Patchanok Kaewpongsaton 2012: Mitigation of Tar from Synthetic Gas Produced from Eucalyptus Pellet by Downdraft Gasifier. Master of Science (Environmental Science), Major Field: Environmental Science, Department of Environmental Science. Thesis Advisor: Associate Professor Apinya Duangchan, Ph.D. 123 pages.

The present study focuses on the mitigation of tar from gas produced by the thermal decomposition of Eucalyptus wood using downdraft gasifier. Various air flow rates, chemical and thermal tar cracking are experimented. Air flow rates of 130, 140 and 150 L/min and thermal cracking at temperatures of 700, 800, 900 and 1,000°C were tested. Iron acetate, aluminium hydroxide and sodium carbonate solutions have been used as additives for chemical tar cracking. The results obtained indicated that the conditions of 150 L/min air flow rate, 1,000°C and iron acetate solution as an additive provided the most desired gas products, i.e. 16.59% of carbon monoxide, 12.47% of hydrogen and 2.12% of methane with the lowest tar content of 4.74 g/Nm^3.

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