

A Decision Making Optimization Model for Implementing Biomass Gasification Plant in Tamil Nadu

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Abstract

Global warming has been the watchword today for the whole world, which is mainly caused due to the usage of non renewable and conventional fuel sources. This phenomenon can be reduced at large by the usage of renewable resources, especially biomass. Biomass generally refers to plant matter grown to generate electricity or produce bio fuel. In India the realization for the potential use of Biomass Gasification has increased tremendously since it is greener and also generates a higher return on investment than geothermal, solar & wind combined generation of electricity. In this paper an optimization model has been developed to maximize the profit of an industry implementing a biomass gasification plant by determining the best within some broader boundaries like the alternative sources of biomass and technology under the given circumstances for a location, taking into account the effects that are typical for the biomass like the Seasonal fluctuations in supply and demand of biomass, Losses of water due to drying, losses of dry matter due to heating and the technological constraints. Using this model the optimal campaign to maximize the profit was determined on a real life case: a sugar industry which has recently installed the cogeneration facility.

Keywords

Renewable resource, Biomass, Biomass Gasification, Optimization model, Cogeneration, Sugar industry.