

***Analysis of Making Briquettes From Coconut Shell Charcoal With Bottom Ash  
Mixture of PLTSa BantarGebang With Cassava Peel Adhesive***

Dafit Ari Prasetyo as supervisor

**Pradipta Arya Yuda**

*Renewable Energy Engineering Study Program*

*Engineering Department*

*Jember State Polytechnic*

[pradiptaaryayuda26@gmail.com](mailto:pradiptaaryayuda26@gmail.com)

**ABSTRACT**

*The need for energy is increasing along with the increase in population. Therefore, Indonesia is making an efforts to find the alternatives to replace fossil fuels that are dwindling by utilizing the availability of sources of biodiversity in nature. One of the alternative energy sources to replace fossil fuels in Indonesia is coconut shell which has a high calorific value of 5,780 cal/gr when it has been charred. Bottom ash leaves carbon material that has not been fully burned and has carbon residue that has not been utilized. In addition, cassava peel waste contains starch and pectin has so that it can be used as an adhesive for making briquettes. This study aims to make and analyze the characteristics as an shell charcoal briquettes coconut with a mixture that of bottom ash and cassava peel adhesive using the pyrolysis method. Briquettes were made in this study, has variations of coconut shell charcoal 90%, 80%, 70%, a mixture of 5%, 10%, 15% bottom ash and cassava peel adhesive 5%, 10%, 15%. The process of authoring the pyrolysis method with a temperature of 150-200°C for 6-7 hours. The results of the study with the best composition, namely VI, used a ratio of 90% coconut shell charcoal with a mixture of 5% bottom ash and 5% cassava peel adhesive: 4,62% moisture content, 7.29% ash content, 6315 cal/gr calorific value, density 0,00124 kg/m<sup>3</sup>, burning rate 0.069 gr/s and kamba density 363 kg/m<sup>3</sup>.*

**Keyword:** *briquettes, bottom ash, cassava peels, coconut shells.*