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Study on mercury emission characteristics of circulating fluidized-bed boiler and pulverized coal boiler.

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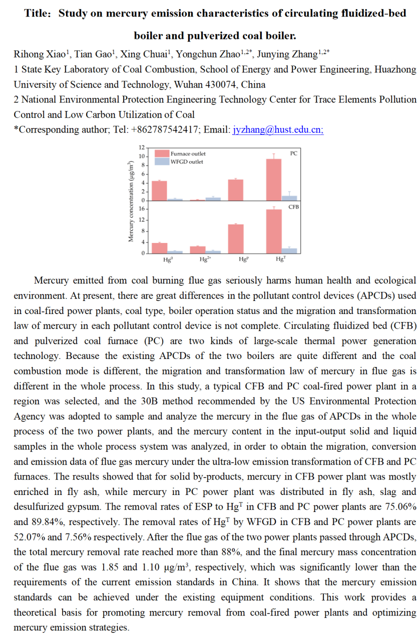
Mercury emitted from coal burning flue gas seriously harms human health and ecological environment. At present, there are great differences in the pollutant control devices used in coal-fired power plants, coal type, boiler operation status and the migration and transformation law of mercury in each pollutant control device is not complete. Circulating fluidized bed (CFB) and pulverized coal furnace (PC) are two kinds of large-scale thermal power generation technology. Because the existing APCDs of the two boilers are quite different and the coal combustion mode is different, the migration and transformation law of mercury in flue gas is different in the whole process. In this study, a typical CFB and PC coal-fired power plant in a region was selected, and the 30B method recommended by the US Environmental Protection Agency was adopted to sample and analyze the mercury in the flue gas of APCDs in the whole process of the two power plants, and the mercury content in the input-output solid and liquid samples in the whole process system was analyzed, in order to obtain the migration, conversion and emission data of flue gas mercury under the ultra-low emission transformation of CFB and PC furnaces. The results showed that for solid by-products, mercury in CFB power plant was mostly enriched in fly ash, while mercury in PC power plant was distributed in fly ash, slag and desulfurized gypsum. The removal rates of ESP to Hg^T *in CFB and PC power plants are 75.06% and 89.84%, respectively. The removal rates of* Hg^T *by WFGD in CFB and PC power plants are 52.07% and 7.56% respectively. After the flue gas of the two power plants passed through APCDs, the total mercury removal rate reached more than 88%, and the final mercury mass concentration of the flue gas was 1.85 and 1.10 μg/m*^{3}*, respectively, which was significantly lower than the requirements of the current emission standards in China. It shows that the mercury emission standards can be achieved under the existing equipment conditions. This work provides a theoretical basis for promoting mercury removal from coal-fired power plants and optimizing mercury emission strategies.*



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