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Waste Lubrication Oil Gas Stove

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ABSTRACT - The project focuses on the design and development of a Waste Lubrication Oil Burner, which utilizes waste engine oil as a fuel source for a stove, offering a sustainable and economical alternative to traditional wood-burning stoves. The burner system operates by supplying excess air through a small 12V blower, ensuring complete combustion of the waste oil. This method reduces smoke emissions and harmful pollutants, providing significant health benefits to users compared to conventional wood-burning stoves.

The proposed burner is particularly beneficial for low-income communities, where the cost of fuel is a burden. Waste engine oil, which is often discarded and poses environmental hazards, can be repurposed as a nearly free fuel source, adding value to an otherwise harmful waste product. The system is designed to be compact, transportable, and cost-effective, making it accessible to a wide range of users. Additionally, the burner is easy to maintain, with a simple vessel cleaning process that promotes its longevity and safe use.

Economically, this solution reduces fuel expenses for users while also addressing the issue of waste oil disposal. Environmentally, the burner minimizes deforestation by reducing the dependence on wood and ensures a cleaner burn with zero smoke emissions. Overall, the Waste Lubrication Oil Burner represents a promising innovation for sustainable energy, offering practical benefits to the economy, the environment, and the health of its users.

***KEY WORDS*:** Centrifugal fan, Nozzle, Coupling, Adaptor, Mild steel, Shaft-MS, Spray can, Blower, Blower mountings.

1.INTRODUCTION

The Waste Lubrication Oil Burner is an innovative and sustainable solution designed to provide an affordable and eco-friendly alternative to traditional wood-burning stoves. It utilizes waste engine oil, a readily available and often discarded resource, as a fuel source, significantly reducing reliance on wood. This not only offers a cost-effective option for low income communities but also adds value to what is otherwise considered a waste product. Waste Lubrication Oil Burner offers substantial savings. Waste engine oil is almost free of cost, and the compact, transportable design of the system makes it accessible and convenient for widespread use. Its low production cost ensures affordability.

2. BODY OF PAPER :-

Aim of Project : The "Waste Lubrication Oil Burner" project aims to develop a sustainable and economical solution for low-income households by utilizing waste engine oil as an alternative fuel source.

Scope of Project : The burner system will be compact, portable, and designed with affordability in mind, making it accessible to poor communities. Its simple construction and use of widely available materials ensure easy manufacturing and maintenance. Further more, the burner offers substantial health benefits by producing zero smoke, reducing the harmful respiratory effects typically associated with wood burning.

Objective of Project :

- Utilize Waste Engine Oil.
- Promote Environmental Sustainability
- Improve Health Outcomes:
- Enhance Affordability and Accessibility:
- Ensure Zero Smoke and Clean Operation
- Fabricate a Durable and Efficient Model

Problem Statement :

The traditional use of wood as fuel for cooking and heating poses significant challenges for low-income households, particularly in rural areas. Wood burning leads to deforestation, increased carbon emissions, and severe health risks due to smoke inhalation, contributing to respiratory diseases. Additionally, the rising cost and scarcity of wood further strain the resources of poor communities. An alternative, low-cost, and environmentally friendly fuel source is urgently needed to alleviate these issues.

Waste engine oil, which is often discarded or improperly disposed of, represents a largely untapped resource. If properly utilized, it could serve as an economical and accessible energy source for disadvantaged populations. The "Waste Lubrication Oil Burner" project addresses this problem by developing a compact, transportable, and low-cost burner system that uses waste oil as fuel. By supplying excess air through a small 12V blower, the system achieves complete combustion, producing zero smoke and reducing harmful emissions. This innovation not only provides a sustainable alternative to wood but also adds value to waste oil, which is typically available at little to no cost. The project offers significant health, economic, and environmental benefits, making it an ideal solution for low-income households seeking cleaner, more affordable energy options.

