



# Quick detection of high oxidant levels by 3D TRASAR™ Technology for Membranes and System Assurance Center prevents membrane damage

**NALCO** Water  
An Ecolab Company

CASE STUDY - FOOD & BEVERAGE

CH-1995



## BACKGROUND

A large dairy processing plant in the western U.S. uses a two-train Reverse Osmosis (RO) unit to provide high-quality water for performing equipment cleanups. The plant operations team uses 3D TRASAR Technology for Membranes and Nalco Water's System Assurance Center for system monitoring and control. The technology includes the probes and sensors needed to monitor key operating parameters. A team of highly trained chemical engineers in the System Assurance Center monitors and interprets system conditions in real time and addresses system alarms 24/7.

## SITUATION

In mid-February, the membranes on both trains of the RO system were replaced. The System Assurance Center performed a data check and revalidated the alarm limits on the 3D TRASAR controller. Nine days later, the sodium bisulfite inventory was depleted due to a higher-than-normal demand. Plant personnel were unaware of this situation.

This situation allowed high-oxidant water to enter the RO unit. Left unchecked, this situation would have damaged the new membranes and possibly forced their untimely and costly replacement. Thankfully, the high oxidant levels triggered a high Feed ORP alarm on the 3D TRASAR controller. The System Assurance Center received and addressed this important alarm immediately. Figure 1 shows the data points that triggered the alarm.

### ENVIRONMENTAL RESULTS

Prevented premature replacement/disposal of membranes due to quick detection/response to high oxidant levels

eROI<sup>SM</sup>

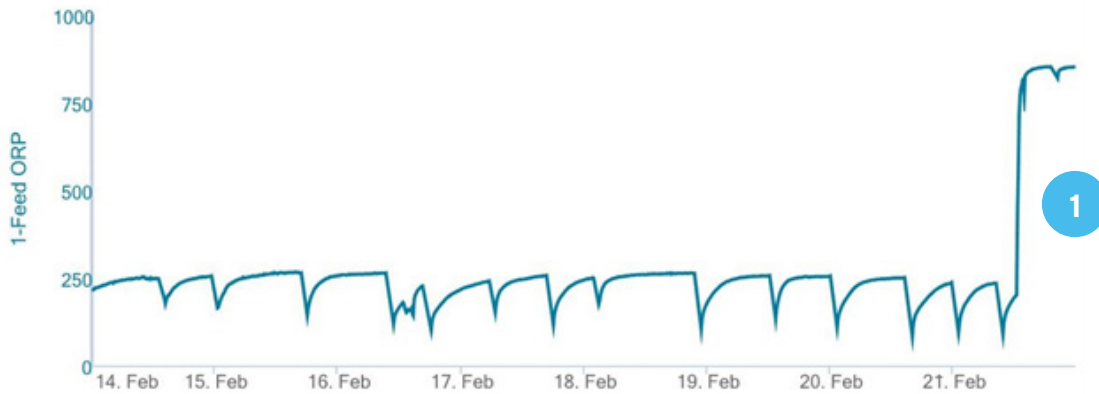


ASSETS

### ECONOMIC RESULTS

Membrane replacement costs valued at \$87,000 USD

*eROI is our exponential value: the combined outcomes of improved performance, operational efficiency and sustainable impact delivered through our services and programs.*



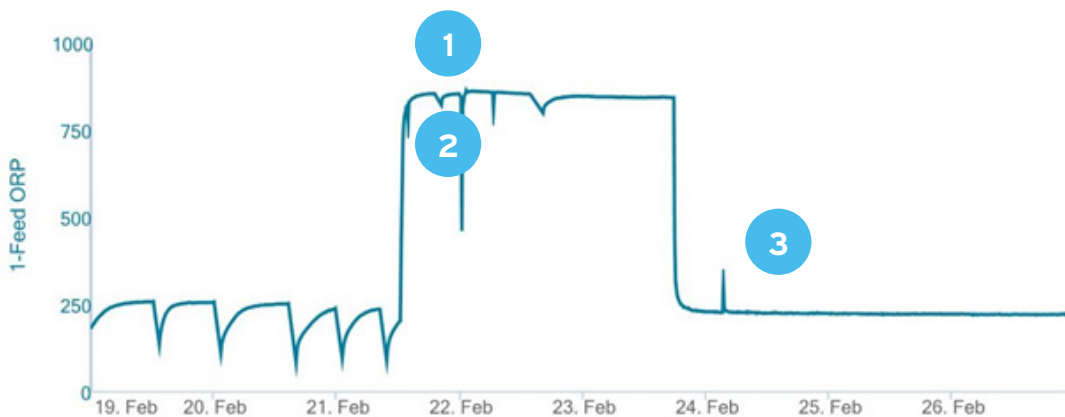
**Figure 1 - 3D TRASAR data from the event**

1. System Assurance spots high oxidant levels and alerts local Nalco Water contact

## SOLUTION

After analyzing the RO unit's 3D TRASAR data, the System Assurance Engineer immediately identified the most likely causes of the high oxidant levels. A detailed alarm analysis with recommended corrective actions was sent by e-mail to the customer and the local Nalco Water Sales and Service team. The System Assurance Engineer also followed up with the Nalco Water Sales Engineer via phone.

After the Sales Engineer confirmed the issue's root cause, a rush order for sodium bisulfite was placed. This quick notification also enabled the customer to take additional steps to minimize membrane damage by ensuring that the feedwater's free residual halogen (FRH) levels did not exceed 2.0 ppm. The bisulfite was delivered two days later, and product feed was restarted. This action brought the Feed ORP levels back down to acceptable levels. See Figure 2 for details.



**Figure 2 - Feed oxidant levels before & after implementation of recommended corrective action**

1. System Assurance spots high Feed oxidant level and alerts local Nalco Water contact
2. Rush order of sodium bisulfite is placed
3. Feed oxidant levels return to normal after bisulfite feed restart

## ECONOMIC RESULTS

3D TRASAR Technology for Membranes, the System Assurance Center's 24/7/365 monitoring service and the local Nalco Water team's quick response helped to prevent membrane replacement at a cost of \$87,000 USD.

Production constraints that would have resulted while replacement membranes were secured and installed were avoided.

### Nalco Water, an Ecolab Company

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