Submission Summary

Conference Name
5th Recent Advances in Automotive Engineering

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68

Paper Title
Characteristics of densified bio-char produced through a slow pyrolysis of Arabica coffee-skin

Abstract
A rise in annual coffee production poses an increase in coffee residuals which is a potential source of renewable energy. The use of coffee skin as a raw material for bio-briquettes may be an effective way to minimize their wastage as landfill. This study aims to examine the characteristics of densified bio-char produced through a slow pyrolysis process and pressed at a pressure of 100, 150 and 200 kg/cm2. Prior to densification process, bio-char was ground and sieved to mesh 20. A mixture was then made by adding 20 wt% starch binder followed by molding and drying processes. Characterization of the briquette employs a number of techniques including DSC, TGA, bomb calorimeter and proximate analyses as well as mechanical testing. The results show that the calorific value of the coffee-skin briquette is 16783 J/g containing 11.8 wt% of moisture, 12 wt.% ash. The rate of combustion is 0.019 g/s with ignition time of 196 s. Varying briquetting pressure results in a change in ignition time of bio-briquettes as the density is increased. However, no significant change was observed on the rate of combustion upon increasing the briquetting pressure. This investigation concludes the potential use of coffee industry by-product as feedstock for solid biomass fuel production.

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Authors
Adi Setiawan (Malikussaleh University) <adis@unimal.ac.id>
Faisal Faisal (Malikussaleh University) <faisalmes96@gmail.com>

Submission Files
Extended-Abstract-A_Setiawan r1.doc (207.5 Kb, 26/5/2019 23.53.25)
ReCar_Full-paper A_Setiawan.doc (1.7 Mb, 24/2/2020 10.33.07)

Supplementary Files
Acceptance Letter-ReCAR68.pdf (531.8 Kb, 29/5/2019 07.09.26)
template Full paper.doc (85.5 Kb, 29/5/2019 07.10.19)

Submission Questions Response

1. Name

Adi Setiawan

2. Affiliation

1Mechanical Engineering Department, Faculty of Engineering, Universitas Malikussaleh, Jalan Batam, Kampus Bukit Indah, Lhokseumawe, 24352, Indonesia

3. Category

Academic / Industry

4. Registration

International

5. CV for Academic / Industry

PhD