

DESIGN & FABRICATION OF MACHINE FOR USED COVID MASK

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Abstract: The system involves an incinerator which uses electricity to heat the heating coil which in turn will lit up the Mask when dumped into the incinerator. The principle of heat being generated when current is passed through a resistance is employed in various household appliances like electric iron, water heaters. Although the disclosed device has the same principle of operation, here the heat produced is used to burn the Mask which is dumped into the incinerator. For this purpose, the most commonly used heating coil made up of chrome alloy is used. The Mask primarily surrounded by Cloths/3 LAYER PP will have an ignition temperature of around 250 to 300°C. When the Mask burns, it is reduced to ashes. The burnt ashes will be collected at the removable ash collector being rigidly tightened to the upper part of the incinerator. The incinerator is surrounded by a refractive material, primarily silicon-di-oxide. The outer most layer of the incinerator is made up of Bakelite for easy handling. The disclosed device is scalable in all aspects because the materials preferred for this investigation is easily reachable in the marketplace.

KEYWORD- Incinerator, incineration, Municipal waste management, Combustion

1. INTRODUCTION

Face mask disposal machine is used to dispose face mask, gloves, its protect us from spreading corona virus and land pollution

Small-scale incinerators are a useful technology to combust household waste, medical waste, slaughter waste, etc. instead of discharging it in a landfill. Furthermore, heat and energy may be recovered and it helps to avoid open burning of municipal waste which creates much more harmful emissions and endanger human health and environment. Costs for these incinerators range from very high to low, but it is often possible to construct the incinerators by instructed community members and with local materials such as bricks and steel. The waste should be separated previously in order to retain organics or recyclable material before incineration. The ashes can contain toxic substances and heavy metals and should therefore, if possible, be disposed of safely.

The Total conditions to do with public health attempt to make public opinion has taken about a well take to change in the country, not town areas in the getting well of conditions to do with public health facilities in the villages including the institutions like schools, hostels, being healthy middles and so on. The disposal of waste is becoming a serious hard question.

Both biodegradable and not biodegradable waste can make certain dangerous for being healthy, if exact and full removal is not done.

PROBLEM STATEMENT



That's millions of gloves and masks being used then thrown away every single day - just in India healthcare settings. So it's not difficult to see why conservationists around the world are sounding the alarm over where all these single-use products are ending up. Waterlogged masks, gloves, hand sanitizer bottles and other coronavirus waste are already being found on our seabed's and washed up on our beaches, joining the day-to-day detritus in our ocean ecosystems , It's just as much of a problem on the other side of the world. Back in February, Oceans Asia flagged the growing number of masks being discovered during its plastic pollution research. Masses of masks were found on the Islands. Considering the problem of pollution due mask we have designed this machine. Simple to use, low cost no costlier parts involved in this machine. So that all governments and private hospitals can buy them use them to eliminate the problem of pollution due to mask.

OBJECTIVE

Solution to above problem is to design and develop machine to reduce the pollution due waste masks. The objective is to make a fully automatic machine which will solve above problem. In the machine once we fed the mask etc other stuff it will burn them, destroy them.

1. Simple in construction
2. Less space required
3. Portable model
4. Low energy consumption
5. No need of skilled persons & simple in use with one button operated
6. Our design overcomes the previous system which was very in very high cost

SCOPE

- ❖ In this project we are making a portable box chamber with small door to insert the Masks inside the box
- ❖ With less fumes mask will incinerate
- ❖ Pipe for the fumes to exit them into atmosphere
- ❖ Sheet metal construction of portable box with ash collection tray at the bottom

LITERATURE REVIEW

It includes, the data of the published journal papers related to our projects. We have described the work of respective authorities published in their books. This papers are related to our project topic, which have help us to learn various process, methods and design factors used in respective work.

Converging all the ideas and methods used in journal papers, we refined the data required for our project work.

