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Technical Evaluation of Utilization of Different Agriculture Waste for Making Bio-Fuel Using Anthracite Coal

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Abstract –

The constant shortage of fuel attracted the attention of the various academics and governments to the issues of energy crisis and the use of biofuels. The twentieth century came with the attention of the people towards the use of biofuels. Some of the main reasons for the people shifting their interest to biofuels were the rising prices of oil, emission of the greenhouse gases and interest like rural development. Biomass fuels are organic materials produced in renewable manner.Two categories of biomass fuels, Woody fuels and Animalwastes. Cellulosic biomass may be derived from agricultural sources, such as crop residues and perennial energy grasses, as well as forest sources, such as forest residues and woody biomass. Crop residues mainly include corn stover, wheat straw, and rice straw. Biomass provides a clean, renewable energy source that could dramatically improve our environment, economy and energy security. Biomass energy generates far less air emissionsthan fossil fuels, reduces the amount of waste sent to landfills and decreases our reliance on foreign oil.

In this experiment sets of agricultural waste (Maize, wheat, Groundnut cover , millet and rice) , anthracite coal and binder are taken with different proportion like (80%, 20%) , (60% , 40%) , (40% , 60%) , (20% , 80%) and tested its parameters like calorific value , Moisture contents , ash content , density and total solids . after that to check impacts on environment proximate analysis is done the parameters are tested like volatile matter , fixed carbon , Ash content and moisture content, and this all bio –pellets are fall in GPCB norms.

The final results is the set containts (80% , 20% Groundnut cover husk) get higher calorific value and lower ash contents than other sets so this set is recommend for industriesfor bio-fuel to enhance the capacity.

1. INTRODUCTION

Biofuels in the solid form has been in use ever since man discovered fire. Wood was the first form of biofuel that was used even by the ancient people for cooking and heating. With the discovery of electricity, man discovered another way of utilizing the biofuel. Biofuel had been used since a very long time for the production of electricity.

This form of fuel was discovered even before the discovery of the fossil fuels, but with the exploration of the fossil fuel like gas, coal, and oil the production and use of biofuel suffered a severe impact. With the advantages placed by the fossil fuels they gained a lot of popularity especially in the developed countries. Liquid biofuel have been used in the automotive industry since its inception.

The twentieth century came with the attention of the people towards the use of biofuels. Some of the main reasons for the people shifting their interest to biofuels were the rising prices of oil, emission of the greenhouse gases and interest like rural development.

2. Need of Study

To make bio- fuel mixing with different proportion of different agricultural waste with anthracite coal.

To find out calorific value , ash contents , density , total solids and moisture contents.

To do proximate analysis and Comparison with conventional fuel.

4. METHODOLOGY

- Study Conceptualization.
- Literature Review.
- Making Bio-fuels mixing with proportions of anthresite coal.
- To determine Proximate Analysis of Bio-Fuel having high C.V.
- comparison & Conclusion

5. COMPARISON WITH CONVENTIONAL FUELS

Sr. No	Fuel	C.V (KJ/kg)	Density (gm/cm3)	Total solids (%)	Moisture content (%)	Ash content (%)
1	E-1 20% (G.C) + 80% (A.C)	19655.55	1.14	97.7	2.3	7.77
2	C-1 20% (R.H) + 80% (A.C)	18899.53	1.2	98.53	1.47	6.66
3	A-1 20% (W.H) + 80%(A.C)	18479.5	1.52	93.31	6.69	7.69
4	B-1 20% (Maize) + 80% (A.C)	17639.56	1.26	89.29	10.70	4.65
5	D-1 20%(Millet) + 80%(A.C)	16883.53	1.31	96.66	3.34	8.33
6	Anthracite coal	24000	1.4	97.50	2.5	8
7	Lignite coal	17000	1.29	63.2	34.8	6.2
8	Imported Indonation coal	22500	1.20	66.1	6.99	13.9

6. CONCLUSIONS

- Using Agricultural waste to make Bio- Fuel results are successfully achieved , so the pellets can effectively increase its calorific Value.
- Tapioca starch powder as a binder effectively work to increase its calorific value and good binding.
- The Set of 80% Agricultural waste and 20% Anthrecite coal amonf all sets are best for Good Calorific value.
- Agricultural waste Calorific value is around 3000 cal/kg and after mixing with coal and binder its increases upto 5600 cal/kg , its Shows that this Procedure increase its calorific value by 75%.
- This Bio-fuel enhanced performance of normal Bio-fuel in terms of increase its calorific value and low ash contents.
- Comparitive results of bio-fuel with other fuel shows that this bio-fuel is better than other fuels in terms of Calorific value , density , moisture contents
- Operation and Maintance cost is higher than normal plants because of anthecite coal cost is high but it can increase efficiency

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9. FUTURE SCOPE

- Improvement in present status may lead to new research. Describe concept of Agriculture waste a non convention fuel in present work may give new idea for further research in nonconventional fuel side.
- Change in parameter of briquette making techniques to see performance of boiler furnace.