

Title: Bio-Energy Potential from Cotton Stalks Gasification

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One of the solutions to the risk of global warming and climate change is to concentrate on research and development of using biomass as a clean and alternative energy to fossil fuels. Current estimate of cotton residues waste in the world is about 50 million tons. This huge amount of biomass waste should be converted into clean energy to avoid burning the stalks in open fields after harvest. Therefore, harmful emissions such as carbon dioxide will be reduced. Gasification is a thermal conversion method; it converts biomass into gases under high temperature range. These gases can be used for thermal applications or for engine applications. This study investigated different literature to understand the energy production from cotton stalks gasification, to know the effect of gasification agents (air and steam) on syngas and to determine the calorific value of cotton stalks residues. It can be concluded that, the main producer gases of air and steam gasification of cotton stalks are hydrogen, carbon monoxide, carbon dioxide and methane, in addition to producing nitrogen in the case of air gasification. The gasification agent significantly affects the quality of the product gas, for cotton stalks gasification the lower heating value increases with changing the agent from air to steam. The range of higher heating value of cotton stalks was found between 15.2 – 21.9 MJ/kg which indicates that cotton waste is a promising renewable energy if more researches are focused on this type of biomass.

Biography

Hussien is a PhD student at China Agricultural University, College of Engineering-Agricultural Engineering Department under Chinese Government Scholarship (CGS). He contributes as research assistant at Bioenergy and Environmental Science & Technology Laboratory, College of Engineering, China Agricultural University. He completed MS.c in Agricultural Engineering, College of Agriculture, University of Khartoum, 2019. He has published three articles in reputable journals, and has tow papers under process to be published.

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