

CASE STUDY**RESULTS**

The installation of the RO has allowed all flash steam to be reused. This has resulted in a 5-10,000 pph reduction in steam production from the boilers. Boiler blowdown was reduced from 12 gpm to 2 gpm and chemical usage dropped by almost 70%. This change produced an annual cost savings in excess of \$200,000 per year.

**TOTAL SAVINGS**
\$200,000+ annually

A corporate partner that understands system operations can find innovative ways to manage these systems and make recommendations that can save companies thousands of dollars

**CHALLENGE**

A large oilseed processing facility in northern Minnesota was venting large amounts of flash steam to prevent corrosion in its condensate return system. When the flash steam was used in the process, large amounts of carbonic acid were created in the condensate return system. This creation increased condensate corrosion rates and resulted in a large amount of iron being transported from the pipes and process heat exchangers back to the boilers. To prevent iron fouling, boiler blow-down was increased. The increased blow-down caused an increase in energy usage as well as an increase in water, sewer, and chemical use due to the lack of condensate that would normally be returned to the boilers.

**SOLUTION**

The low pH's in the condensate return were due to subcooling of the condensate when flash steam was used in the process. High levels of CO₂ in the flash steam were generating a large amount of carbonic acid in the condensate return. The CO₂ in the steam was due to the breakdown of bicarbonate alkalinity in the makeup water and the subsequent release of CO₂ when heated in the boiler. To remove the alkalinity, a twin 100 gpm RO was installed to remove dissolved solids in the softened makeup water, thus reducing the CO₂ potential of the steam. By removing the bicarbonate alkalinity ionically in the RO, the amount of CO₂ that was generated with the steam was greatly reduced.

More than a water treatment solution.

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