

Acoustic Cleaners on SCR Reactors
Jake Shelton, BHA Group, Inc.
Jshelton@BHA.com

In the early 90's, when the US Utility Companies began implementing SCR reactors on coal-fired boilers, the only proven on line catalyst cleaning system was conventional sootblowers. That is no longer true! At this time, there are more than 80 SCR reactors being cleaned by the acoustic energy emitted from acoustic cleaners (sonic horns). The acoustic cleaners have proven effective on high dust and low dust reactors following boilers burning a variety of coals including PRB. Experience has also shown that the acoustic cleaners are effective on the different catalyst designs: plate, honeycomb and corrugated.

The US Utility Industry has used acoustic cleaners since the early 80's. The most common applications for the acoustic cleaners have been baghouses, precipitators and the back passes of boilers. Areas where the ash deposits are dry. The first SCR reactor installation in the US took place in 1997. The acoustic cleaners were installed on a trial bases to replace some out of service steam sootblowers. The trial installation proved successful, and the plant eventually replaced all of the sootblowers on the SCR reactor with acoustic cleaners. Please refer to the paper titled "A Sound Method of Cleaning SCR Reactors" for more details on this installation.

As the implementation of SCR reactors began to heat up in US, BHA began actively promoting the use of acoustic cleaners in lieu of sootblowers. The first hurdle for BHA to over come was to confirm that the acoustic energy emitted by the acoustic cleaners would not damage the catalyst. This was done by doing lab and field-testing with several of the major catalyst suppliers. All of the testing proved that the low frequency (75 Hz), high-energy (147 dB) sound waves did not cause any structural damage to the catalyst. In fact, most people believe that the acoustic cleaners will prove to be a much more gentle cleaning system to the catalyst than the erosive cleaning action of sootblowers.

The next step for BHA was to prove that the acoustic cleaners were at least equally as effective to the cleaning action of sootblowers on this application. To prove this point, BHA supplied acoustic cleaners to several different utility companies to do side by side comparisons. These companies operated the acoustic cleaners on at least one reactor and operated sootblowers on other reactors treating the flue gas from the same boiler. In every side-by-side evaluation, the acoustic cleaners have been selected as the preferred cleaning system. For more information on one such comparison, please refer to the technical paper titled "TVA, Paradise Fossil Plant – Powerwave Acoustic Cleaners Vs. Sootblowers".

Once the acoustic cleaners proved to be an effective catalyst cleaning system that would not damage the catalyst, the utility plants began seriously considering the use of acoustic cleaners instead of air and/or steam sootblowers. The economic justifications to use the acoustic cleaners were so tremendous that utility plants began requesting the use of acoustic cleaners on the SCR reactors being designed and built by the SCR OEMs. BHA's first contract from a SCR OEM was obtained in the summer of 1999. Since that time, BHA has supplied thousands of acoustic cleaners to all of the SCR OEMs and has worked with the majority of

the A&E firms involved in the US SCR market. It is estimated the BHA has saved the US Utility Industry approximately 50 million dollars in SCR equipment and construction costs.