

PHASE III BIOREFINERY FOR HANDLING WASTES GENERATED IN SMALL TOWN

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ABSTRACT

As the advent of industrialization has led to the depletion of fossil fuels there is a constant search for renewable resources. Although renewable energy can be obtained in the form of solar and wind energy, it is essential to consider the utilization of biomass as it is the only renewable source of the carbon backbone typical of all high energy output fuels.

The aim of the report is to use the different renewable resources, which are otherwise wastes, in a phase III biorefinery to produce biofuels. While the lignocellulosic components are utilized for bioethanol production, after being pre-treated, the bread wastes are directly utilized as they are carbohydrate rich. As a part of the pre-treatment, fat is separated and then used for the production of biodiesel in conjunction with oil from bleaching earth. The rest of the wastes received such as slaughterhouse waste, sludge and the effluent from the bioethanol reactor are pretreated and used for the production of biogas, which can later be potentially used for electricity and district heating. A brief consideration of the fate of glycerol from the biodiesel plant has been discussed.

The purpose of the biorefinery is to obtain multiple products which can be used for energy production, in order attain sustainability while also being able to sell energy. The energy requirements of the plant are mainly obtained from the burning of saw dust, lignin and biomass. While, the difference in energy requirements can be bought as in conventional refineries.