

Ecolab and Badger State Ethanol:

Plant cuts evaporator CIP time and discovers the value of a total cleaning partnership.



BACKGROUND

Ethanol producers use evaporators to concentrate stillage to a thick syrup for use in animal feed. Evaporators generally contain many tubes that plug over time due to high solids content and long run times. Plugged or fouled tubes reduce evaporator efficiency in removing water from stillage.

Ecolab knew evaporator cleaning was a pain point at almost every ethanol plant. The standard cleaning technique for fouled evaporators involved both weekly cleaning and semi-annual shut downs for hydro-blasting of clogged equipment. Ecolab developed a better process and was soon receiving calls from plants across the nation.

One of those calls came from Badger State Ethanol. "We called Ecolab because we were having trouble with our evaporators fouling too quickly," says Stephanie Schmidt, PhD, process analyst & plant chemist at Badger State Ethanol. "They sent out Zach Babcock with this amazing program and exceptional on-site consultation and the rest is history."



CONVERSION SAVINGS



PRODUCTIVITY

2x

cleaning per week needed

Every cleaning cycle reduced from

10 to 4 Hours

Hydroblasting shutdowns

0



PRODUCT QUALITY

Reduced cross contamination of caustic and acid valves

80%

reduction in Sodium

10%

reduction in Delta Glycerol

SOLUTION

Cleaning evaporators more efficiently and effectively

While the chemicals Ecolab used to clean the evaporators were more expensive per ounce than the commodity caustic Badger State had been using, the new CIP process delivered far superior results at a comparable cost – while using less water and requiring less down time.

“I don’t think anybody had ever talked to anyone in the industry about how to clean more effectively and efficiently,” says Stephanie. “This was a real eye opener.”

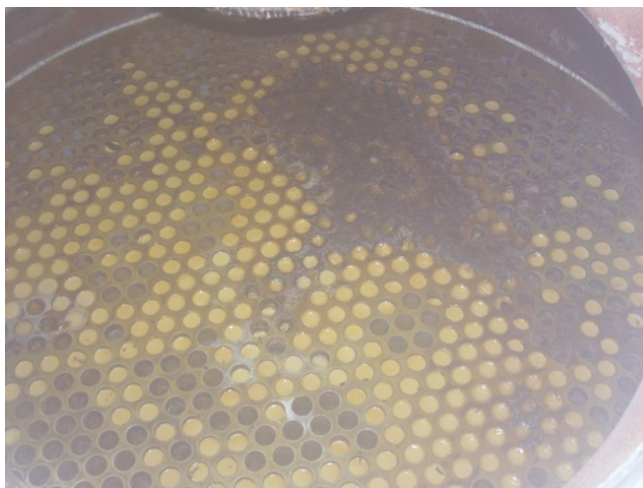
Eliminating caustic from fermentation cleaning

The success of the evaporator cleaning established enough trust that BSE Operations Manager Doug Friedrich was willing to consider reducing the use of caustic in front-end cook and fermentation systems.

“Using a ton of caustic to clean is all the industry has ever known,” explained Zach. “No one’s ever helped them think about the cleaning process any differently.”

Given the 734,000 gallons held in Badger State’s fermentation tanks, the Ecolab team first conducted small tests of the alternative cleaning program in isolated mash trains from March through June of 2018.

Evap 7: Pre-Ecolab Program



Evap 7: Post-Ecolab Program



RESULTS

An ongoing plant cleaning partnership

Today Ecolab cleaning expertise is at work in virtually every BSE cleaning process – from evaporators and mash trains to fermentors, tricanors, syrup lines and more.

Badger State Ethanol was recently named “Member of the Month” by Growth Energy¹. When CEO and General Manager Erik Huschitt was asked what he considered some of the company’s main accomplishments, BSE’s “latest collaboration with Ecolab” was specifically mentioned.

“We can’t say enough great things about Ecolab,” concludes Stephanie. “Their level of interest, concern, willingness to dig in and attention to detail has been just amazing.”

The admiration is mutual.

“The ethanol industry looks to Badger State Ethanol as being out front in terms of innovation. Their willingness to experiment as well as their drive for continuous improvement makes them an ideal partner for Ecolab,” concludes Mike Berthoud, vice president of the AGRI and GOBS segments.

¹ <https://growthenergy.org/2018/02/01/member-week-badger-state-ethanol/>