De La Salle University - Dasmariñas

BANANA PEEL BRIQUETTING MACHINE

A Thesis
Presented to Faculty of the
Mechanical Engineering Department,
College of Engineering, Architecture and Technology
De La Salle University - Dasmariñas

In Partial Fulfillment of the Requirements for the
ME Research Project (MEET514f)

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APRIL 2014

ABSTRACT

SO, R.B., TINIO, D.A.M., STA.ANA, J.P., Banana Peel Briquetting Machine. Bachelor of Science in Mechanical Engineering – De La Salle University Dasmariñas, Cavite.

Banana peels are usually thrown away after removing them from the bananas. Although they can be used as fertilizers, the researchers tried to find other possibilities that can be done with the banana peels. By conducting research, different studies show that the peels can be converted into a fuel, called briquettes. These briquettes can serve as a substitute to wood charcoals in which wood charcoals are limited. This alternative fuel may aid in supporting the growing demand of energy of the society.

In this research, the banana peels were initially grinded and then mixed with a stiffener, in which most of the previous studies used sawdust. The mixture was compressed into a mold by using a presser. With several small holes around the mold, during this compression, the moisture was partially removed from the mixture. Once the briquette was formed, it was dried.

The objective of this study was to develop a banana peel briquetting machine. A mock experiment was done to determine certain parameters needed to come up with the design. After the mock experiment, the machine was designed and fabricated that integrated the processes necessary to produce briquettes. Upon completion of the fabrication and assembly of the machine, the researchers

determined the production rate of the briquetter. It took approximately 2.3 minutes to produce the first briquette and, from then on, a stable flow rate of 4 briquettes/minute was attained. Next, two experiments were conducted for the calorific value analysis of the briquette by the use of a bomb calorimeter. The first experiment involved analyzing the calorific value of various briquettes made with different stiffeners, and the briquette that yielded highest calorific value was chosen as the sample for the second experiment. The second experiment was to analyze the calorific value of the briquette as the drying time lengthened at the same temperature. The lowest and highest calorific values obtained from the first experiment were 673 kcal/kg and 1796 kcal/kg respectively. The lowest and highest calorific values obtained from the second experiment were 1743 kcal/kg and 3030 kcal/kg, respectively in which the sample consisted of banana peels, rice husk, and sawdust.

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