Sr.no	Author	Title	Conclusion
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1	Mayank Aggarwal Mongabay Series: Environment And Health	Pollution watchdog releases guidelines to handle COVID-19 biomedical waste	Article type literature: The communities need to dispose their used napkins, tissues, empty sanitizer bottles in a separate bag, to ensure the safety of municipal workers and rag pickers. It will also ensure that the cycle of garbage collection and plastic recycling Don't get affected. The government should also provide safety kits to municipal workers urgently and educate them on how to handle household waste during the outbreak, to help in halting the chain of transmission,
1.	Madheswaran Subramaniam ¹ , Anandha Moorthy Appusamy ² , Prakash Eswaran ³ , Karthik Shanmugavel ⁴ , Santhana Kumar Sadaiappan ⁵ , Maheshwaran Periyasamy ⁶	Design of Domestic Incinerator for the Safe Disposal of Menstrual Waste in the Rural Areas	Still there are many village women in India are suffer a lot because of this problem even some will omit schools during those menstruation days. And there is no proper solution for the disposal of those wastes. The improper disposal of menstrual waste in open environmental condition will affect the health of the surrounding population in a great manner
2.	Mohsen Ansari Shahid Sadoughi University of Medical Sciences and Health Services	Dynamic assessment of economic and environmental performance index and generation, composition, environmental and human health risks of hospital solid waste in developing countries	With the intention that, this proposed setup is to overcome the tremendous hazard of disposal of these wastes. As a responsible citizen of our country is to maintain the environment neatly, taking it in mind the model has been designed and also ensures the performance of it.
3.	Khushal Nande ¹ , Omkar Karande ² , Simesh Marodkar ³ , Akshay Bhalerao ⁴ , Dr. P. S. Kalos ⁵	Agricultural Incinerator Based on Solar Power	After the completion of this project we came to the conclusion that for completing any project successfully we need have a proper planning of everything starting from design to its functionality

4.	Shivani1, Syed Khursheed Ahmad2, Saurabh Kumar Garg3, Pintu Kumar	HOSPITAL WASTE MANAGEMENT-A CASE STUDY	The focus on this study is on the practices related to the hospital waste collection, segregation, transfer and transportation, and final disposal of the waste as per the Biomedical Waste (Management and Handling) Rules, 1998 in our country especially for the metropolitan cities. Based on the results the wastes are collected in different bags which are colour coded and these bags sent to the common treatment facilities for their treatment and disposal. The treatment facilities consists the equipments like autoclaves, shredders and incinerators etc.

Literature Summary:

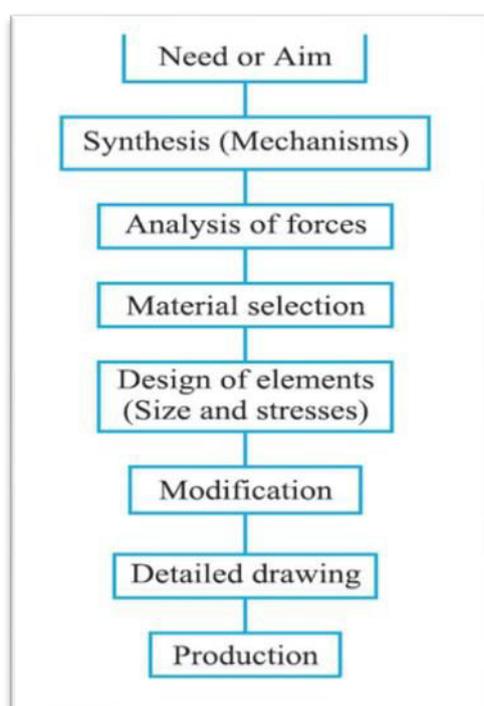
Many researchers have discussed the Indian scenario of how hospitals in India deal with the hospital waste and how they manage them, so many have given their point and ideas to execute hospital waste management and what are the problems are faced during execution.

Praveen Mathur, Sangeeta Patan (2017) in this paper they discuss about mainly on handling and transportation and disposal of biomedical waste and role of hospital in managing to do in better way by just by separating things at initial level.

Praveen mathur, Sangeetapatan and Anand S. Shobhawa have discussed in this paper about how biomedical waste cause serious health issue in the society and why should disposal of waste should be done in better way.

Ranju Rajan (2017) have discussed about biomedical waste management in ayurvedic hospital and current used practice with their merits and demerits, they have divided in biomedical waste into different types and discussed why hospital hygiene is important for all of us.

