COMPOTECH: A Smart Composting Machine for Sustainable Food Waste Management

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Food wastes are a major environmental pollutant due to the greenhouse gases that are emitted by them, like: methane. It should be notice that Food loss and waste is estimated to be roughly one third of the food intended for human consumption in the United States. The project aims to reduce the harmful environmental impact of food waste especially organic foods. COMPOTECH machine is going to exposes food scraps to suitable conditions and accelerate the normal composting process, shortening a long process that would otherwise take months to produce. We began by conceptualizing the dimensions of our COMPOTECH machine, then we have drown it and made a 3D simulation for it to ensure the functionality of all components. After finding our final destine for the machine we have collected the raw materials, which most of them was reused tools to minimize environmental impact and enhance sustainability. On ducted a series of tests to ensure the system operated within the desired temperature range of 100-120°C, optimizing the composting process. The COMPOTECH device demonstrated significant efficiency in composting food waste. After running multiple tests, the machine successfully converted 75% of the food remains into compost within 48 hours, meeting the targeted temperature range of 100-120°C. The temperature and humidity sensors ensured optimal conditions were maintained throughout the process, while the door press sensor provided an added layer of safety. our project makes a perfect compensation between recycling and food waste management. By utilizing our knowledge in sciences we have created this composting accelerator.

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