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Sustainable organic biomass by using dying biological sludge and coir pith

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ABSTRACT:

Currently, fossil fuels such as oil, coal and natural gas represent the prime energy sources in the world. However ,it is anticipated that these sources of energy will deplete within the next 40-50 years. moreover, there are expected environmental damages such as the global warming, acid rain and urban smog due to the production greenhouse gases. The project focuses a fairly exhaustive review of contemporary literature on the subject into a comprehensive, polished definition of sustainable development. Terminology in the field of sustainable development is becoming progressively more important, because the number of terms continues to enhance along with the rapid increase in awareness of the importance of sustainability. The significance of this project is to concentrate on thermal application of biomass briquette at various industrial purposes. Reduction of green house gas emission , convert organic waste in to a product , residue-reused and minimize deforestation.

Key words:

Environment projects; Civil engineering; Sustainable development, organic biomass; Textile ETP sludge and coir pith

1.INTODUCTION

The physical properties and proximate analysis of coir pith and biological sludge from various industries and common effluent treatment plants respectively in and around Erode, Coimbatore, Tirupur region. Remove moisture content from the sludge and make dry. After drying the Biological sludge to be conducted, Moisture content, Density, PH ,Total Suspended Solids and Electric conductivity. Select the briquette .machine for making briquette. Mix the both ingredients into different combination. produce briquette from the machine.

Currently ,fossil fuels such as oil, coal and natural gas represent the prime energy sources in the world. However, it is anticipated that these source of energy will deplete within the next 40-50 years. Moreover, the expected environmental damages such as the global warming, acid rain and urban smog due to the production emissions from these source have tempted the world to try to reduce carbon emissions by 80% and shift towards utilizing a variety of renewable energy resources (RES) which are less environmentally harmful such as solar , wind , biomass etc. in a sustainable way. Biomass is one of the earliest sources of energy with very specific properties.

In this review, several aspects which are associated with burning biomass in boilers have been investigated such as composition of biomass, estimating the higher heating value of biomass, comparison between biomass and other fuels, combustion of biomass, co-firing of biomass and coal, impacts of biomass, economic and social analysis of biomass, transportation of biomass,

densification of biomass, problems of biomass and future of biomass.

It has been found that utilizing biomass of boilers offers many economical, social and environmental benefits such as financial net saving, conservation of fossil fuel resources, job opportunities creation and Carbondioxide and NOx emissions reduction.

However, care should be taken to other environmental impacts of biomass such as land and water resources, soil erosion, loss of biodiversity and deforestation. The health and environmental benefits of the project to achieve for its made through chemical less technique without use of any type of chemical so it is 100% naturals.

2. MATERIAL PROPERTIES

MATERIAL USED

2.1 Textile ETP Sludge

2.2 Coir Pith

2.3 Water

2.1. TEXTILE ETP SLUDGE

The textile Effluent Treatment Plant sludge used in the present investigation was taken from CETP, SIPCOT. The wet sludge was collected from the CETP and then dried. The dried sludge was then sieved for removal of dusts. Then the sludge was mixed along with the coir pith to be tested calorific value in laboratory tests

2.2. COIR PITH

Locally available coir pith is made from coconut husks. The coco peat which is obtained can hold large quantities of water, just like a sponge. Biomass is the one of the predominant renewable energy sources and the use of biomass for the energy generation has got much attention due to its environmental friendliness

.

2.3.WATER

Water is required for the mix between from sludge and coir pith

3.METHODOLOGY

- Collection of sludge samples
- Collection of coir pith
- Removal of moisture content
- Study of characteristics
- Selection of machine
- Test for calorific value
- Comparison with various fuels
- Feedback from industrial users .

4.DRYING OF CUBES SAMPLES

Casting of block after the completion of 24 hours mould will be removed then dried for sun light. The cube for specific age 10 to 15 days. After the completion of fully dried it will be tested.

The cube samples is dry for achieving from the strength for burning boiler

Table 1 Composition of biomass samples

S.NO	Qty of coir pith (kg)	Qty of DBS in (kg)	proportionate
1	1.050	0.500	2:1
2	0.775	0.775	1:1
3	0.500	1.050	1:2

5.TEST FOR CALORIFIC VALUE

Calorific Value

The energy contained in a fuel or food, determined by measuring the heat produced by the complete combustion of a specified quantity of it. this is now usually expressed in joules per kilogram.

The calorific values were found in laboratory. On comparing the results with country fire

wood, the specimen value is more or less similar; hence the biomass can be used as a supplementary fuel with country wood or with the other fuels.

It is non –hazardous to the environment, or any life on the plant. It is an excellent idea for recycling the agricultural wastes that are mostly burnt in an ineffective way. It prevents deforestation and conserves the naturals forest resource.

6.RESULT AND DISCUSSIONS

Biomass briquette

This is the one of the alternative methods to save the consumption and dependency on fuel wood.

- Densities fuels are easy to handle, transport and store.
- They are uniform in size and quality.
- The process helps to solve the residual disposal problem.
- It provides additional income to farmers and creates jobs.
- There is no sulfur in briquettes

There is no fly ash when burning briquettes.

The biological sludge's were characterized for various physic-chemical parameters such as moisture content (%), Density, pH, total suspended solids, Electric conductivity and turbidity. Basics of laboratory test with different reading and average values are presents in.

7.CONCLUSION

In the present study ,the unwashed coir pith minimum percentage of moisture content mixed with completely dried Textile ETP Sludge –Biological sludge taken at SIPCOT. The characteristic was completely analyzed .it is found that the sludge and coir pith having more fibre content which is suitable for Biomass fuel for industrial boiler and other heating purpose for any industrial process

.

- This helps to prevent releasing too much of CO2 into the atmosphere.
- This fuel causes negligible pollution and does not emit sulphur or fly ash , and so keep the Eco-balance.
- Excellent source of fuel with good thermal calorific value.
- Since it uses only agro-waste or bio-waste for production it is cheap and is easily available in plenty.
- It offers consistent combustion.
- Ash content is very low as compared to fuel like coal.
- The auto ignition temperature is very low as compared to coal.
- Does not have corrosive outcome on the boiler equipment's.
- It is non-hazardous to the environment, or any life on the planet.
- Due to their compact size they are easy to store, handle and transport.

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