



Srishyla Educational Trust (R), Bheemasamudra

GM INSTITUTE OF TECHNOLOGY, DAVANGERE

(Affiliated to VTU Belagavi, Approved by AICTE, New Delhi & Govt. of Karnataka)

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Department of Civil Engineering
INNOVATIVE METHODS OF TEACHING AND LEARNING

Activity on Biomedical waste Incineration System

Subject: Solid Waste Management

Name of the Faculty: Mr. Mohammed Yaseen

Dated: 10/09/2018

Students were given the task of exploring and design of a Biomedical waste incineration system to treat the hospital waste generated without causing Air Pollution. A team of students prepared the working prototype of a Biomedical waste incineration system which will treat the Biomedical waste effectively by controlling the air pollutants. This Model was selected in Students Engineering Model Competition (SEMC). Out of Country's several working models only 100 best models were selected and invited to present the prototype in the India International Science Festival held at Lucknow during October 6th and 7th 2018 at GD Goenka School.

Title of the work: EcoFriendly Biomedical Waste Incineration System

Biomedical waste disposal is a growing concern in most of the urban cities and disposal of the biomedical waste management is a troublesome task since it contains infectious waste which can cause risk to human health and deteriorate environment.

In this regard, The biomedical waste data is collected from major hospitals of Davanagere city and based on the data a Biomedical waste disposal incinerator is designed with a capacity of 200 kg/hour. Using this incinerator biomedical waste is treated effectively by reducing its volume upto 95 percent. To control the hazardous gas the incinerator is fitted with a venturi scrubber and the water used for scrubbing is treated using a sand bed filter which can be reused again for scrubbing reducing the quantity of freshwater requirement.

By adopting this Biomedical waste incinerator, it can be concluded that the infectious biomedical waste can be treated effectively without causing much harm to the environment. This technology will also help us to reduce the air pollution by removing the air pollutants from the incinerator system. Further this study can also be extended by recovering thermal energy which can be used for heating and other forms of energy.



Fig : Project Associates with Mentor, HOD and Principal



Fig: Working Prototype of Eco-Friendly Biomedical waste Incineration

In this work students learnt the idea of treating Biomedical waste effectively without causing environmental deterioration and Air pollution.

Activity on Investigation of Complex Problems such as Plastic Waste Management:

Subject: Alternative Building Material , Solid Waste Management.

Name of the Faculty: Mr. Puttaraj M H

Date: 10-01-2018

Today's life style is impossible to imagine without plastic, it acquired all the areas of human activities. After the use of plastic, it will be throne as a waste and thus it is became as a major waste material in the municipal solid waste and causing the complex problems. Other side every ones dream is to have their own house, to build a house the resources are extracted from the earth, in the present era it is exploiting the resources even beyond the limit. If a construction product is produced from these wastes and used, this will save the environment as well as avoid the exploitation and future scarcity of natural resources. Thus the engineer will become as humane engineer and the product will be Ecofriendly one and environmental sustainability can be achieved.

Final Year Students were given with an idea of wastes available in the surrounding Environment as well as need of the new building materials. The path is shown to the students to achieve a method that could use the wastes and form a building material and students were came with the so many ideas. In that use of the plastic as composition of aggregate in the manufacture of Concrete Blocks and other is to use the plastic by melting and forming the Brick were found best amongst are considered as research work.

Title: Utilization of Waste Plastic in manufacturing of Plastic Brick

In this research a method has been developed to form a building block (Brick) with the use of food grade waste plastic bottles (PET), and quarry dust which is available in the form of silt. Where the plastic is made to be melted and quarry waste silt is mixed. The elasticity, thermo softening properties and strength characteristics are made to be improved with the addition of bitumen. The molten resin is poured into the brick mould and after the heat dissipation it is removed from the mould and brick is ready to use. The strength, water absorption, bonding characteristics are satisfied according to the IS code for the building blocks (bricks).



