

Case Study Coal-fired Power Plant

Plant information

Tiefstack, Hamburg, Germany

2 x 75 MW_{el}, Steinmuller

Fuel: Ruhr and Colombian coal

Cleaning areas:

2 x Catalysts with 44 m^2 cross-section area

Infrasound generators: 2xAP2000

Installation year: 1996

INFRAFONE

Plant Situation

Initially there were 4 layers in the catalysts. No soot cleaning equipment was installed from the beginning, since the boiler manufacturer Steinmüller was convinced, that by guiding the flue gas in parallel, the cat stones would not become dirty. The catalyst reactor was also built by Steinmüller.

The catalyst elements are of honeycomb type, made by Frauental in Austria. Pitch 6,75mm, opening 5,7mm. The volume of the reactor is 125 m3. The first of the three layers was completely soiled and the ashes piled up like sand dunes of 1m height, mainly along the walls. Below each layer many dust "stalactites "~30mm were hanging out of each basket. Because of the pressure drop and related fan problems, the plant had to be stopped one time every three months. The pressure drop increased from 6-7mbar in clean conditions up to 12 mbar. Then the current for the ventilator exceeded nominal current and they had to reduce the load of the boiler or to stop for cleaning. The cleaning process was a time consuming (~5days) and expensive activity. Each layer has to be vacuumed and the plugged orifices needs to be perforated manually (800.000 perforations per layer could be blocked!). The normal case was that the boiler started from clean conditions in September – first cleaning beginning of December – second cleaning February / March and then trying to reach June with reduced load to avoid further cleaning.



The top part of the 90 deg bent Infrasound generator

Technical results

Clean the full season. The Infrasound generators keeps the catalysts clean the full season, without any need for manual cleaning. The differential pressure is kept stable on a low level.

Reduced NOx emissions. Since the catalyst is now kept cleaner the lowest catalyst layer has been removed, now operating with three layers only.

Under References, at www.infrafone.se, you can read about our technical and economical results for several heat and power plants.

We have also gathered our knowledge based on our long experience of infrasound technology compared to conventional methods as steam soot blowing, shot cleaning, compressed air soot blowing and audible sound (sonic or acoustic horns) in several "white papers" that are available under Knowledge Base at Infrafones homepage.

More information about the infrasound technology and its benefits as well as technical features and functions of the Infrasound System can be found in several brochures under Products at Infrafones homepage.

INFRAFONE