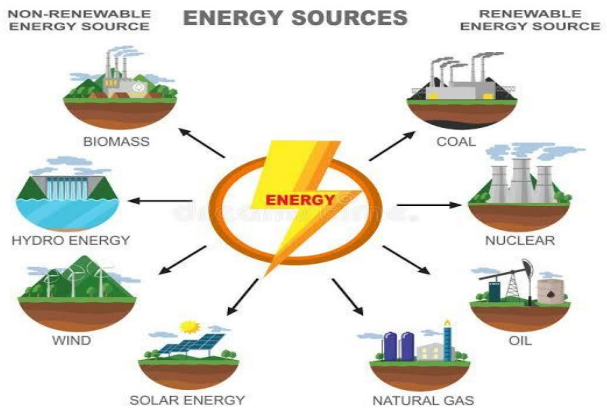

Fig -1: Energy Sources

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The burner operates using a 12V blower, which supplies the excess air necessary for efficient combustion. This small blower ensures that the waste oil burns cleanly, producing zero smoke and significantly reducing harmful emissions compared to wood-burning stoves. The absence of smoke provides major health benefits for users, especially in rural or underprivileged areas where indoor air pollution from wood stoves is a leading cause of respiratory issues.

METHODOLOGY : The development of the Waste Lubrication Oil Burner involves several key stages,
from design to fabrication, ensuring that the burner is practical, efficient, and environmentally friendly. The following steps outline the working methodology.

Design and Conceptualization : The initial phase involves creating a design using Solid Works, focusing on a compact, transportable structure. The burner design is based on the principle of burning waste lubrication oil efficiently using excess air supplied by a small 12V blower. The design emphasizes minimal smoke emission, easy cleaning, and ease of operation for low-income households

Material Selection: Materials are chosen for their durability and cost-effectiveness. The main body of the burner is constructed from metal that can withstand high temperatures. A vessel is integrated to hold and burn the waste oil, with a focus on easy removal for cleaning and maintenance. The 12V blower is selected to ensure a steady air supply without consuming too much power.

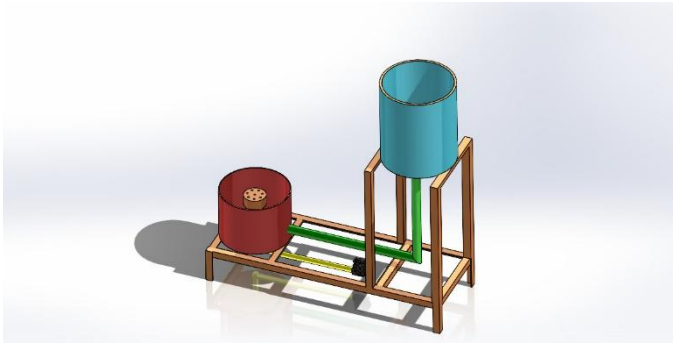
Fabrication: The next step involves fabricating the burner according to the Solid Works design. Key compo -nents include the vessel for holding the oil, the air supply system, and the combustion chamber.

Assembly and Testing: After fabrication, all components are assembled. The system is tested using waste engine oil to ensure optimal combustion and minimal smoke. Performance metrics such as heat output, fuel consumption, and air supply are measured to refine the design.

Evaluation and Optimization: Post-testing, the burner is optimized for efficiency, focusing on fuel economy and environmental benefits. Health advantages over traditional wood-burning stoves are evaluated, ensuring the system provides a cleaner and healthier cooking solution

Model of your project

- The entire model has been designed with the help of designing software solid works.
- With the help of colour feature the colours are given to the entire model.



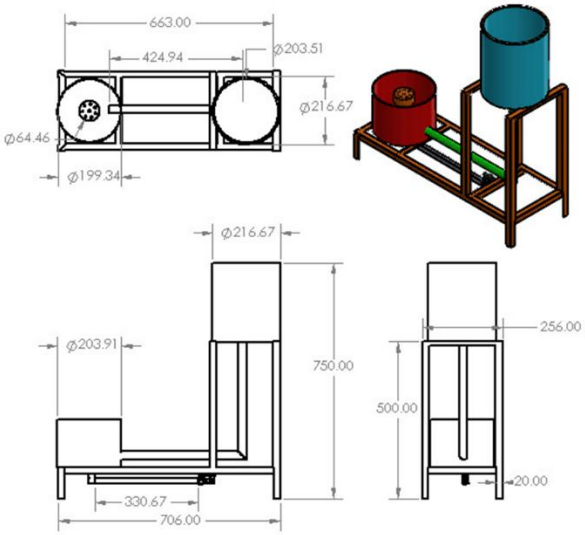
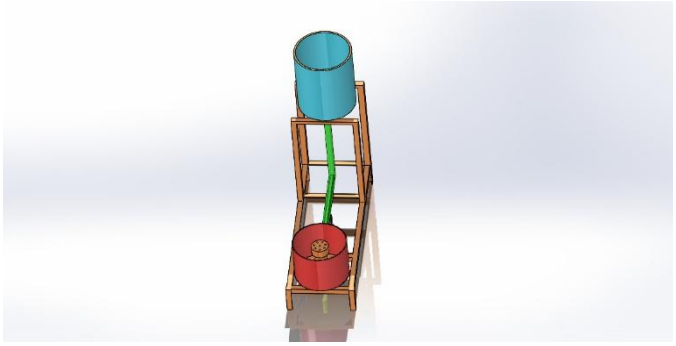


