TransAlta Centralia WFGD Retrofit

QUICK FACTS

(Number below are based on Contract Guarantee Case Basis)

Contract Cost - $151,321,555
Compliance Unit #2 by 12/31/01 and Unit #1 by 12/31/02

**Plant Totals for 2 Units**

- Limestone Consumption 656 tons per day
- Gypsum Production 1,198 tons per day

**Process Basis Per One Unit**

- Sulfur at 1.05% per Unit
- 70% Centralia Coal and 30% Imported Coal
- Unit Power Generated 700 Megawatts
- Fuel Higher Heating Value 7,842 BTU per lb.
- Calculated Furnace Heat Input 7,015,000 BTU per hr.
- Specified SO₂ Emission 1,580 lbs. per hour
- SO₂ into Scrubber 17,558 lbs. per hour
- SO₂ Removal Rate in Absorber 90%
- SO₂ Removed 15,924 lbs. per hour

Limestone Ball - One Installed Total for both units
Horizontal Mill 12.5 ft by 24 ft, 2,000 horsepower

- New stack is 70 ft in diameter and 470 ft high, stainless steel clad liners are 29 ft in diameter
- 8 Slurry Pumps total at 55,000 gallons per minute recycle each
- 2 Belt Filters at 46 tons per hour each

*Inside of the Absorber looking up at spray headers and nozzles.*

- There are two Absorber vessels made of stainless steel.
- They are each 58.5 ft in diameter and 121.45 ft in height.
- There are four spray levels per absorber.
Introduction to Wet FGD Technology

Flue gas containing $SO_2$ contacts alkaline (limestone) aqueous slurry in an absorber. In the absorber, $SO_2$ dissolves in the slurry and initiates a reaction with dissolved limestone. As a result of this reaction, calcium sulfite crystallization occurs in the reaction tank, and available alkalinity of the slurry is depleted. Fresh limestone slurry is added to the reaction tank to maintain the desired alkalinity. Forced oxidation is added to the reaction tank to convert calcium sulfite into calcium sulfate (gypsum). The reaction tank slurry is recycled through the spray nozzles until the desired density of the slurry is obtained. Classifier pumps then remove some of the reaction tank slurry to be dewatered and filtered. The by-product is gypsum.