

Thesis Title Gasification of Wood Charcoal in Fluidized Bed

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Academic Year 1986

ABSTRACT

The gasifier was a cylindrical cast iron lining with refractory cement and having inside diameter 150 mm. with 2000 mm. in height. In this experiment, we used wood charcoal particle sizes 2-4 and 4-6 mm. They were fluidized by air. The reaction in the bed was undertaken at the temperature between 900°C and 1200°C. Feed rate of air and wood charcoal were 0.29 to 0.51 m³/min. and 88 to 280 gm/min. respectively. Bed height was varied from 500 mm. to 700 mm.

The most appropriate conditions for this gasifier were as following:

bed height	600 mm.
feed rate of wood charcoal	99 gm/min.
flow rate of air	0.29 m ³ /min.
particle size	4-6 mm.
and bed temperature	1100 °C

The ash was mounted from the bed and was separated by dust-separator. The gaseous fuel was cooled down to the same temperature as the ambient, then it was fed into the internal combustion engine

of 1600 cm³. The motor ran smoothly at 2500 rpm. The consumption of gaseous fuel was about 0.30 m³/min at room temperature and atmospheric pressure. It could develop power up to 46.4 hp. and could drive the 5 kilowatt dynamo very well.