**Dealkalizer Installation Improves Program and Reduces Operating Costs**

**Problem**
A rendering plant in the Southeastern U.S. required high chemical dosages to control corrosion in the boiler condensate return system. Plant management was concerned about the existing water treatment program’s high cost. Boiler fuel costs were also higher than in similar plants within the organization.

The plant used three 800-HP boilers to generate 29,000 lbs/hour of steam at 100 psig. The primary fuel source was Tallow. Well water with high alkalinity and hardness levels supplied the boiler makeup water. Dual tank water softeners were used for hardness removal.

**Analysis**
When Chem-Aqua audited the system particular attention was paid to upgrading the pretreatment equipment. Using a dealkalizer to lower the makeup water alkalinity can significantly reduce the boiler blowdown rate and chemical requirements. For this operation, the makeup water’s high alkalinity required high boiler blowdown rates to prevent foaming and carryover. By installing a dealkalizer, the blowdown rate could be reduced from 9.0% to 4.0% of the feedwater flow. Reducing the blowdown rate was projected to reduce fuel costs by over $18,000 annually. The water savings was estimated at 660,000 gallons per year.

High makeup water alkalinity levels can also cause large amounts of carbonic acid to form in the condensate. Unless controlled by chemicals, the carbonic acid causes corrosion in the condensate return system and contributes to energy-robbing iron deposits on the boiler tubes. The dealkalizer installation was projected to reduce the chemical required to control condensate system corrosion with a savings of $10,000 per year.

**Solution**
An appropriately sized chloride cycle dealkalizer was recommended at a total cost $20,000 with annual operating costs estimated at $2,300 and payback on the project at 9.6 months, which represents a 26% ROI. The rendering plant purchased and installed the recommended dealkalizer mid 2006.

During a subsequent review meeting, actual savings were found to be in excess of $30,000 annually, based on 2005 fuel prices. Furthermore, due to the upgrade, the boiler tubes are significantly cleaner, the boilers are less susceptible to foaming and carryover, and steam traps are less prone to failure.

The Chem-Aqua recommended pretreatment equipment upgrade significantly improved the water treatment program results and reduced fuel, water, and maintenance costs.