# SONIC CLEANING

case study Installation of 2X5pc INSONEX® 200G sonic cleaners in Fine Paper Mill. (FUEL, White liquor)

## **REPORTED PROBLEM**

Temperature outlet from the airpreheater too high and increasing rapidly during normal operation at the risk that the fabric filter could be damage. The use and operation of the steel ball system is expensive and not effective enough, further more the steel ball system causes a lot of wear on the tube packages.

## **ENGINEERING / INSTALLATION**

From the drawings and operation data gathered, the engineered proposal was to install 5pc INSONEX® sonic cleaners, model 200G into the left side of the airpreheater to evaluate the result prior to installing on the right side. (Please see sketch next side.)



Right side: result when cleaned by conventional steel ball system. This section is now equipped with sonic cleaners.



## **RESULT REPORTED / EVALUATED**

#### MEASURED RESULT:

Flue gas temperatures between each tube package measured - result is that the overall heat transfer was increased by 49°C in favour of the INSONEX side compared with the side cleaned by the steel ball system.

Use of steel ball cleaning has been reduced by 50% with less wear on the tubes as a result from the sonic installation.

#### **VISUAL INSPECTION:**

Visual inspection at shut down clearly shows less soot accumulation on the heat transfer surfaces. (See pictures)

At the shut down and in combination with the visual inspection the decision was made to install five more INSONEX® 200G on the right side of the airpreheater.

### **BASIC PRINCIPLE:**

Sonic Cleaning is a low impact on-line cleaning method and the basic principle of Sonic Cleaning is to create a sound wave carrying an energy level exceeding the forces that tend to make particles suspended in a gas flow to adhere to each other and surrounding surfaces, i. e. preventing build up by breaking up the particles before they can form a hard layer. Further more the sound will not be shadowed of by any internal construction.

This is achieved by activating one or more sound emitters in periods, intervals and frequency adapted to the specific conditions at the plant.

The sound emitters are driven by compressed air.





Left side Cleaning result from the INSONEX system on the left side. Picture view from INSONEX No 1.



Kockum Sonics AB, Industrigatan 39, P.O. Box 1035, SE-212 10 Malmö, Sweden. Tel: +46 (0) 40 671 88 00 Fax: +46 (0) 40 21 65 13, e-mail: info@kockumsonics.com, www.kockumsonics.com