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Building a Charcoal Extruder by using Bicycle Power

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Abstract

The purpose of this research is to build a charcoal extruder by using a bicycle. The extruder is 0.73 meters in width, 1.75 meters in length, and 1.30 meters in height. It operates in the same way as pedaling a bicycle. The ingredients to make charcoals consist of charcoal powder, tapioca starch, and water at a ratio of 7:3 which is 7 parts of charcoal powder and 3 parts of tapioca starch. Pedaling the bicycle is an initial power to compress the mixed ingredients and deliver to the cylinder compression. Then, the extruder will perform a compress operation and finish the final product which is a charcoal. The diameter of the charcoal briquettes is 10 centimeters. After that, the timer is set for compressing the charcoals for 10 minutes, and then the moisture in the charcoals is eliminated by sun drying. The research also aims to find a physics mechanical property which is to find the density of the charcoal briquettes. It is also to find out daily production capacity of the extruder by using regular ingredients which are charcoal power and tapioca starch to produce charcoal briquettes.
The results showed that the Bicycle Powered Charcoal Extruder can compress charcoals at the mean value of 0.964 kilograms, which means that the production capacity is 34.704 kilograms per day. According to the time reckoning for 10 minutes, the extruder is able to produce charcoal briquettes in a hexagonal prism shape with a diameter of 3 centimeters. The charcoal briquettes have density of 412.30 kg/m3 and the production cost is 4,260 baht.

Keywords: Charcoal Briquettes, Powered Bicycle

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