

Nutritional Plant in Singapore Saved 17,640m³ of Water Annually with 3D TRASAR™ Technology

# An Ecolab Company

## CASE STUDY - FOOD & BEVERAGE

CH-2173AP



### BACKGROUND

The customer is a major manufacturer of premium-quality nutritional products in Singapore. The company has a strong commitment to product quality assurance, water saving and environmental sustainability.

#### SITUATION

Facing stress from high freshwater consumption at the plant and rising water prices, the customer organized a comprehensive plant audit to find opportunities to improve the efficiency of their water use. During the audit, Nalco Water and customer utility representatives worked together to carry out a full plant Mechanical, Operational and Chemical (MOC) assessment. The objective was to evaluate the site's water management practices and utility system efficiency, with a focus on water reuse. After the audit, Nalco Water proposed several opportunities for water savings to meet the plant's sustainability goals.

The customer used a water softener system for boiler feedwater pretreatment. Freshwater was used for rinsing the softener resin in the resin regeneration process, which was then discharged to the wastewater system. The discharged rinse water quality was normally clean enough to be used as cooling water makeup. However, the rinse water would occasionally fail to meet the specifications for cooling water makeup due to high conductivity.

CUSTOMER IMPACT	<b>e</b> <sup>ROI™</sup>	ECONOMIC RESULTS
Reductions of the process water usage for cooling water as well as make up water for the cooling tower: total water freshwater saving is estimated at 17,640 m <sup>3</sup> /yr	WATER	Actual savings due to reductions in freshwater consumption: \$29,771 USD
Reduction of the wastewater discharge: an estimated 17, 640 m³/yr	WASTE	Actual savings due to reductions in wastewater discharge fees: \$29,504 USD

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

Meanwhile, the customer had a 3D TRASAR<sup>™</sup> for Boilers unit on-site, which required cooling water to cool and reduce pressure of the incoming boiler feedwater sample before water measurement. In this case, the customer was using valuable process cold water with a flowrate of ~2m<sup>3</sup>/hr as the cooling water, which was then discharged to the sewer as a waste stream.

#### SOLUTION

In order to help the customer improve water saving and reuse, an integrated solution using 3D TRASAR™ technology was proposed. Rinse water from softener resin regeneration was diverted to a 300-liter buffering tank before it was used as cooling water makeup. Another 3D TRASAR™ unit was installed to continuously monitor the conductivity of the new buffering tank water. The water would be automatically discharged to the sewer if it exceeded the conductivity specification for makeup water.

Nalco Water also proposed using cooling tower water to replace the process cold water for 3D TRASAR™ Boiler sample cooler.

With both technology configurations, the customer significantly reduced water consumption and costs, as well as wastewater treatment costs.



Figure 1 - P&ID of proposed water saving project

Figure 2 - 3D TRASAR™ installed to monitor and control the softener rinse water

#### CONCLUSION

The Nalco Water project significantly reduced the freshwater intake and wastewater discharge by 17,640 m³/yr resulting in a total cost savings of over \$59,000 USD annually. In addition, 24/7 real-time monitoring and control of 3D TRASAR™ technology helped ensure the makeup water quality and optimum performance of the cooling water system.

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