REINHOLD ENVIRONMENTAL Ltd.

2011 NOx-Combustion Round Table & Expo Presentation

February 7-8, 2011, in Birmingham, AL / Hosted by Southern Company

SCR Inspection : The Good and the Bad

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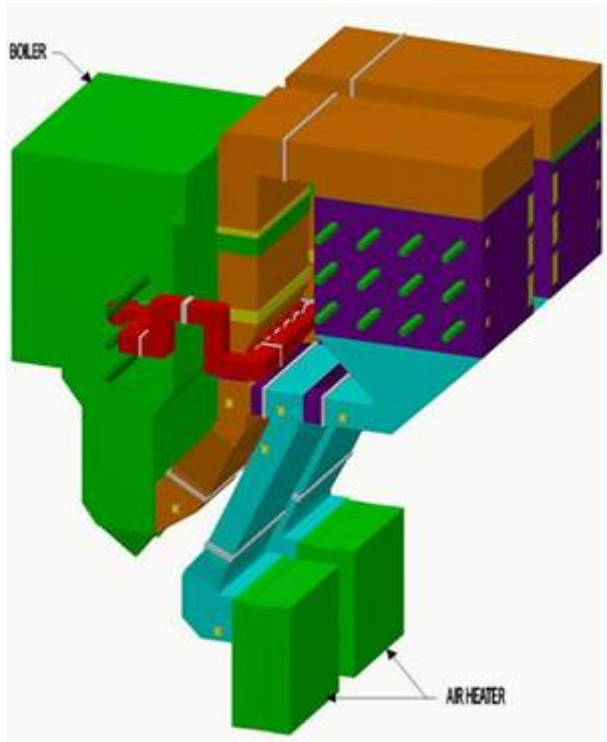
A SCR inspection is not just looking at the catalyst

A thorough inspection will start at the boiler economizer and proceed through the outlet of the SCR box.



Economizer Bypass

- Look for cracks or deformation caused by thermal stress
- Look for ash deposits or ash erosion
- Check the condition of the dampers

LPA Screens

- Inspect the structural elements
- Inspect the screens for holes and thin areas

Source: Steag

SCR Inlet Ducts

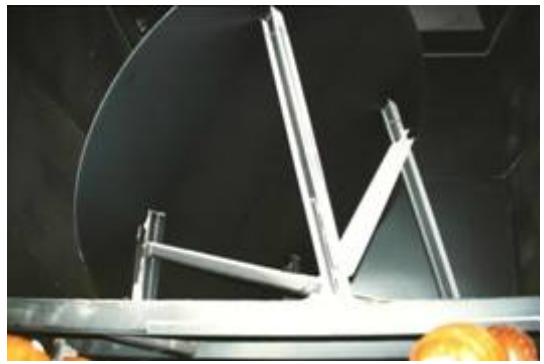
- Ash deposits can give an indication of flow deviations across the duct. A larger ash deposit is a sign of a lower gas flow.
- Erosion of duct wall is a sign of very high gas flow

Turning Vanes

- Check that the vanes are clean and free from erosion damage
- Check that each vane is securely fastened to the support structure

Delta Wings

- Check that the wings are clean and free from erosion damage
- Check that each wing is securely fastened to the support structure



Static Mixers

- Check that the mixing vanes are clean and free from erosion damage
- Check that each mixing vane is securely fastened to the support structure

Ammonia Injection Grid

- Make sure all the components of the AIG are in place
- Make sure each injection hole is not plugged with ash or ammonium bisulfite deposits

Dampers

- With year round operation, dampers aren't being used as often
- If possible, one may want to stroke the dampers while someone is in the duct watching them travel to identify any spots where the dampers may tend to bind or rub
- Look for erosion or corrosion on the dampers and their frames

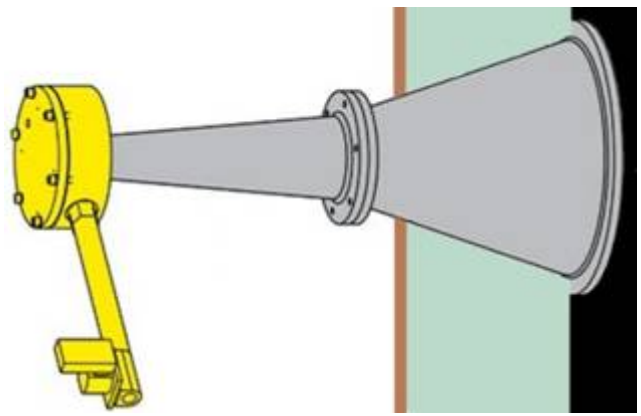
Rake Sootblowers

- Check the rake supports
- Check that the guide rollers are free to turn
- Look for erosion damage on the exterior of the rake arms
- Make sure the holes in all the nozzles are open

