

CASE STUDY:

SOUTHEASTERN PULP AND PAPER MILL IMPROVES PERFORMANCE AND REDUCES COST BY 40% WITH NEW BIOAUGMENTATION TECHNOLOGY

In the face of rising manufacturing costs and ever-tightening environmental regulations, remaining profitable while being an environmental steward can be challenging.

Wastewater treatment, in particular, is one of the most costly areas of environmental compliance for industrial facilities. Historically, more production equals more waste, which equals more cost. EBS challenges this status quo by employing sound scientific and economic principles, and this is our story.

In 2014, a Kraft Pulp and Paper Mill in the SE US asked EBS to assist them in reducing supplemental nutrient feed, decreasing operating costs, and improving wastewater treatment system performance. The mill treats ~40 MGD of effluent via a large aerated stabilization basin (ASB). Their wastewater does not contain adequate nitrogen and phosphorus to sustain a healthy bacterial population in the ASB, and they have historically relied on large amounts of supplemental nutrient to ensure adequate BOD removal. The system is also subject to process upsets and seasonal variations, which result in elevated BOD loading, foaming episodes, and inadequate aeration.

The mill has utilized bioaugmentation since the 1980's to improve ASB performance. In 2012, EBS installed Bacterial Acceleration Chambers (BACs) at the mill and documented significant performance improvements and cost savings. The goal of this project was to build upon the initial success utilizing EBS's second generation BAC Technology – the BAC² System. The BAC² System is the product of a two-year EBS research project and is an on-site bacteria factory capable of producing the equivalent of 12,000 to 24,000 pounds of dry bacteria per day or 4.4 – 8.8 million pounds per year.

Figure 1 details the wastewater treatment system bacterial counts during the first two years of the BAC² System's operation and shows a sustained increase in the concentration of viable bacteria in the aeration basin after the BAC² System installation.



Increasing the bacterial population created a more robust ASB, decreasing the reliance on supplemental macronutrients. The mill reduced their nutrient feed ~22% in year one and 40% after three years of continued optimization.

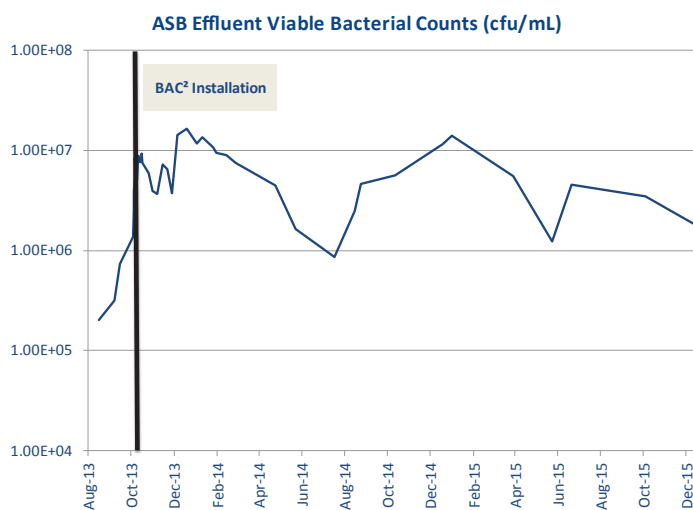


Figure 1 – A sustained increase in the concentration of viable bacteria in the ASB documented years after the BAC² System installation.

Figure 2 shows that bioaugmentation and macronutrient costs decreased roughly 35% on a \$/lb of BOD treated basis since the unit's installation despite an increase in BOD loading to the system. While the BAC² System was the key to these improvements, the EBS service plan was a critical component as well. Rigorous monitoring of product usage and bacterial counts allowed us to determine the right feed rates at the right time, bolstering treatment efficiency and reducing waste.

The BAC² System can be utilized to seed new systems and, following outages, address major WWTP upsets, and bolster existing bacterial populations against toxic and inhibitory compounds.

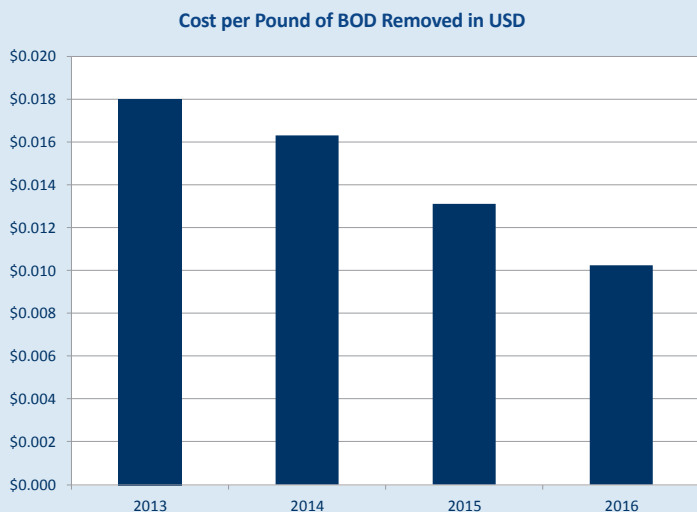
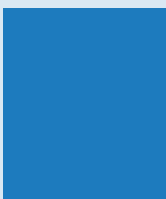


Figure 2 – Cost per pound of BOD₅, including nutrients and all bioaugmentation related costs.



To learn more about the BAC² System, please call us today at 985-674-0660 or send an inquiry to info@ebsbiowizard.com.



Figure 3 – The EBS BAC² System.

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