

Effect of Coffee Grounds on Physical and Heating Value Properties of Sugarcane Bagasse Pellets

Authors : K. Rattawan, W. Intagun, W. Kanoksilapatham

Abstract : Objective of this research is to study effect of coffee grounds on physical and heating value properties of sugarcane bagasse pellets. The coffee grounds were tested as an additive for pelletizing process of bagasse pellets. Pelletizing was performed using a Flat–die pellet mill machine. Moisture content of raw materials was controlled at 10-13%. Die temperature range during the process was 75-80 ^oC. Physical characteristics (bulk density and durability) of the bagasse pellet and pellets with 1-5% coffee ground were determined following the standard assigned by the Pellet Fuel Institute (PFI). The results revealed increasing values of 648±3.4, 659 ± 3.1, 679 ± 3.3 and 685 ± 3.1 kg/m³ (for pellet bulk density); and 98.7 ± 0.11, 99.2 ± 0.26, 99.3 ± 0.19 and 99.4 ± 0.07% (for pellet durability), respectively. In addition, the heating values of the coffee ground supplemented pellets (15.9 ± 1.16, 17.0 ± 1.23 and 18.8 ± 1.34 MJ/kg) were improved comparing to the non-supplemented control (14.9 ± 1.14 MJ/kg), respectively. The results indicated that both the bulk density and durability values of the bagasse pellets were increased with the increasing proportion of the coffee ground additive.

Keywords : bagasse, coffee grounds, pelletizing, heating value, sugar cane bagasse

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