| Removal Efficiency level, % | Process Listing |
|---|---|
| | 3. Low-sulfur fuel substitution<br>4. Limestone injection with a multistage burner[a] |
| 50-90% (low-sulfur coal) | 1. Lime spray dryer process<br>2. Limestone scrubbing |
| Below 50% | 1. Physical coal cleaning (highly variable effectiveness due to variation in coal properties)<br>2. Blending with low-sulfur coal |

[a] Not presently available commercially

Tables A.3.1 and A.3.2 summarize the relative merits and available cost data for sulfur oxide controls on thermal power plants.

Physical coal cleaning costs up to around $800 per tonne of $SO_2$ removed for high-sulfur coals. The capital costs of wet flue gas desulfurization (FGD) at new plants range between $162-326 per kilowatt of installed capacity. Limestone systems tend to be the most economical wet FGD system. FGD processes such as the dual alkali and Wellman-Lord processes, tend to be more expensive than purely non-regenerable processes. The capital costs of dry scrubbers are $154-200 per kilowatt of installed capacity but the technology is still under development. In general, there is a wide range in the actual installed cost of FGD systems due to the variables that need to be considered on a site- specific basis.

**$NO_x$ Reduction**

Several approaches can be used for $NO_x$ control depending upon the degree of control required. Combustion modifications are the most cost-effective methods for low levels of control. Flue gas treatment by ammonia injection methods have now achieved operational acceptance on coal-fired plants in Japan and could be considered if a high degree of control is required. A rough ranking of the degree of control is as follows:

| Removal efficiency level, % | Process Listing |
|---|---|
| 90% or higher | 1. Catalytic reduction with more than normal amount of catalyst, preceded by combustion modifications |