EXERGY ANALYSIS ON POLLUTANT EMISSION AND ENVIRONMENTAL IMPACT ASSESSMENT OF POWER PLANT

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Abstract:

The world energy consumption is largely dependent on fossil fuels. Especially the coal plays a key role in energy utilization process. More than seventy percents power generation were supplied by coal in China. With the growing concern for environment protection and pollutant emission reduction, pulverized power plant took a lot of measures to reduce the SO$_2$, NO$_x$ and CO$_2$ emission during the combustion process of coal.

Based on the second law of thermodynamics, exergy analysis is the most appropriate means to correlate with environment impact, which allow the identification of the irreversibilities and the environmental analysis aims to quantify the impact caused by the pulverized coal power plant.

In the study significant attention is focused on the linkage between exergy and the environment, several important observations and trends have been identified. The relations are identified between the chemical exergy values of emission waste and measures of environmental impact.

In this paper, the chemical exergy and was used to evaluation the air pollutant emission effect to environment exergy efficiency combined with intrinsic exergy efficiency evaluated to the environment protect equipment such as FGD, SCR. This paper demonstrates the application of exergy to attain a better understanding of pollutant emission and reduction, especially chemical exergy, specific chemical exergy, exergy efficiency and intrinsic exergy efficiency.

Keywords: power plant, chemical exergy, environment impact

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