

STUDY, ANALYSIS AND DESIGNING OF A MACHINE TO UTILIZE THE DOMESTIC WASTE

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ABSTRACT

The study analysis and design of a particular type of waste utilization of domestic waste and garbage is kind of technique to utilize the domestic waste and furthermore converting it into a useful product. We are concerning about that study and analysis because of our personal interest about handling and utilization of all kind of domestic waste and garbage. Generally what kind of domestic waste we are disposing out as garbage, it is having various useful and nutrients content for agriculture as a fertilizer and also other kind of plantation and gardening purpose. By choosing or utilizing this technique we can. Easily convert the domestic garbage or waste successfully. Here we are having list domestic wastage and garbage that comprises, Organic kitchen waste vegetables, fruits wastage food, breads, egg, unused chapatti, food from hotels and parties etc. Along with the described type of wastage we disposing it off, can be recycled to meet hopefully and convenient source of fertilizer, that is having approximately same properties and content as such the other kind of standard fertilizer having. Normal adequate properties of standard fertilizers are nitrogen, phosphate, iron, calcium, potassium, sulfur, magnesium etc. these are the essential element for any kind of cultivation and production of fruits, vegetables, wheat, soya and other kind of agriculture.

Keyword: - Analysis of process of waste treatment, design of machine, process of converting domestic waste into useful product, Use of final product.

1. INTRODUCTION

There is a never-ending civil war with the wastage or garbage that directly dumped to the dumping ground. It is also a headache for every individual person or society that how to face this problem. Even our government is also trying to face out this problem to safely dispose the garbage. We are generally not aware of our health issues, that disposal of garbage openly and unsafely will cause of several dangerous disease even may kill us.

In many cases, the most efficient and cost effective way to manage waste is to not have to deal with it at all; therefore waste diversion and waste minimization are often a primary focus for most integrated waste management plans. Specific goals and targets are defined in a plan. In many jurisdictions, the ICI sector must follow prescribed federal, provincial and municipal Goals and targets as identified in acts, regulations, and bylaws.

Actually it is not a problem of any single person, or any single society. This is the problem of every individual person, society and country that how to reduce the domestic waste or how to handle the domestic waste safely and effect fully. Here I would like to share my idea and concept for diminishing the domestic waste and garbage

perfectly. The concept says about the utilizing the waste and converting that domestic waste to useful for agriculture as a fertilizer. The Detailed explanation of methodology and concept will be carrying out further.

The literature review focuses on surveying information pertaining to existing waste management methodologies, policies, and research relevant to the ICI sector in Nova Scotia. Information was sourced from peer-reviewed academic literature, grey literature, publicly available waste management plans, and through consultation with waste management professionals. Literature pertaining to C&D And municipal solid waste minimization, auditing and management were searched for through online journal databases, particularly Web of Science, and Science Direct. Legislation pertaining to waste management in Nova Scotia, and in Canada, was also researched using the Canlii database. Additional information was obtained from grey literature and textbooks pertaining to waste management topics.

After conducting preliminary research, prevalent references of select sources were identified and scanned for additional relevant articles. Research was also expanded to include literature pertaining to recycling, composting, education, and case studies. Input from a sub-committee comprised of various waste management professionals identified areas requiring further research. Wastewater, bio-solids, and hazardous wastes (as defined by the Canadian Transportation of Dangerous Goods Act) were not focused on in this literature review. Hazardous wastes are briefly discussed, but they typically require specialized management which lies outside of the scope of this literature review.

The literature review targets ICI sector organizations in Nova Scotia and thus information sources most directly related to the target audience were preferred. Newer sources were sourced; however, no cutoff date was implemented to restrict older material from being examined.

