

SOCIALLY RELATED PROJECTS- MECHANICAL ENGINEERING

SOLAR POWERED WATER PURIFICATION USING A NATURAL COAGULANT

The main aim of our project is to provide clean and safe drinking water in rural areas using solar energy at a low cost. We are using a self-sustaining structure to purify water using Solar Energy, Moringa Seeds Powder and UV Light Source. It is reviewed that many have worked on various water purification methods like physical treatment using different filters, chemical treatment using RO and other chemicals, and boiling the water using solar energy where even the good bacteria also gets killed. All these methods are used separately for water purification resulting in higher costs. Therefore our present work aims in designing and fabricating a solar powered water purification system at lower maintenance cost where in sand, pebbles and charcoal are used for physical impurity filtration, water is preheated using heating coils, where moringa seeds acts as a natural coagulant and solar energy is used to power the heating coils and UV light source. Our expected outcome is to finally purify and obtain drinkable water with chemical analysis and other composition within the permissible limits prescribed by WHO.



Solar Powered Water Purification using a Natural Coagulant

COMFORTABLE COCONUT TREE CLIMBER

The main aim of this project is to design and analyze the coconut tree climber for normal human being usage. As we all know that climbing a coconut tree is a very risky task due to the absence of branches on the tree and presence of a constant cylindrical surface. A skilled laborer can only be able to climb the coconut trees. Due to the less percentage of skilled laborers, the owners should pay more labor charges. Since the educational background of youths in India is more so most of the people may not be interested in an agricultural profession? Considering this as a key point, a device can be developed which will be very useful for normal humans to climb a coconut tree in large coconut cultivation areas as well as small areas. This climber will attract the people to show interest in an agriculture profession.



Coconut Tree Climber

BIODIESEL FROM GARCINIA GUMMIGUTTA SEEDS

Biodiesel is a form of diesel fuel derived from plants or animals and consisting of long chain fatty acid esters. Energy is basic need of human kind like food and shelter. Increase in population, industrial growth and living standard of people develop the impact on conventional resources. On the other hand, depleting nature of fossil fuels and emissions released by fossil fuels limits the use of them. Production of biodiesel from oil and ethanol from sugar-based resources are considered as the best substitute of diesel and gasoline respectively in the country. The biodiesel produced by the oil of Garcinia is considered as one of the best substitutes for the diesel FFA test is conducted using titration method as the raw oil consists of high viscosity and free fatty acid (FFA) the three-stage standard transesterification method is used to produce Biodiesel. The stage wise transesterification removes impurities, wax, gum, etc. and the triglycerides are converted in methyl ester and glycerin. The neat biodiesel is obtained after the removal of glycerin and water wash. Increase in awareness and growth in research in these areas can motivate Garcinia gummigutta as the alternative source of fuel by replacing Diesel. In the present steady attempt has been made to develop the Biodiesel from the oil of Garcinia gummigutta. The setup consists of single cylinder, 4-Stroke, Diesel engine connected to eddy current dynamometer for loading. It having necessary tools for combustion pressure and crank- angle Measurements. The setup consisting of air box, fuel tank, manometer, fuel measuring unit, transmitters for air and fuel flow measurements, process indicator and engine indicator. Rotameter are provided for cooling water and calorimeter water flow measurement. The study of engine performance for brake power, indicated power, frictional power, BMEP, IMEP, brake thermal efficiency, indicated thermal efficiency, Mechanical efficiency, Volumetric efficiency, Specific fuel consumption, A/F ratio and heat balance. Lab view based Engine Performance Analysis software package “Engine soft” is provided for on line performance evaluation.



Mechanical Expeller and expelled cakes of Garcinia seed