



Case History

Reverse Osmosis System Saves Food Processor Energy Costs

A food processor contracted with Aries Chemical to review the feasibility of using membrane technology to reduce their steam boiler energy costs. Aries performed an energy audit at their facility that projected substantial energy savings by utilizing a Reverse Osmosis (RO) Membrane system for boiler feedwater treatment. The food processor was using softened water as make-up water. Boiler cycles of concentration were limited to approximately 8.5 cycles. RO make-up water would allow the boiler water to be cycled up to approximately 50 cycles of concentration.

Aries' feasibility study projected an 18 month project pay-back based upon energy savings. The food processor contracted with Aries Chemical to design, build and install a one-pass RO system to pretreat their boiler make-up water. The table below details the 46,000 ft³/day natural gas savings.

	Boiler Operating Performance before RO installation	Boiler Operating Performance with RO make-up water
Steam Production	1,060,000 lbs/day	1,060,000 lbs/day
Pressure	180 psi	180 psi
Cycles of Concentration	8.5 cycles	50 cycles
Blowdown	141,000 lbs/day	21,000 lbs/day
Reduction in blowdown	NA	120,000 lbs/day
Daily Natural Gas savings	NA	46,000 cubic ft/day

PROJECT RESPONSIBILITIES

Technical responsibilities for design, fabrication and installation were assumed by Aries Chemical. Aries' responsibilities were as follows:

- Design of One-Pass Reverse Osmosis system treating clarified surface water.
- Reverse Osmosis system includes PLC, dechlorination, dispersant chemistry, one pass RO, permeate holding tank and Clean-In-Place system.
- Aries Chemical staff designed, built and installed complete RO system.

For further product and technical assistance, contact your Aries Chemical Representative or the Beaver Falls office @ 315 346 – 1489.

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