



HOW TO MAKE A BOILER LOOK GOOD FOR INSPECTION

In the water treatment business, it has become apparent that many cases of “apparently” dirty boilers come from poor shutdown techniques – not inadequate treatment.

During normal operations, the boiler water chemistry is carefully controlled so that the suspended material is conditioned to prevent hard deposits on boiler metal. These suspended solids are maintained in suspension by water circulation and the action of the treating chemicals. When a boiler is shut down or drained, this sludge may settle and bake on tube surfaces; it may become so adherent that mechanical (turbining) or chemical cleaning may be required. At worst, there are large piles of sludge in the mud drum and in the lower tube ends which cause the customer and/or boiler inspector to feel that the deposits developed during operation, and thus unjustly criticize the treatment program. Outlined below is a procedure that if followed, will minimize the total amount of sludge left behind when a boiler is opened.

Shut-Down Procedure

1. Three to five days before a scheduled shutdown, increase the blowdown rate by 50% or more.
 - a. If possible, increase the alkalinity to a least 500-ppm. Go as high as possible without causing foaming or carryover.
 - b. Due to the increased blowdown rate, the feed rate of the scale inhibitor and oxygen scavenger must be increased so as to maintain the normal boiler water residuals.
 - c. If possible, increase the sludge conditioner level in the boiler water by 50 to 100%.
2. During the last 24 hours before shutdown, decrease the continuous blowdown and increase the manual blowdown.
 - a. Frequent short bottom blows are better than fewer longer blows.
 - b. Generally, it is sufficient to hold each mud drum blowdown valve open for about 5-10 seconds every one to two hours.
 - c. Once the load is dropped from the boiler, include the header blowdowns as part of the manual blowdown procedure.
3. When the fire is out and the boiler is cooling, continue heavy manual blowdowns. Refill each time with hot treated feedwater.
 - a. Blowdown the water column, gage glass and feedwater regularly while there is still pressure in the boiler.
 - b. Continue to blowdown and refill until the boiler tubes and setting are cooled and ready to open.
 - c. When the setting is cold enough so that is possible to get into the furnace, the boiler is cool enough to drain.
 - d. If the boiler is drained too soon there will be sufficient heat to bake on the remaining sludge.
 - e. The rate of cooling should conform to the manufacturer’s recommendations.
4. Open the boiler as soon as it is drained, and immediately wash out the remaining sludge using a high-pressure hose.
 - a. If washed out immediately, the sludge will be in a fluid form that will be easily rinsed away.
 - b. If not washed immediately, the sludge may dry and even bake on if there is enough heat left. This will require a more stringent cleaning.