



**DESIGN AND FABRICATION
OF
WOOD GASIFIED STOVE**



A PROJECT REPORT

submitted by

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In partial fulfillment for the award of the degree

of

BACHELOR OF ENGINEERING

in

MECHANICAL ENGINEERING

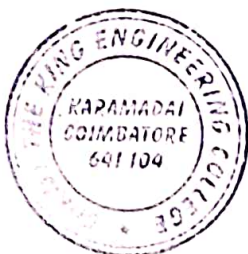
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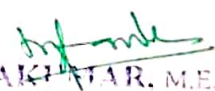
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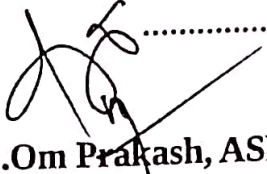
Certified that this project work titled "WOOD GASIFIED STOVE" is the bonafide work of MONISH A M – (710420114017) NAVEEN KUMAR M – (710420114018) ABISHEK A – (710420114301) ELUMALAI G – (710420114309) , who carried out the project work under my supervision.

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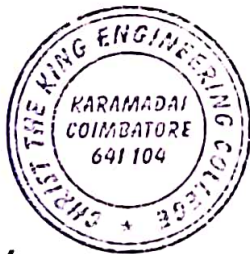
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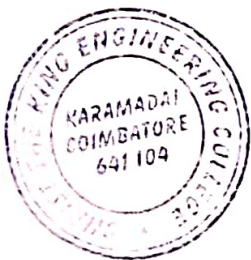
ABSTRACT


The wood gasified stove is an innovative and efficient cooking appliance that utilizes the process of wood gasification to generate heat for cooking while minimizing environmental impact. This abstract provides a concise overview of the wood gasified stove, highlighting its key features, benefits, and potential applications.

Wood gasification is a thermochemical process in which wood or biomass is heated in a controlled environment to produce a gaseous fuel known as wood gas or syngas. The wood gasified stove incorporates this gasification principle, allowing for the conversion of wood into a clean-burning fuel for cooking purposes. The stove typically consists of a combustion chamber, a gasification zone, and a cooking surface.

The gasification process within the stove involves the partial combustion of wood, producing combustible gases such as carbon monoxide, hydrogen, and methane. These gases are then channeled through a series of pipes and vents to the combustion chamber, where they mix with air and undergo further combustion. This secondary combustion process ensures efficient utilization of the generated gases, resulting in a clean and intense flame that can be utilized for cooking.

The wood gasified stove offers several advantages over traditional cooking methods. Firstly, it enables the use of renewable and widely available biomass resources such as wood, agricultural waste, or forestry residues as fuel, reducing reliance on fossil fuels. Secondly, the gasification process significantly reduces harmful emissions, such as smoke, particulate matter, and greenhouse gases, contributing to improved indoor and outdoor air quality.




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CONCLUSION

The conclusion, results, and discussions related to wood gasification stoves can be summarized as follows:

Efficiency and Performance: Wood gasification stoves have been found to achieve higher thermal efficiencies compared to traditional biomass burning methods. The gasification process allows for more complete combustion, resulting in improved energy conversion and reduced fuel consumption.

Emissions and Environmental Impact: Wood gasification stoves have shown potential in reducing emissions of particulate matter, carbon monoxide, and other pollutants. Proper operation and maintenance are crucial to ensuring minimal emissions and maximizing the environmental benefits of wood gasification.

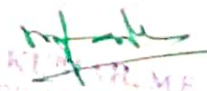
Fuel Flexibility and Adaptability: Wood gasification stoves have demonstrated the ability to utilize various biomass feedstocks, expanding the range of available fuel sources. This flexibility enhances their applicability in different regions and promotes sustainable use of biomass resources.

User Perspectives and Adoption: User acceptance and adoption of wood gasification stoves depend on factors such as fuel availability, affordability, ease of use, and user education. Awareness programs and training initiatives play a vital role in promoting successful implementation and operation of these stoves.

Limitations and Challenges: Wood gasification stoves face challenges related to fuel quality, fuel preparation, stove complexity, maintenance, and initial costs. Addressing these limitations through technological advancements, improved fuel processing methods, and user support can enhance the overall performance and usability of wood gasification stoves.

In conclusion, wood gasification stoves offer a promising solution for efficient and cleaner biomass utilization. They have the potential to contribute to energy independence, environmental sustainability, and improved indoor air quality. However, further research and development are needed to optimize stove designs, address operational challenges, and ensure wider adoption of wood gasification technology.



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