

可再生能源发电

两段式秸秆气化炉中当量比对气化特性的影响

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摘要:

中国拥有大量的农林废弃物生物资源, 因此开发以村为单位的生物质能量转化系统前景广阔。该文介绍上海交通大学研制的两段式秸秆气化炉的创新结构, 并通过该两段式气化炉研究了当量比eER 对气化炉主要性能参数的影响。结果表明: 在实验工况下, 最佳当量比为0.3~0.35, 此时秸秆气化气平均热值可达6 009.7 kJ/m³, 产气率为1.84 m³/kg, 碳转化率为91.3%, 气化效率为84.6%。当0.250.3时, 焦油含量又呈上升趋势。

关键词: 生物质气化 两段式气化炉 最佳当量比 稻秆 焦油

Effect of Equivalence Ratio on Gasification Characteristics in a Rice Straw Two-stage Gasifier

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Abstract:

China produces large amount of biomass waste during agriculture process, hence, the prospect of developing biomass energy conversion system based on one village self-sufficient concept is very attractive in China. The innovative structures of the two-stage rice straw gasifier developed by Shanghai Jiaotong University was introduced, and the influence of equivalence ratio (eER) on gasification performance was researched. The tests show that under the experimental condition, the best value of eER was between 0.3 and 0.35, the even heating value of product gas could reach 6 009.7 kJ/m³, gas production rate of 1.84 m³/kg, carbon conversion rate of 91.3%, 84.6% for the overall gasification efficiency. When eER was 0.25~0.3, the tar content in gas decreased with increasing equivalence ratio, but when eER was above 0.3, the tar content increased again.

Keywords: biomass gasification two-stage gasifier equivalence ratio rice straw tar

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