Analisis Potensi SRF dari Sampah TPA Cipayung dengan Menerapkan Teknologi Biodrying = Analysis of SRF Potential from Cipayung Landfill Waste By Applying Biodrying Technology

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Abstrak

Salah satu solusi untuk mengatasi permasalahan sampah perkotaan adalah dengan mengubah sampah menjadi sumber energi terbarukan yang dikenal dengan konsep waste to energy baik melalui pembakaran langsung maupun dalam bentuk bahan bakar seperti SRF (Solid Recovered Fuel). Namun tidak semua sampah mudah diproses menajdi SRF, salah satunya karena kadar airnya yang relatif tinggi. Di TPA Cipayung Depok kadar air sampah mencapai 51,18%. Diperlukan proses pre-treatment terhadap sampah tersebut untuk menurunkan kadar airnya yaitu melaluii proses bio-drying. Penelitian ini dilakukan untuk mengetahui potensi sampah TPA Cipayung yang diolah menggunakan teknologi bio-drying sehingga dapat dimanfaatkan sebagai SRF. Perhitungan timbulan dan pengukuran komposisi sampah diukur menggunakan metode SNI 19-3964-1994, sedangkan variabel bebas dalam penelitian ini berupa variasi waktu tinggal dan variasi perlakuan bio-drying. Adapun variabel terikat yang diamati adalah perubahan pada treatment bio-drying yaitu volume reduction, suhu dan proximate analysis. Kemudian dengan menggunakan ultimate analysis dan uji nilai kalor maka dapat ditentukan potensi sampah yang bisa dijadikan SRF. Studi ini menemukan bahwa bio-drying bisa menurunkan kadar air dari 64% menjadi 28% dan fixed carbon 6,05% menjadi 5,92%. Sebaliknya menaikkan kadar abu dari 2,92% menjadi 9,30% dan volatile matter dari 26,17% menjadi 53%. Secara keseluruhan nilai kalor naik dari 1,670 MJ/kg menjadi 16,159 MJ/kg. Meskipun demikian hasil bio-drying ini belum memenuhi standar SRF untuk industri semen. Optimasi proses diperlukan agar sampah TPA CIpayung bisa diolah memenuhi standar SRF.
.....One solution for dealing with the large amount of municipal waste is to convert waste into a renewable energy source, known as the waste to energy concept, either through direct combustion or in the form of fuel such as SRF (Solid Recovered Fuel). However, not all waste is easily processed into SRF, one of which is because its water content is relatively high. At the Cipayung Depok landfill, the moisture content of waste reached 51.18%. A pre-treatment process such as a bio-drying process is needed for the waste processing to reduce its moisture content. This research was conducted to determine the potential of Cipayung landfill waste which is processed using bio-drying technology to be used as SRF. Calculation of waste generation and measurement of waste composition were measured using the SNI 19-3964-1994 method, while the independent variables in this study were variations in residence time and variations in bio-drying treatment. The dependent variables observed were changes in the bio-drying treatment which are volume reduction, temperature and proximate analysis. Then, by using ultimate analysis and calorific value tests, the potential for waste that can be used as SRF can be determined. This research found that bio-drying can reduce water content from 64% to 28% and fixed carbon from 6.05% to 5.92%. Additionally, it increases the ash content from 2.92% to 9.30% and volatile matter from 26.17% to 53%. The calorific value of waste increased from 1,670 MJ/kg to 16,159 MJ/kg. However, the bio-drying results do not meet the SRF standards for the cement industry yet. Process optimization is needed so that Cipayung landfill waste can be recycled to meet SRF standards.