**Experimental Investigation On Smokeless Cooking Stove With Blower Attachment Using Small Wooden Pieces As Its Fuel**

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|  | A B S T R A C T  The present day cooking is a challenging process using the conventional gas stove due tothe increasing gas cylinder cost thereby focusing on other options for cooking which willsave cost. This project utilizes a stove having conical cup shape vessel and uses smallwooden pieces as its fuel. The inner shell of the stove is made up of cast iron and the outershell is made up of mild steel with proper vent holes at the bottom through which air isblown using a blower operating on D.C power supply and producing an output of 4.5Ampswith a maximum power consumption of 1.5units /month leading to very minimumoperating costs. Waste wooden pieces are used as source of fuel for burning which also areobtained as waste materials in carpentry workshops, thereby eliminating the need of costlyfuel like gas. The cooking time is very fast and efficient. The process does not producesmoke and is environment friendly ensuring complete retention of good taste for the cookedfood. The wood charcoal obtained during the process can also be utilized as filter elementin water filters hence the byproducts of the burnt wood is also effectively used. This stoveis portable and can be carried anywhere easily. We can get power even from car adapter or12V battery and food can be cooked on the spot easily. This project is useful whiletraveling remote areas such as hill stations and tourist places etc. This project attempts todevelop a low cost cooking stove with a cost effective method of operation and thus havingenormous scope for the benefit of our society. |

Keywords: Key Words: smokeless cooking, low cost cooking, wooden fuel, environment friendlycooking.

In contrast to LPG, this portable wood stove offers a cost-effective cooking solution while providing no health risks. It's a powerful wood burner that may be used for cooking while camping, hiking, hunting, emergency preparedness, or any other outdoor recreational activity. It's also extensively utilized in areas with no or limited electricity (tribal and deep rural areas), where it's an environmentally friendly and cost-effective cooking option.

**Table 1** Comparing the woodstove with normal and rocket stove

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| **S.NO.** | **PARAMETER** | **NORMAL STOVE** | **ROCKET STOVE** | **WOOD STOVE** |
| 1 | Fuel Type | LPG or Wood | Wood Logs | Wood Logs |
| 2 | Operation | Gas Fired or Natural Draft air | Natural Draft Air | Turbocharged Air |
| 3 | Feeding System | Manual | Manual | Manual |
| 4 | Weight | < 10 kg | < 10 kg | < 10 kg |
| 5 | Accessibility | Not Portable | Portable | Portable |
| 6 | Smoke  Treatment | Heavy smoke | No smoke  12% max ash | No smoke  1% max ash |
| 7 | Cost Saving | Not Applicable | Not Applicable | 80% compared to  LPG |



Fig 1 Wood Stove

# Nomenclature

LPG -Liquefied petroleum gas

***1.BAMBOO WOOD***

Bamboos are a diverse group of [evergreen](https://en.wikipedia.org/wiki/Evergreen) [perennial](https://en.wikipedia.org/wiki/Perennial_plant) [flowering plants](https://en.wikipedia.org/wiki/Flowering_plant) in the [subfamily](https://en.wikipedia.org/wiki/Subfamily_(biology)) Bambusoideae of the [grass](https://en.wikipedia.org/wiki/Grass) family [Poaceae](https://en.wikipedia.org/wiki/Poaceae). [Giant bamboos](https://en.wikipedia.org/wiki/Giant_bamboo) are the largest members of the grass family. The origin of the word "bamboo" is uncertain, but it probably comes from the [Dutch](https://en.wikipedia.org/wiki/Dutch_language) or [Portuguese](https://en.wikipedia.org/wiki/Portuguese_language) language, which originally borrowed it from [Malay](https://en.wikipedia.org/wiki/Malay_language) or [Kannada](https://en.wikipedia.org/wiki/Kannada_language).In bamboo, as in other grasses, the internodal regions of the [stem](https://en.wikipedia.org/wiki/Plant_stem) are usually hollow and the [vascular bundles](https://en.wikipedia.org/wiki/Vascular_bundle) in the cross-section are scattered throughout the stem instead of in a cylindrical arrangement. The [dicotyledonous](https://en.wikipedia.org/wiki/Dicotyledon) [woody](https://en.wikipedia.org/wiki/Woody_plant) [xylem](https://en.wikipedia.org/wiki/Xylem) is also absent. The absence of [secondary growth](https://en.wikipedia.org/wiki/Secondary_growth) wood causes the stems of [monocots](https://en.wikipedia.org/wiki/Monocotyledon), including the [palms](https://en.wikipedia.org/wiki/Arecaceae) and large bamboos, to be columnar rather than tapering.

