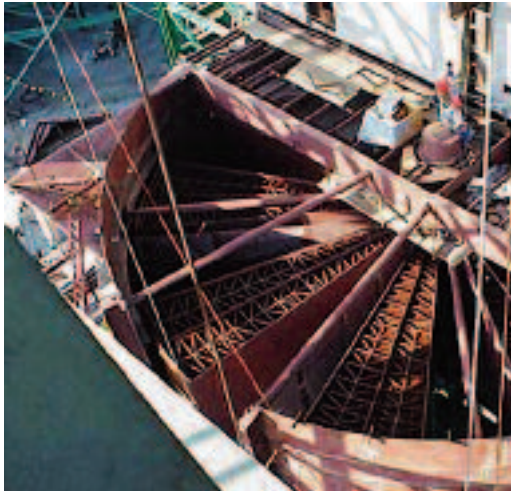


Rotary Air Preheater (APH)



The Problem-

Heat from the coal burning is wasted and causes the electricity process to be lower in efficiency. This inefficiency causes more fuel to be burned and thus would result in more emissions.

The Solution -

Capture some of the waste heat and use it to preheat the fresh air needed for the coal combustion, thus increasing efficiency. This means that less coal is burned, and therefore, less emissions are created.

How it works-

This technology is at least 100 years old, and every power plant already has some version of the air preheater installed. The most common is the rotary preheater. Metal plates are placed in the exhaust of the coal combustion process and allowed to heat up. The plates are then rotated into the fresh air going to the furnace and the plates, in turn, heat up the air. The exhaust is cooled from 700°F to 300°F while the air is heated from ambient temperature to 600°F. This fuel-saving device decreases the amount of coal burned, thus decreasing emissions by up to 10 percent.

What does this have to do with mercury control?

Some of the most important chemical changes to mercury in coal exhaust gases occur in the air preheater. To be able to fully understand this chemistry, and to simulate the actual conditions of a full-scale power plant, the same time versus temperature path through the air preheater needs to be followed. By using a smaller version of the same device installed in a power plant, this similarity is maintained, and thus will allow the Mercury Research Center to accurately simulate a bigger power plant.