Sonic Horns

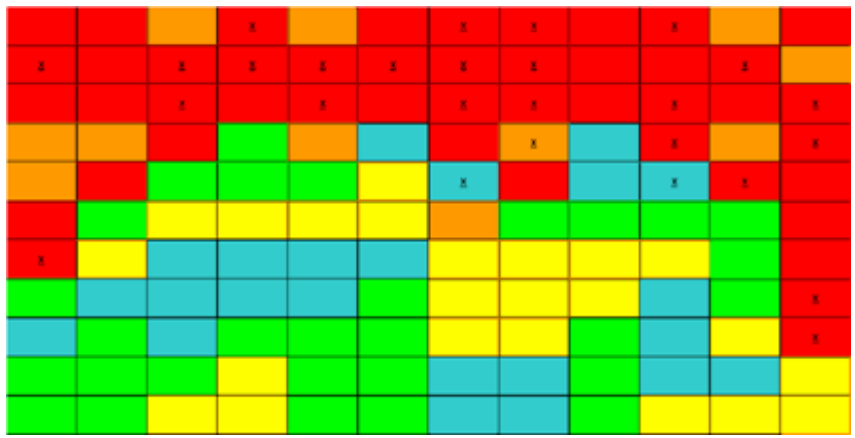
Check the inside of the horn bell for:

- Ash buildup in the cool wet area
- Corrosion and holes in the cool wet area



Catalyst

- It is not unusual to find a lot of ash and debris on top of the catalyst.
- Pay attention to the pattern across the SCR box.

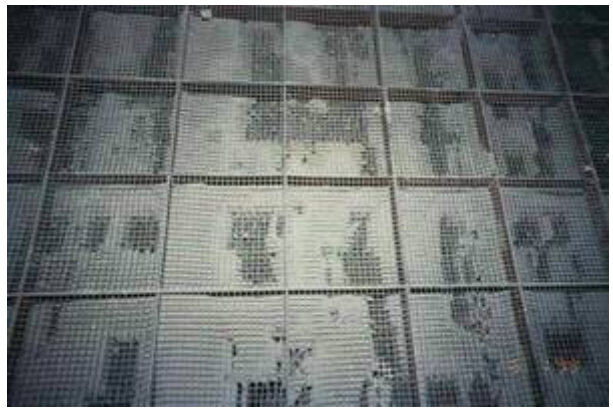


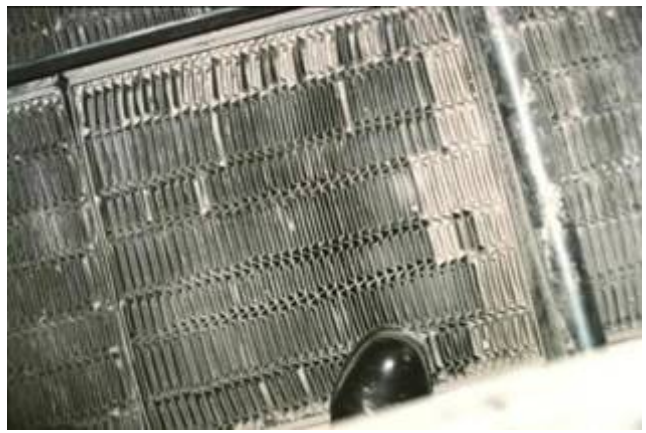
Catalyst (cont.)

- After vacuuming the ash off the top of the catalyst, one needs to inspect and count the plugged cells in a representative number of catalyst modules

Catalyst (cont.)

- It is more difficult to count the percentage of cells plugged in a plate catalyst





Unburned Carbon

- One needs to minimize the amount of unburned carbon that accumulates on the catalyst.
- Large accumulations can lead to smoldering deposits or catalyst fires.

Charred Deposit in Catalyst

Catalyst (cont.)

- Check for catalyst erosion
- With plate catalyst the wire mesh will still be there but the catalyst will be missing
- With honeycomb catalyst the surface may look like an aerial view of a mountain range
- With plugged honeycomb catalyst the erosion may be hidden, look at the bottom side of the catalyst

Catalyst (cont.)

- Look for gas leakage between the catalyst modules indicating a bad seal
- Look for missing seal strips around the honeycomb catalyst elements

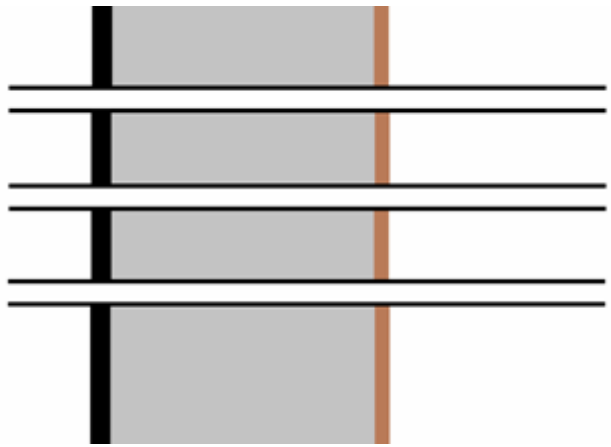
Sampling Plate Catalyst

Source: Argillon

Honeycomb Test Element

Sampling Grid

- Check that the sample lines are firmly attached and terminate in the correct location
- Look for holes in the lines
- The sample lines tend to plug or corrode holes through the tube wall at the hot/cold interface



Questions?