

According to statistical data, the SO₂ emissions of the accounts for a considerable proportion in the whole country, for about 40% of the total, therefore, in order to improve the air quality, to take the necessary measures to control over the SO₂ emissions from Coal-fired Power Plants is of great significance. In 2007, the national governments strengthen environmental management, cohering on "Energy-saving and emission-reduction", and set emission standards as absolute obligation. This is a crucial year for China in its efforts to meet the energy saving and emission reduction target.

The thermal power plans in central part of Shaanxi is the main target to implement the "Energy-saving and emission-reduction" policy. There are abundant coal recourses in central part of shaanxi, so that there are numerous large-scale thermal power plants. Except the large thermal power plants with capacity of one million KW • h such as Qinling, Pucheng, Weihe, Baoji and Huaneng, others are basically small and medium-sized. By statistics, every year each of the thermal power plants discharges hundreds of thousands of tons of SO₂ that cause serious pollution on the environment.

At the beginning of 2007, the state environmental protection department and power supply bureau require all new power plants to install facility of desulfurization and dedusting for flue gas to ensure that the atmospheric emissions of SO₂ complies with the national standard. Otherwise they cannot be authorized to be established. The old power plants need to arrange those kinds of facilities as well in the shortest period; otherwise those power plants will suspend their production for rectification. Currently, most of the thermal power plants are being carried out in this work, but that produced plenty of desulfuration gypsum.

Shaanxi big thermal power plans used mainly wet flue gas desulfurization process in the thermal power system, mainly including limestone (CaCO₃), lime (CaO) slurry for detergents, in reaction tower to remove SO₂ in the flue gas. Such technology is more mature with the advantages of high desulfurization efficiency (90% ~ 98%), large capacity, high coal adaptability, and low operating costs and easy recovery of byproduct.

In large thermal power plants, over 90% of them use the wet lime / limestone-gypsum flue gas desulfurization process. Its main advantage is to conduct extensive commercial development, which can be as rich absorbefacient resources with low costs, and can be also as gypsum to recovery. Currently, lime / limestone flue gas desulfurization process is most widely used in the world, the desulfurization rate of more than 90% for high sulfur coal, 95% for low sulfur coal.

After learning of the Hancheng and Huxian two thermal power plants' by-products of desulfurization gypsum for chemical analysis and cement grinding test, there show no impact on cement by adding desulfurization gypsum, in contrast, it can improve the concrete performance.

The data indicates that the sulfur content is 39% in the gypsum by-product, have no adverse impact on cement and concrete products, can absolutely substitute for natural gypsum on cement production. And Many enterprises have used desulfurization gypsum in cement production throughout the country, through mass production and technical experiments, it has been approved that there is no any negative effects and risk, and it is a fully mature and safety technology.

In March and April 2007, West China Cement Limited have done more than 20 times tests on cement nature, 10 tests on concrete, and examined the results of cement applied by other enterprises, we draw a conclusion that there is no technical risk. In May 2007, our company began trial cement production blended with desulfurization gypsum instead of 50% natural gypsum. The products received good comments in the market. From June 2007, our company will improve production facilities, to achieve the target that all natural gypsum will be replaced by desulfurization gypsum. It can substantially reduce the cost of cement production, and can also enjoy the favorable tax policy on comprehensive utilization of resources.

According to the cement production plan of 1.78 million tons from June to December 2007, gypsum takes 6% in blending proportion of cement. In Pucheng, the tax-inclusive price of natural gypsum is RMB140 yuan per ton, RMB61 yuan for desulfurization gypsum. In Lantian, the tax-inclusive price of natural gypsum is RMB155 yuan per ton, RMB67 for desulfurization gypsum. For wetter desulfurization gypsum, considering 20% of the water, from June to December, cost savings are:

Pucheng Company: $(140 - 61 / (1 - 20\%)) \times 6\% \times 880,000 \text{ tons} = 3.37 \text{ million yuan}$

Lantian Company: $(155 - 67 / (1 - 20\%)) \times 6\% \times 900,000 \text{ tons} = 3.85 \text{ million yuan.}$

Both Companies: $337 + 384.7 = 7.12 \text{ million yuan.}$

Based on the above analysis, by the use of cheap desulfurization gypsum, cement quality is not affected; we can not only contribute to energy-saving, but also save 7.22 million yuan. The economic and social benefits are obvious.

West China Cement Co. Ltd.

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