

Experimental investigation of a downdraft biomass gasifier

Abstract

An experimental investigation of a downdraft biomass gasifier is carried out using furniture wood and wood chips. The effect of equivalence ratio on the gas composition, calorific value and the gas production rate is presented. The calorific value of the producer gas increases with equivalence ratio initially, attains a peak and then decreases with the increase in equivalence ratio. The gas flow rate per unit weight of the fuel increases linearly with equivalence ratio. It is also observed that complete conversion of carbon to gaseous fuel has not taken place even for the optimum equivalence ratio.

Keywords — Biomass, downdraft, gasification, gasifier, wood