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生物质成型燃料三次配风锅炉的设计及低NO_x排放效果

Design and low NO_x emission effect of biomass briquette boiler with third air distribution type

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英文关键词: [biomass](#), [boiler](#), [heat losses](#), [three air distributions](#), [excess air coefficient](#), [NO_x emission](#)

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中文摘要:

根据生物质原料的燃烧特性,采用三次配风锅炉,研究污染性气体及热损失随三次配风比例与进给量的变化特征。结果表明:调节三次配风的比例,可以有效改变NO_x的质量浓度,当一次风、二次风和三次风进给比例为7:1:2,NO_x的排放浓度达到最低,为83.45 mg/m³。随着过剩空气系数(α_{py})的增大,SO₂、NO_x的排放浓度逐渐减小,烟尘排放浓度逐渐增大,锅炉总热损失呈现先减小后增大的趋势。当α_{py}值为1.75时,锅炉的热损失最小,为13.8%,此时,SO₂、NO_x和烟尘排放质量浓度分别为29.29、83.03和74.90 mg/m³,为生物质成型燃料清洁低NO_x排放燃烧锅炉的设计和运行提供了依据。

英文摘要:

According to the combustion characteristics of biomass materials, a new boiler structure with three air distributions was designed, and the variation characteristics of the pollution gas emission and heat loss with the change of air distribution ratio and quantity were studied. The results showed that the mass concentration of NO_x changed by changing the ratio of air distributions. When the ratio of the primary air, secondary air, and tertiary air was 7:1:2, the mass concentration of NO_x got the minimum value of 83.45 mg/m³. With the increase of excess air coefficient, the mass concentrations of SO₂ and NO_x decreased gradually; the flue dust concentration increased continuously; the total heat loss of the boiler decreased first and then increased. When excess air coefficient was 1.75, the total heat loss got the minimum value of 13.8%, and the mass concentrations of SO₂, NO_x and flue dust were 29.29, 83.03 and 74.90 mg/m³ respectively. This research provides the theory basis for the combustion boiler design and operation of biomass briquette with low NO_x emission.

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