TREATMENT OF OIL PALM BIOMASS BY SUPERHEATED STEAM FOR BIOCOMPOSITE PRODUCTION

TECHNOLOGY DESCRIPTION

Superheated steam or SHS is a technology created to convert oil palm biomass into biocomposite material.

TECHNOLOGY FEATURES

The technology produces fine particle fiber from easy grinding. Easy grinding encourages the usage of oil palm biomass as a substitute to non-biodegradable polymer. Volatile components, silica bodies and hemicelluloses were removed during the process, thus improving the thermal stability of the fiber. This reduces odor and increases hydrophobicity of the oil palm fiber to promote better interaction with polymers, thus improve mechanical properties of the biocomposite produced from the oil palm derived fibers. The SHS treatment does not require hazardous chemicals for operation and it is a safe, non-hazardous, green technology. The entire SHS procedure is cost-savvy as it is operated at atm pressure and prevents the abrasive wear and damage of the extruder screw.

ADVANTAGES

- Easy grinding of the oil palm biomass into fiber
- Removes particles and increases thermal stability
- Saves overall operational cost on the need for frequent replacement of extruder screw

INDUSTRY OVERVIEW

Prospect: Biocomposite producers

Demand of bio-composite products are strongly affected by changes in the demand for consumer goods (such as furniture, household products, toys, etc.) by the population. Malaysia generated an average of 53 million tonnes of palm oil biomass residue with a 5% annual growth projection. In 2010, the palm oil biomass solid wastes accounted for 80 million tonnes of dry biomass and it is projected to rise to a significant 100 million dry tonnes by the year 2020. By 2020, it is estimated that the use of oil palm biomass in the wood and bioenergy industries could contribute RM 2.8 billion and RM 2.4 billion to gross national income respectively.

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