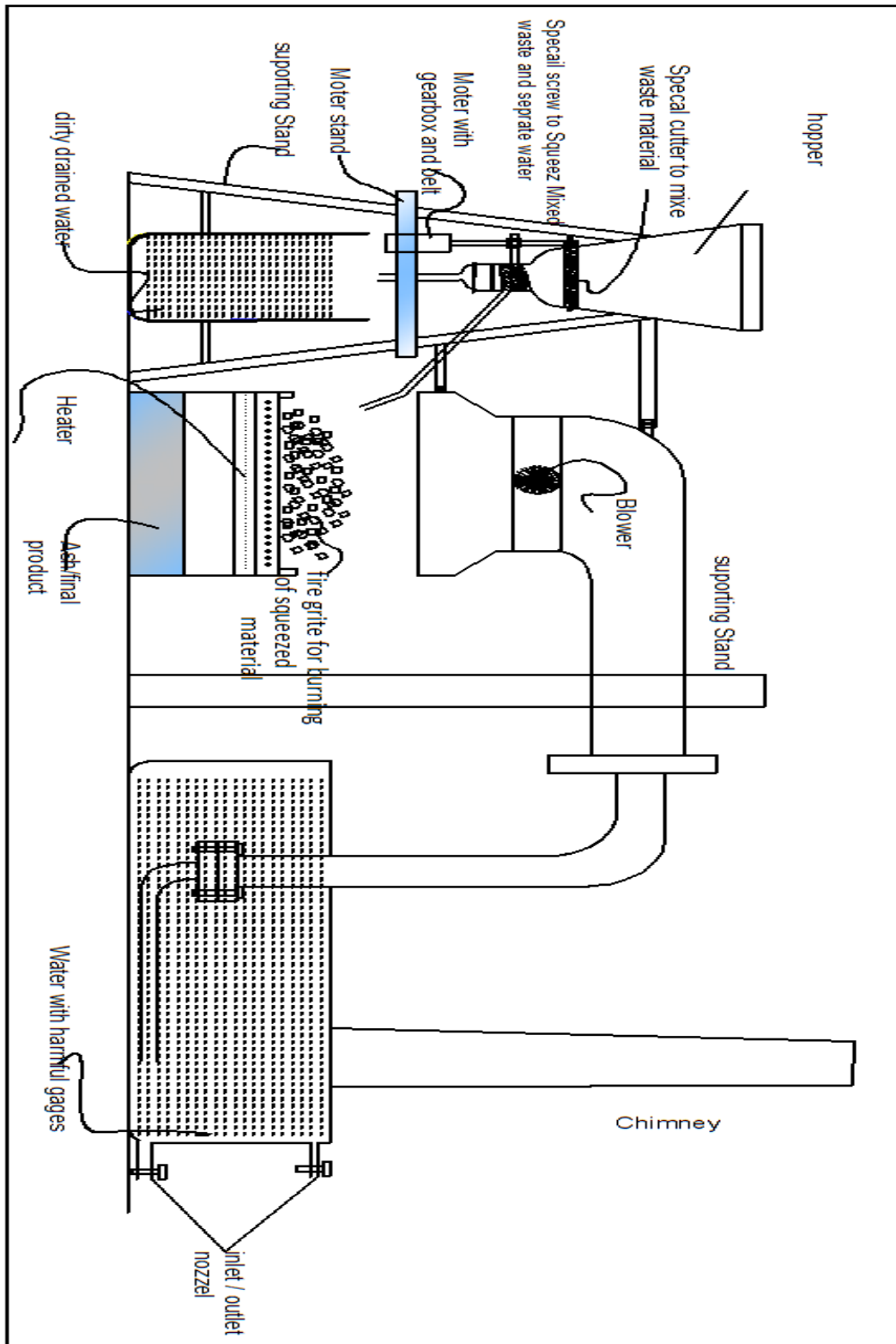
2. CONCEPT OF UTILIZATION OF DOMESTIC WASTE

The concept behind the fact of utilizing domestic waste is just a kind of process to convert the domestic waste into the agricultural use as a fertilizer. Via using some kind of special machine, and that special kind of machine is the bases of this project. Here I am utilizing the domestic waste as a raw material for the machine and further converting this raw material to useful for the machine. Afterwards the machine will convert the raw material into the dry and light wait product that can be burn directly by the fire grits.