Fig: Evaluation of the outcome of the activity by The Principal, Dr. P Prakash

Methodology

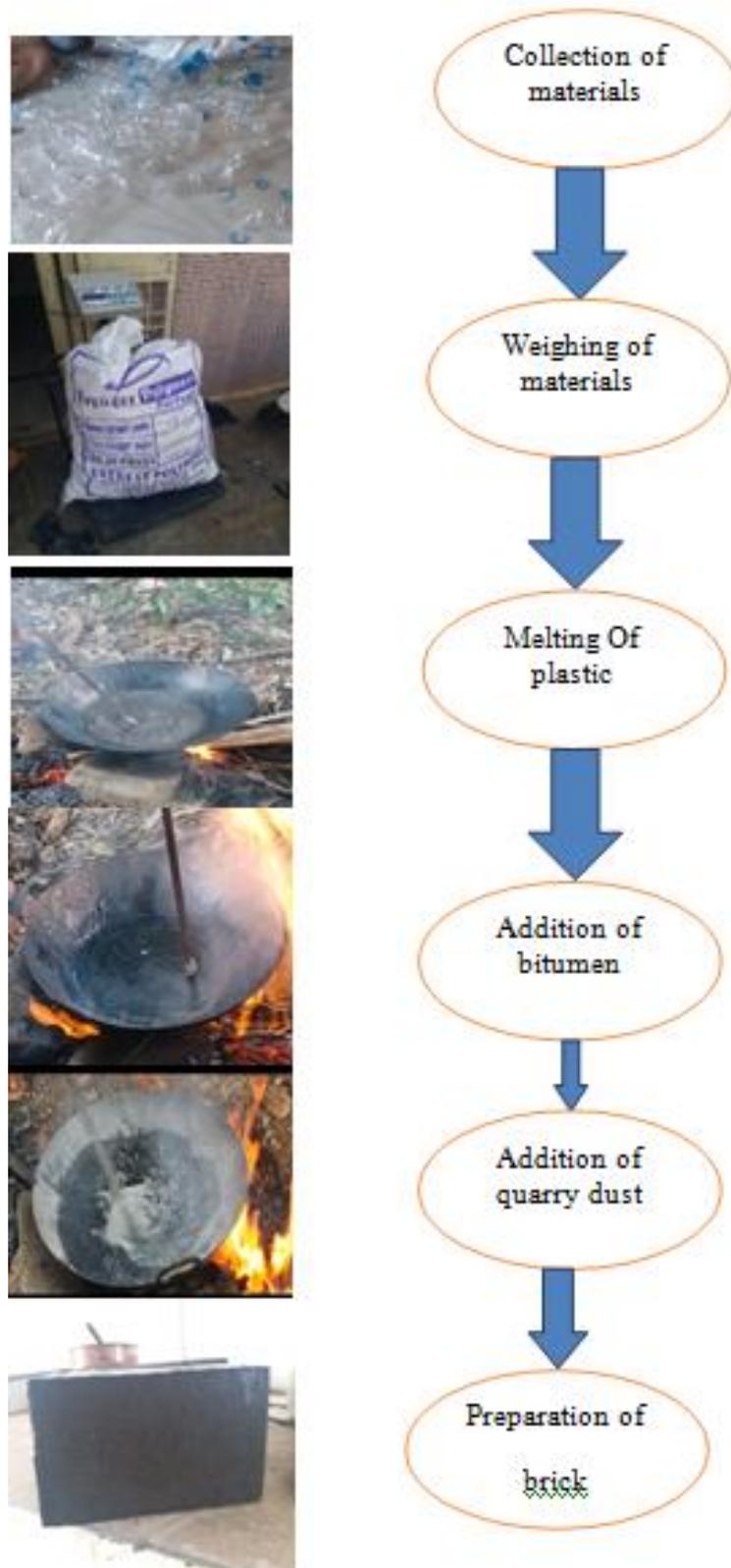


Fig: Process flow chart

From this activity students learnt about the zero waste concept and are inculcated with the research mentality.

For any comments, compliments and suggestions write us at puttarajmh@gmit.ac.in

Activity on low cost water treatment

Subject: Water Treatment Engineering

Name of the Faculty: Mr. Mohammed Yaseen

Dated: 06/06/2017

Students were given the task of exploring and design of the low cost water treatment technology .Students selected the locally available adsorbents as filter media and tried to explore the possibilities of low cost water treatment for rural areas with less investment without the use of power requirement.

Title of the work: Comparative Analysis of Locally Available Adsorbents for Purification of Water

It is well known fact that clean water is absolutely essential for healthy living. Adequate Supply of fresh and clean drinking water is essential for all human beings on the earth, yet it has been observed that millions of people worldwide are still drinking water that is contaminated by bacteria, toxic chemicals and other pollutants. Hence there is a need for purification of water. In the present study a low cost water filter is designed for 7 litre capacity. The filter media consists of layers pebbles, sand, corncob, and adsorbents (sugarcane bagasse, rice husk, fly ash, activated carbon, and blended activated carbon & fly ash) 4cm each. The main focus in this project is the removal of fluoride from water by using adsorption technique. The water is also tested for various parameters like acidity, alkalinity, turbidity, total dissolved solids, Hardness and pH. From this study it can be concluded that Sugarcane Bagasse is an effective adsorbent. The removal efficiencies of Sugarcane Bagasse for Acidity, Alkalinity, Turbidity, and Fluoride are 40%, 2.5%, 94.84%, and 31.42% respectively. Rice Husk has removed hardness upto 18.18%.



Fig : Project Associates with Mentor



Fig: Model of the Low Cost Filter with Adsorbents

In this project work students learnt the idea of utilizing locally available adsorbents for purification of water in rural areas and small communities without the use of power requirements to get the purified water. Students also published this work in the International Journal (IJSART) ISSN [ONLINE]: 2395-1052, IJSART - Volume 3 Issue 6–JUNE 2017.