

عنوان مقاله:

Pelletization and efficient use of agricultural waste: Effects of moisture, temperature and pressure on fuel pellet quality

محل انتشار:

پانزدهمین کنگره ملی و اولین کنگره بین المللی مهندسی مکانیک بیوسیستم و مکانیزاسیون کشاورزی (سال: 1402)

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خلاصه مقاله:

Biomass, including renewable carbon sources, is crucial to produce biofuels and value-added products. Waste biomass densification into pellets improves the characteristics of loose biomass residue for efficient transport, storage, and thermochemical conversion into advanced fuels. This research focused on examining the process of preparing solid fuel pellets from Pith Bagasse. The fuel pellets were examined in the laboratory, by focusing on the three parameters including die temperature (70, 95 and 120 °C), pressure (20, 30 and 40 bar), and moisture content (20, 30 and 40% wb) at a retention time of 20 seconds and the initial density of the pellets with a diameter of 6 mm. The density of the fuel pellets ranged between 940-1318 kg/m³. The Central Composite design was employed to understand the interactions between compression operating conditions for the optimal density of the pellets. The optimal density was obtained for the samples produced at moisture content of 20-25% (wb), pressure of 40 bar and die temperature of 120 °C having the initial density above 1000 kg/m³.

کلمات کلیدی:

Sugarcane, Pith, Bagasse, Pellet, Density

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