste as feedstock for composting in bins increased the temperature during aerobic

decomposition. Consequently, several parameters were affected under higher

temperature the waste food is dumping in damp yards it leads to environmental pollution so by using this machine we can

dump the food waste in this machine hence the pollution can be controlled by converting this waste to manure. By using the device, it is easy to convert Wet waste to biodegradable form.

By using this device in homes, the amount of waste produced in the home can be reduced and therefore pollution decreases. Many can use this because the cost will be low. This machine will be eco-friendly. The main purpose of this project is to see our nation as eco-friendly and green society.

X. REFERENCES

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