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发电

O2/CO2气氛煤粉燃烧特性试验研究

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摘要： O2/CO2燃烧技术是一种可分离回收CO2的新型燃烧技术，其燃烧机理与常规空气气氛燃烧存在着较大的差异。为此，该文在热重分析仪上进行了模拟空气气氛及不同O2浓度(j(O2)=21%、30%、40%、80%)的O2/CO2气氛下3种不同品质煤粉(龙岩无烟煤、贵州烟煤、元宝山褐煤)的燃烧特性试验，确定了3种煤粉的燃烧特征参数及综合燃烧性能指数。试验结果表明，O2/CO2气氛下煤粉的燃烧分布曲线与O2/N2气氛下有明显不同，相同O2浓度的条件下，O2/CO2气氛下煤粉燃烧速率低，燃尽时间长。在O2/CO2气氛下随着O2浓度的增加，燃烧DTG曲线向低温区偏移，着火温度及燃尽温度降低，燃尽时间缩短，煤粉综合燃烧特性指数增大，表明提高O2浓度可改善O2/CO2气氛下煤粉的燃烧特性。

关键词： O2/CO2气氛 燃烧特性 热重分析 氧浓度

Investigation on Characteristics of Pulverized Coal Combustion in O2/CO2 Mixtures

Abstract: Coal combustion in the mixture of oxygen and carbon dioxide is one of new method to tackle CO2 emission with low pollutants emission reductions. The chemical kinetic of coal combustion in O2/CO2 mixture is significant different from traditional coal combustion process in air conditions. Combustion characteristics of pulverized coal in different ranks were studied using thermo-gravimetric analyzer for four oxygen volume contents (j(O2)=21%, 30%, 40% and 80%). The combustion characteristic parameters were marked and the characteristic index were calculated and analyzed. Results show that the DTG curve of coal combustion in O2/CO2 atmosphere is different from that in O2/N2 condition. In the O2/CO2 mixture, coal burning rate is lower and burning time is longer. With the oxygen content increases, DTG curve of pulverized coal moves to low temperature zone and the ignition and burnout temperature decrease. In addition, the burnout time of coal is shortened and the combustion characteristic index increases with oxygen content. Conclusion can be drawn is that the O2/CO2combustion characteristics can be improved by enriching oxygen content.

Keywords: O2/CO2 atmosphere combustion characteristics thermo-gravimetric analysis oxygen volume content

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