

CASE STUDY | Boiler Condensate Treatment



CHALLENGE

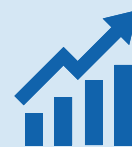
A large oilseed processing facility in Minnesota was venting significant amounts of flash steam to reduce corrosion in its condensate return system. When flash steam was reused in the process, elevated CO₂ levels formed carbonic acid in the condensate, accelerating corrosion and transporting iron back to the boilers. This led to increased boiler blowdown to control iron fouling, resulting in higher energy, water, sewer, and chemical costs.



SOLUTION

Water analysis revealed that bicarbonate alkalinity in the makeup water was the source of the CO₂ causing condensate corrosion. A twin 100-GPM reverse osmosis (RO) system was installed to remove dissolved solids and bicarbonate alkalinity from the softened makeup water. By reducing the alkalinity entering the boiler, CO₂ generation in the steam was significantly lowered, minimizing carbonic acid formation and reducing corrosion throughout the condensate return system.

A knowledgeable water treatment partner with a deep understanding of system operations can identify innovative optimization opportunities and recommend solutions that deliver significant cost savings.



RESULTS

100% FLASH STEAM REUSE

REDUCED STEAM PRODUCTION
5,000–10,000 PPH

BOILER BLOWDOWN
DECREASED 83%
From 12 to 2 GPM

REDUCED CHEMICAL CONSUMPTION
NEARLY 70%

LOWER ENERGY AND WATER COSTS



TOTAL SAVINGS

\$200K+ Annually