

## Equipment scrutiny and chemistry optimization save 5.2 million gallons for a beef producer in Australia.



### CHALLENGE

One of Ecolab's beef processing customers in Australia was struggling with various technical challenges at their beef processing plant. Feed water entering the reverse osmosis (RO) system was high in aluminium traces and colloidal silica, causing scaling issues. Lack of effective pre-treatment and ineffective membrane antiscalant treatment were adding to the problem. Additionally, continuous chlorine exposure was causing membrane oxidation and permanent damage to complete modules, leading to reduced salt rejection and compromising product quality. Frequent outages of heat exchangers and condensers were increasing operating costs and a loss in total production output.

### SOLUTION

To address these challenges, the Ecolab Global Intelligence Center (EGIC) collaborated with local Ecolab industry and account representatives to develop a solution. To overcome high salt passage, specifically silica ions, the EGIC proposed to replace the damaged membrane (DuPont BW30 XFRLE 400/34) in turn to provide increased protection against scale formation/ deposition on steam raising plants, leading to increased cycles of concentration in all related systems.

The Ecolab industry technical consultant (ITC), based on an assessment with the local team, recommended liquid chlorine dosing to be replaced with the PermaDUO programme comprising of PC-22. The solution would help ensure protection against biofouling within the complete media filtration and membrane system, without the risk of further halogen damage. Two dosing points for PC-22 were suggested.

#### ANNUAL SAVINGS

##### WATER

Saved  
**5.2 MILLION**  
gallons of water

##### ASSETS

Saved  
**\$34,400**  
Membrane Replacement Cost

##### PRODUCT QUALITY

Saved  
**\$3,000**  
per year  
64 Hrs. CIP Time per year

##### PRODUCTIVITY

**\$2,880**  
Workhours Saved for the  
customer - 96 Hrs

#### RECOVERY

Pre Recovery- 60%  
Post Recovery- 73%

##### TOTAL VALUE DELIVERED

**\$40,280**

Aimed at protecting the membrane from silica fouling, the existing anti-scalant program (PC-391T) was replaced with PermaTreat PC-510T. The equipment and configuration issues were jointly handled by the local account manager and EGIC engineers.

## IMPACT

With these technical solutions in place, the latest modelling using Ecolab RO optimizer PRO showed a significant impact. The recovery ratio safely increased by 13%, from 60% to 73%. This increase in RO recovery allowed the production of high-quality permeate from the same feed water flow volume while reducing the volume of concentrate needing treatment and final disposal. Moreover, the increase in operating recovery reduced antiscalant dosing requirements due to an increase in concentration factor. Overall, the collaboration among the EGIC team and local industry and account representatives had a positive impact on the customer's beef processing plant, resulting in improved system performance and reduced production losses.

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