

# Pembuatan Arang Kayu Lamtoro Menggunakan Metode Pirolisis Sebagai Bahan Bakar Pembangkit Listrik Tenaga Uap (PLTU)

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**Abstract.** Coal reserves in Indonesia are of low quality (lignite) with calories <5100 cal/gr which are included in reserves with a percentage value of 60%. The policies set by the government are Law No. 4 of 2009 concerning Mineral and Coal Mining, then on Increased Value Added (PNT) contained in PP No. 23/2010. This policy is realized by processing and refining fine minerals in the country. The existence of PNT can also be done by making new and renewable energy by means of pyrolysis. Pyrolysis is a process of thermochemical decomposition of organic matter through heating without or a little oxygen, where the material will undergo a breakdown of its chemical structure into gas and liquid phases. Renewable energy by means of pyrolysis is one solution to reduce the effect of greenhouses. This energy, of course, must be included in renewable energy, this energy can be produced from wood plants which have the nature of growing rapidly to act as a fuel energy reserve. The purpose of this study was to determine the pyrolysis results of local wood, namely lamtoro wood (*leucaena leucocephala*), to the charcoal produced during the pyrolysis process, the calorific value obtained and also the biochar for analysis of these results. The pyrolysis process used a sample of lamtoro wood with a size of -32 + 42 mesh and carried out at 3 temperature variables, namely 300°C, 450°C, and 600°C with a heating rate of 10°C / minute for 60 minutes. From the test results, the optimal temperature in the pyrolysis of lamtoro wood is at a temperature of 450 °C with a yield obtained that is 26.45% and Volatile Matter obtained 73.55%. Then from these results the calorific value obtained is 6694 kcal / kg and energy 177,056 kcal, where the char energy produced is 38.70%. The optimal mixing of coal is done at a ratio of 25% with a value Volatile Matter of 49.10 and the resulting calorific value is 177.056 kcal.

**Keywords: Biomass, Fuel, Charcoal, Pyrolysis, Calorific Value.**

**Abstrak.** Cadangan batubara di Indonesia memiliki kualitas rendah (Lignit) dengan kalori yaitu <5100 kal/gr yang termasuk kedalam cadangan dengan nilai persentase yaitu 60%. Kebijakan yang ditetapkan oleh pemerintah yaitu UU no.4 Tahun 2009 mengenai Pertambangan Mineral dan Batubara, kemudian tentang Peningkatan Nilai Tambah (PNT) yang terdapat pada PP no.23 tahun 2010. Pada kebijakan ini direalisasikan dengan cara pengolahan dan pemurnian mineral halus didalam negeri. Adanya PNT tersebut dapat juga dilakukan dengan upaya pembuatan energi baru terbarukan dengan cara pirolisis. Pirolisis merupakan proses dekomposisi termokimia bahan organik melalui pemanasan