2.1 Methodology

The term Methodology of the project belongs to the detailed description of the particular project. The mechanism of the machine is a kind of mixer machine which is having hardened steel sharper blades that can cut and mix all kind of domestic waste may be solid or liquid. Afterwards this uniform mixed waste goes to another functioning part of the machine; here we are having some kind screw mechanism and a special kind of screw which is rotated by a motor having a very high torque. This high torque helps to squeeze the mixed garbage. Now here comes the final raw product that we wanted to do, which is a dry squeezed waste which is directly combustible either on electric furnace or coal furnace.

Here we are trying to develop a kind of natural and economic process to convert the domestic waste into a useful product, that is why we avoid electric furnace and about to design a coal based furnace. This will also helpful to increase the quality of our product. Now what we got form the raw squeezed material converted into a kind of fertilizer. Experimentally it has been found that the fertilizer we are obtaining from this kind of process is having almost similar properties that fertilizer available in market. Along with this this kind of fertilizer having no chemical or any hazardous effects nor to the farmers not to the soil and environment. Detailed description of all parts of processing machinery and other subjective necessary equipment are going to be further discussed. Along with the machinery equipment and technical details all other information regarding the whole process are going to be discussed step by step.



Here we are having list of major component attached to the machine, most of them are readymade available in the market like motor, gearbox, belt, blower, heater, different -2 nozzles and other loose items. But along with this some parts we have to fabricate like water tank, drainage tank, chimney, hopper, motor stand, supporting stands, and other loose component. Those are as follows.

- 1 Hopper for waste material
- 2 Special cutter to mix waste material
- 3 Special screw to squish mixed material and separate water
- 4 Motor with gear box and belt
- 5 Motor stand
- 6 Supporting stand
- 7 Drain water container
- 8 Heater / furnace for burning the material
- 9 Fire grate
- 10 Blower for forced convection of smoke
- 11 Supporting stand
- 12 Water tank for mixing harmful gases
- 13 Inlet/outlet nozzles
- 14 Chimney

2.2 Background Review

As human being, we are extremely lucky to acquire a 3.8-billion-year storage of tremendous natural resource. However, with our current patterns of production and over consumption, there will be very little natural capital left by the end of 21st century (Hawken et al, 1999). Sustainable development entered the public view after the “Our Common Future” has been published by the World Commission on Environment and Development in 1987. Our Common Future has explained that our economic development should not just meeting the current needs, but also considering the living condition of future generations.

It also identified a series of environmental impacts and social challenges that require common concerns and actions. The challenges are involved in unsustainable production pattern, unsustainable consumption pattern and unsustainable disposal pattern. In this thesis, we are just at a right direction on addressing the human disposal pattern by focus our attention at municipal solid waste management and more closely on household waste separation, waste collection.

Using material and energy in an efficient way during production and consumption in our society and avoiding of depletion of non-renewable resources are the significant objectives within our industrial ecology research field. As the industrial ecology student, the mission of this thesis is to improve the material, energy and water efficiency by addressing municipal solid waste management; our focuses are particularly located on

3. SOME FACTS ABOUT DOMESTIC WASTE.

Waste stream	Typical waste producers	Types of solid waste
Residential community	Dwellers	Organic waste, paper, cardboard, plastic, glass, metal, timber, textile, ash, battery, light tube, WEEE
Commercial & service	Store, market, restaurant, office building, hotel	Similar to Dwellers
Utility	School & university, hospital, governmental office, prison, park, street, sight spot	Similar to Dwellers, plus dust, yard waste, stick, tree leaves
Industry	Factory, chemical plant, power station,	Sub-quality products, industrial waste material, discard machine, hazardous waste, timber,
Construction	Building & infrastructure project, building demolition	Concrete, metal, timber, dust, demolition waste,

3.1 Some facts about domestic waste.

Types of waste	Time needs to degenerate
Organic waste	7—21 days
Paper, cardboard	30 days—60 days