METHODOLOGY



Following considerations were taken into account

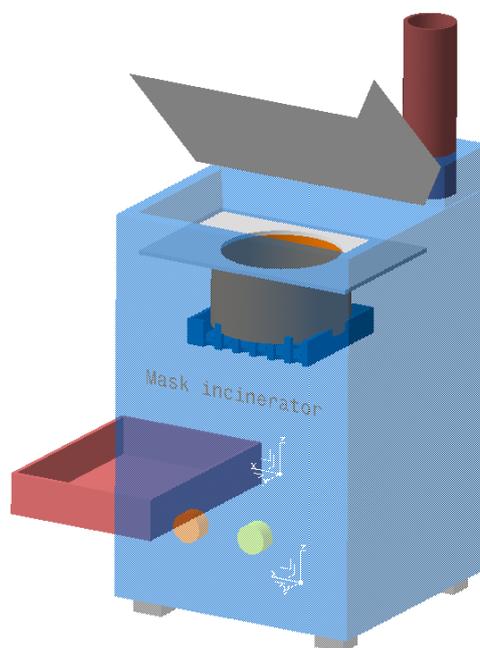
1. The device should be suitable for local manufacturing capabilities.
2. The attachment should employ low-cost materials and manufacturing methods.
3. It should be accessible and affordable by low-income groups, and should fulfil their basic need for mechanical power
4. It should be simple to manufacture, operate, maintain and repair.

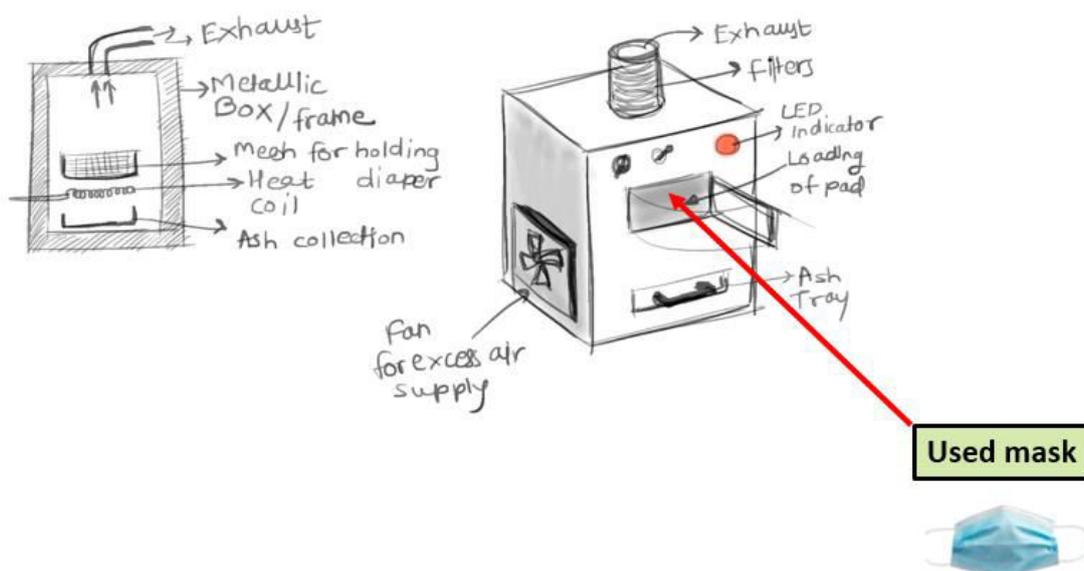
5. It should employ locally available materials and skills. Standard steel pieces such as steel plates, iron rods, angle iron, and flat stock that are locally available should be used. Standard tools used in machine shop such as hack saw, files, punches, taps & dies; medium duty welder; drill press; small lathe and milling machine should be adequate to fabricate the parts needed for the machine.
6. Excessive weight should be avoided, as durability is a prime consideration

The innovative low cost technology incinerator design has been proposed for proper disposal of mask. This design is uncomplicated, secure and cost effective. The incinerator incinerates the wastes like soiled fabric, cotton Waste, paper towels etc. The waste gets rehabilitated into ash and other non-hazardous dregs. The incinerator is consumer responsive and manually operated.

Nichrome heating coil is used in this project to incarnate the mask gloves.

