Co-combustion of refuse derived fuel with coal in a fluidised bed combustor

ABSTRACT

Power generation from biomass is an attractive technology which utilizes municipal solid waste-based refused derived fuel. In order to explain the behavior of biomass-fired fluidized bed incinerator, biomass sources from refuse derived fuel was co-fired with coal in a 0.15 m diameter and 2.3 m high fluidized bed combustor. The combustion efficiency and carbon monoxide emissions were studied and compared with those from pure coal combustion. This study proved that the blending effect had increased the carbon combustion efficiency up to 12% as compared to single MSW-based RDF. Carbon monoxide levels fluctuated between 200-1600 ppm were observed when coal is added. It is evident from this research that efficient co-firing of biomass with coal can be achieved with minimum modification of existing coal-fired boilers.

Keyword: Biomass; Co-combustion; Coal; Fluidized bed combustor; Refuse derived fuel