Bamboos include some of the fastest-growing plants in the world, due to a unique [rhizome](https://en.wikipedia.org/wiki/Rhizome)-dependent system. Certain species of bamboo can grow 91 centimetres (36 inches) within a 24-hour period, at a rate of almost 40 millimetres (1+1⁄2 in) an hour (equivalent to 1 mm every 90 seconds).This rapid growth and tolerance for [marginal land](https://en.wikipedia.org/wiki/Marginal_land), make bamboo a good candidate for [afforestation](https://en.wikipedia.org/wiki/Afforestation), [carbon sequestration](https://en.wikipedia.org/wiki/Carbon_sequestration) and [climate change mitigation](https://en.wikipedia.org/wiki/Climate_change_mitigation).

Bamboo is versatile and has notable economic and cultural significance in [South Asia](https://en.wikipedia.org/wiki/South_Asia), [Southeast Asia](https://en.wikipedia.org/wiki/Southeast_Asia), and [East Asia](https://en.wikipedia.org/wiki/East_Asia), being used for [building materials](https://en.wikipedia.org/wiki/Building_material), as a food source, and as a raw product, and depicted often in arts, such as in [bamboo paintings](https://en.wikipedia.org/wiki/Bamboo_painting) and [bamboo working](https://en.wikipedia.org/wiki/Bambooworking). Bamboo, like [wood](https://en.wikipedia.org/wiki/Wood), is a natural [composite material](https://en.wikipedia.org/wiki/Composite_material) with a high strength-to-weight ratio useful for structures.

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| C:\Users\Administrator\Desktop\vkk\pamboo.jpg | C:\Users\Administrator\Desktop\vkk\800px-Bamboo_Feb09.jpg |
| C:\Users\Administrator\Desktop\vkk\Bamboo_Forest,_Arashiyama,_Kyoto,_Japan.jpg | C:\Users\Administrator\Desktop\vkk\11.jpg |
| Bamboo's strength-to-weight ratio is similar to [timber](https://en.wikipedia.org/wiki/Timber), and its strength is generally similar to a strong [softwood](https://en.wikipedia.org/wiki/Softwood) or [hardwood](https://en.wikipedia.org/wiki/Hardwood) timber. | |

* 1. Tables

Table 2 Lowest access to electricity - Countries and their population

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| --- | --- | --- |
| **S.NO.** | **COUNTRIES** | **% OF THE POPULATION HAVING ACCESS TO ELECTRICITY** |
| 1 | South Sudan | 5.1 % of the population |
| 2 | Chad | 6.4 % of the population |
| 3 | Burundi | 6.5 % of the population |
| 4 | Malawi | 9.8 % of the population |
| 5 | Liberia | 9.8 % of the population |
| 6 | Central African Republic | 10.8 % of the population |
| 7 | Burkina Faso | 13.1 % of the population |
| 8 | Sierra Leone | 14.2 % of the population |
| 9 | Niger | 14.4% of the population |
| 10 | Tanzania | 15.3 % of the population |

1.2Construction of references

From the beginning of civilization wood and biomass are commonly used for cooking. It is observed that over 2 billion people coo badly on inefficient wood stoves that waste wood and subsequently cause health problems and it does not end there, because of the improper use the forest is destroyed. Electricity, gas or liquid fuels are preferred for cooking, but the usage of these depends on the infrastructure and it is not available in all places.

Despite efforts to electrify rural areas, several countries around the world still lack broad access to electricity. Furthermore, many people who have access to electricity must rely on inconsistent and inadequate power. According to statistics, 67 per cent of the developing world still lacks access to power in their homes. Access to electricity has numerous advantages, including a variety of social, economic, and technological advancements.

A French consulting business has launched an energy facility programme in Africa that aims to speed up the construction of rural infrastructure for distributing electricity to the continent's most remote places. Another African project has been a push to install renewable energy systems, such as wind, solar, and geothermal generators, to power rural areas. Table 2 shows the countries that have the least access to electricity and their populations.

**RESULTS**

Many different Asian cuisines frequently use bamboo shoots as an ingredient. They contain a wealth of nutrients and could help you lose weight more quickly, have better digestion, and have lower cholesterol levels. In future, to implement the larger scale food processing its more useful save the lpg and electricity and also reduce cost.

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