WORKING



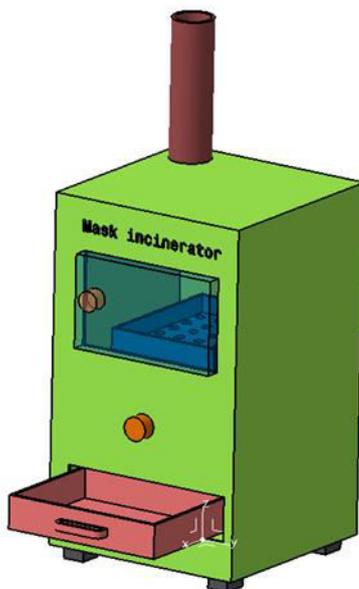


Working:

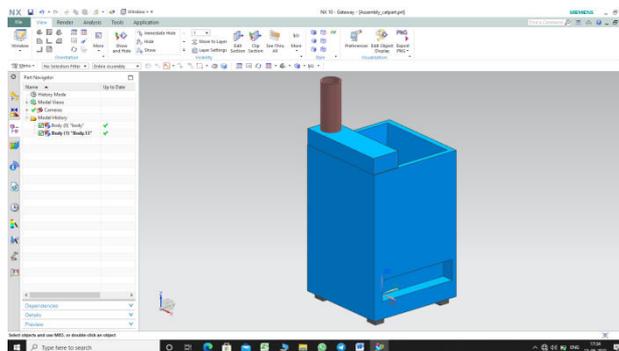
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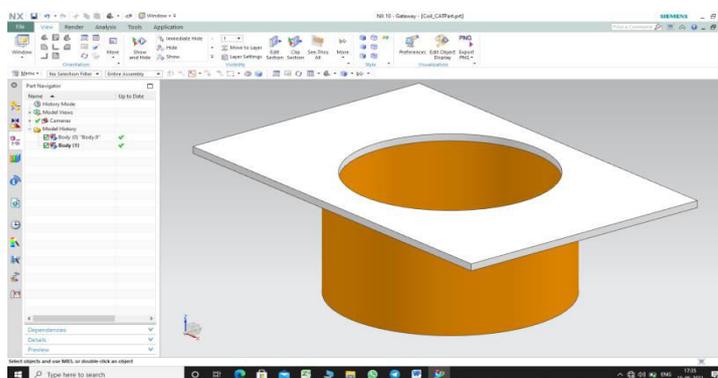
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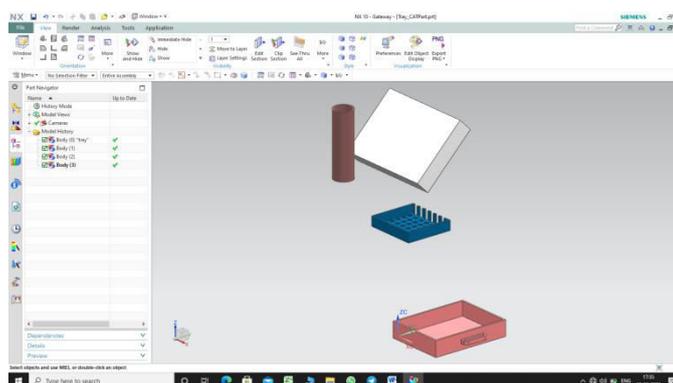
CAD DESIGN



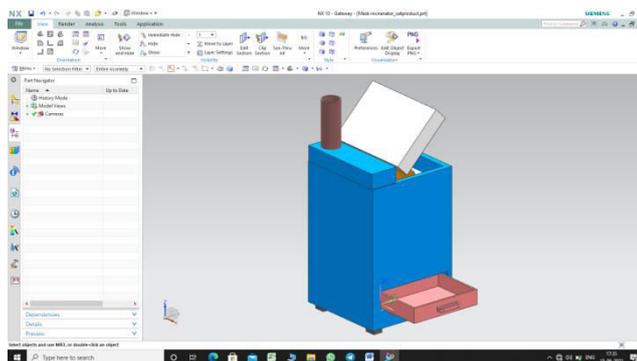
GATE WAY ASSEMBLY



COIL



ASH TRAY & CHIMNEY



FULL ASSEMBLY

CONCLUSION

After design and fabrication of incineration unit we all contributors of this project are of the opinion that this portable incinerator unit is useful for banks, school, small workshop & such places other offices where public used to visit. In order to control covid 19 this small effort and we feel that taken consideration cost and size of portable unit is affordable for one and all, purpose of this project to stop spreading of corona shall be achieved

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