Figure drafting



isometric view

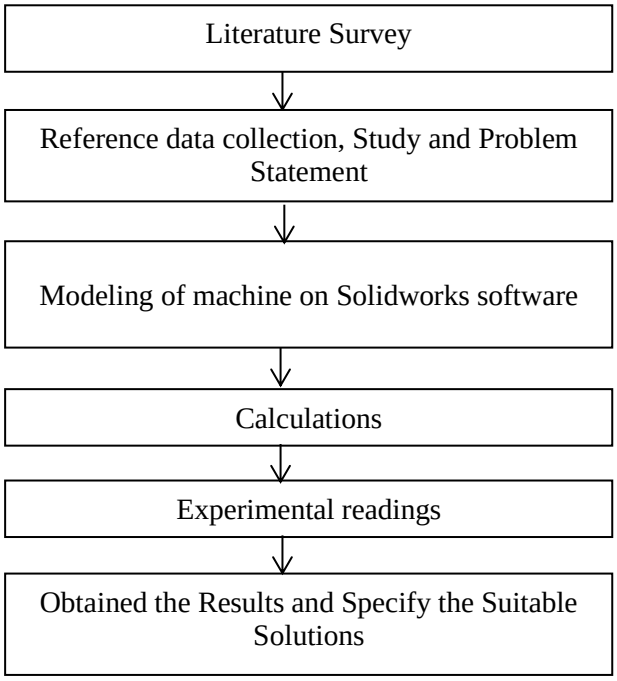


Fig-2: Step of Execution

Future work

The future scope of the **Waste Lubrication Oil gas stove** technology is promising, with significant potential for further development and application. Advancements in burner design can enhance combustion efficiency and reduce emissions even further, paving the way for broader acceptance in both residential and industrial sectors. Additionally, integrating smart technology for automated control of air supply and fuel injection can optimize performance and ease of use.

There is also potential for scaling this technology to large-scale applications, such as in community heating systems or industrial processes that utilize waste oils as an energy source.

Furthermore, research into alternative waste oils and biofuels could expand the range of inputs, increasing sustainability and resource utilization. Collaboration with governmental and non-governmental organizations can facilitate awareness and adoption, particularly in developing regions where energy access is crucial. Overall, the waste oil burner stands as a key component in the transition towards sustainable energy solutions

3. CONCLUSIONS -

Waste oil burner provides an economical and environmentally friendly solution, with waste oil often available at little to no cost. Its efficient design allows for higher thermal output and reduced energy loss compared to both kerosene and wood-burning options.

The waste lubrication oil burner is particularly beneficial for low-income communities, offering a practical solution to energy needs without the financial burden of purchasing conventional fuels.

Moreover, wood-burning stoves, while a common heating source in rural areas, contribute to deforestation and generate significant smoke, leading to health risks such as respiratory issues. In contrast, the waste oil burner provides an economical and environmentally friendly solution, with waste oil often available at little to no cost. Its efficient design allows for higher thermal output and reduced energy loss compared to both kerosene and wood-burning options.

The waste lubrication oil burner is particularly beneficial for low-income communities, offering a practical solution to energy needs without the financial burden of purchasing conventional fuels. Overall, this innovative approach to energy generation not only enhances economic viability but also supports environmental conservation efforts. By adopting waste oil burners, we can create a more sustainable and healthier energy landscape.

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