

What If I Don't Treat the Boiler? Part 1

I actually knew of an account that did not chemically treat their steam boiler; they only softened the make-up water. Having unplanned outages and incurring the extra maintenance costs associated with replacing parts must not have bothered them. I wasn't able to talk with the financial person at the plant, but if given the opportunity, I knew I could have persuaded them to start chemical treatment once I explained the benefits/cost savings it would provide. So, this was the seed that made me think, "If you don't chemically treat steam boiler systems, what would fail first?"

Most likely, parts of the system would fail first due to oxygen corrosion. As the temperatures increase in the boiler system, oxygen becomes very aggressive to mild steel and copper components. The oxygen comes from the make-up water, and as soon as it enters the system it starts corroding the feedwater piping and, later, the boiler tubes. The metal loss is a pitting-type of corrosion, a very early instigator of high maintenance costs, along with the even more annoying unplanned production shutdowns. Since oxygen is volatile, any residual oxygen within the steam can further affect the steam and condensate system equipment.

In addition to a loss in production rates and high repair costs, could there be additional costly problems associated with oxygen corrosion in the system? Most definitely! The corrosion products, often iron and sometimes copper, transport into the boiler, deposit onto the heat transfer surfaces, and become insulators on the boiler tubes. This in turn reduces heat transfer and increases fuel requirements in order to produce the same amount of steam. "Dirty boilers" use more fuel, so the additional penalty is much higher fuel costs. Fuel is the highest operational cost item in a boiler system—even a slight efficiency loss can mean big money to a facility. This loss in efficiency is far greater than the cost of proper water treatment.

Of course, keep in mind these same problems could exist within undertreated or poorly serviced systems as well.

So, now we know three very good reasons to chemically treat a boiler:

- To reduce unplanned outages
- To reduce maintenance costs
- To reduce fuel costs

Armed with this knowledge, I hope you are now pumped up and ready to go speak with your prospect's financial people and plant manager about the opportunity to save them money with your water treatment program. We'll discuss more reasons for system failure in future posts. Stay tuned...