

Thesis Title Preliminary Investigation on Peat
 Gasification

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ABSTRACT

The work described in this thesis has involved a study of utilization of Narathiwat's peat using gasification technique to provide alternative source of energy. Gasification of dried peat and briquetted peat have been investigated comparing with Eucalyptus wood using downdraft gasifier. The condition used was varied with four different air flow rates. In addition, product gas obtained were analyzed using gas chromatography then gasification efficiency were calculated as the ratio of energy input and energy output .

Gasification efficiency of 78.92% at gas flow rate of $0.87 \text{ m}^3/\text{min}$ could be obtained using dried peat while briquetted gave only 58.74% at $0.53 \text{ m}^3/\text{min}$. The most highest efficiency of 91.95% appeared to be of gasification Eucalyptus wood with $0.87 \text{ m}^3/\text{min}$ air flow

rate. Although, both peat forms could be achieved with producing a reasonable efficiency, but serious problem about high tar, which could block cleaning and cooling system, still be existed. For briquetted peat not only tar problem but also fuel cracking which cause energy loss as char and resistant of air flow, are significantly received. Finally, further studies considering tar removal from gas product and also improving efficiency of peat gasification are recommended.