Cotton cloths	2—5 months
Wooleen material	12 months
Leather shoe	40—50 years
Aluminum cans	200—500 years

4. RECYCLING OF WASTE

The basic concept of this report states that, separation, grading and cutting, squishing and decomposing of all kind of the garbage are the operations of the particular machine which is going to be introduced here. After completing these all operations here comes the final product which is going to be used for agriculture purpose. These all process happens simultaneously at a time. The efficient running of the machine gives continuous production of a bio-fertilizer, which is further more retreated for the matching of components as per standards. The product comes from this process is called a kind of fertilizer which is having same properties like the other chemical and branded fertilizers. This bio-fertilizer has been tested and used at a very small level, and found very much interesting results. This kind of fertilizer is generally used to fertilize the fields before the ploughing of fields just to enhance the quality and nourishment of soil.

Nourishment of soil is very much important for every kind of crops and vegetables. The study based on some overviews and comments of designated officers and experts regarding the product, and gave some positive comments which are the key points to me for working further more on the product. Even they suggested me that successful run of this machine can replace various chemical fertilizers. Along with this the bio-fertilizer we are going to produce is having no side effect over any crops, pules, vegetables as well as soil. Here also we can contribute to pollution free nature. Furthermore this kind of fertilizer is less costly than the other kind of fertilizer.

5. DEVELOPMENT OF MACHINE

The development of this kind of particular machine is basically a works on a kind of juicer machine that directly convert any kind of fruits into a fresh juice. Here what we are requiring from that machine that the wastage of fruits is a raw product for our system. We are practicing a kind of experiment that tells us about the future. Now a days we are having a big challenge to dispose of the domestic waste and garbage, that has to be short out any how and any way. The kind of machine or device we are discussing here is a ultimately solution of all these problems regarding the domestic waste and garbage. Some example and experiments have been conducted over this project. And I am glade to announce to others that, the results of that experiment are positive. Furthermore I agree with the experts views that this idea and product needs more research and experiments before come to ground level.

5.1 FUTURE WORK

As we all know about the concept there is always some chances of betterment and research must go on for better results. Along with this project there is also a requirement of betterment. We will try to solve the problems, demerits and disadvantages associated with this method of converting domestic waste into a useful product in our future work. Along with this any modification and changes will be possibly made after consulting to expert of this particular field.

6.0 CONCLUSION

What is the biggest challenge of household waste separation in India? The thesis tried to answer this challenging question by investigating of literatures, survey and interview of all possible stakeholders around, our interpretation is that the laws and regulations published by the government, scientific environmental research and environmental education do not finally bring about a satisfied outcome, however, we have to look deeply into a number of psychological questions concern what do people think about, why do people think like this, how could we influence the thinking pattern of people, why people do not trust something, how to make people believe something, and how to make people enjoy something. I am pleased about that i have selected the right tool to deal these questions, design for sustainable behaviour. Product ecological design with considering human behaviour is a relatively young field, but this should become a part of behaviour changing process by understanding the needs and desires of the individual and whole world is a very powerful step towards a design solution which is desirable and acceptable for the individuals and at the same time effective for changing human behaviours and form a sustainable life later on. More than half of the world's population now lives in cities. And those cities consume over 70% of the world's energy.

Furthermore, our cities span less than 3% of the world's land area, but their ecological footprint extends far beyond urban boundaries to the forests, croplands, coal mines and watersheds that sustain their inhabitants. Without a doubt, this is exactly the true face of India's status nowadays, no country has ever experienced as large or as fast an increase in solid waste quantities that India is now facing. This growing urban waste has significant impact to the society, environment and economic development of India. On the other side, based on the statistics, it is expected that government funding for solid waste disposal industry will reach 800 billion. Municipal solid waste management sector is likely to see a business boom by government funding and favourable policies and its rapid growth is expected to continue over the next 10 years.

We are greatly confident on our final integrated design solution and believe this solution could really make a change to waste separation and recycling program in India, and if there is a room, we will definitely try to implement it in the real life.

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