

Integration Analysis of Torrefied Empty Fruit Bunch as Feedstock to Biomass-Based Power Generation Plants

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ABSTRACT

Torrefaction is a thermal procedure used to convert biomass into a substance resembling coal that possesses superior fuel properties compared to the original biomass. Torrefied biomass is hydrophobic and has a greater energy density, making it more advantageous for handling and storage. The purpose of this investigation is to establish a simulation model of the torrefaction process utilizing Malaysian biomass and optimize it for mass yield and energy consumption. Additionally, the objective is to integrate the optimized torrefaction process into an existing biomass power plant. By retrofitting a biomass-based power generation facility with torrefaction technology, the existing feedstock can be upgraded before sending it to the power plant. Essentially, torrefaction technology represents an enhancement of biomass utilization technology, ultimately allowing for the maximum application of biomass energy.

KEYWORDS

ASPEN Plus, Biomass-based power generation, Empty fruit bunch, Retrofitting, Torrefaction

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