ECOFLOW® CASE STUDY

A Major U.S. Sugar Producer Conserves Tons of Water with Seal Support Valves

Executive Summary

A major US sugar producer has several hundred pumps throughout the plant. These pumps either require packing, which requires constant maintenance, or mechanical seals, which need a water supply to cool and flush them.

In the latter instance, the water is usually returned to a seal water tank or dumped into a drain. Any water that ends up on the floor or in a drain finds its way back to process and must be evaporated (high cost) or sent to wastewater (even higher cost). Because of this, any unnecessary water flow that can be cut from the process is beneficial.

Challenges

This plant faced several challenges prior to their adoption of EcoFlow® valves:

1. The plant could not use mechanical seals on its pumps due to the significant water demand and up-front expense of a closed recirculation system.
2. Packing was used in all pumps instead of double mechanical seals, causing leaks and constant maintenance.
3. Expensive seals were damaged every year due to accidental dry running.

How Our Valve Helped

More than twenty EcoFlow® valves were initially installed at the plant. With great success and zero valve failures after two years, the plant plans to double its usage to over forty valves by the end of summer 2017. Since installing EcoFlow® valves, the plant has reduced dry running damages from four seals annually to zero. The implementation of EcoFlow® valves has also

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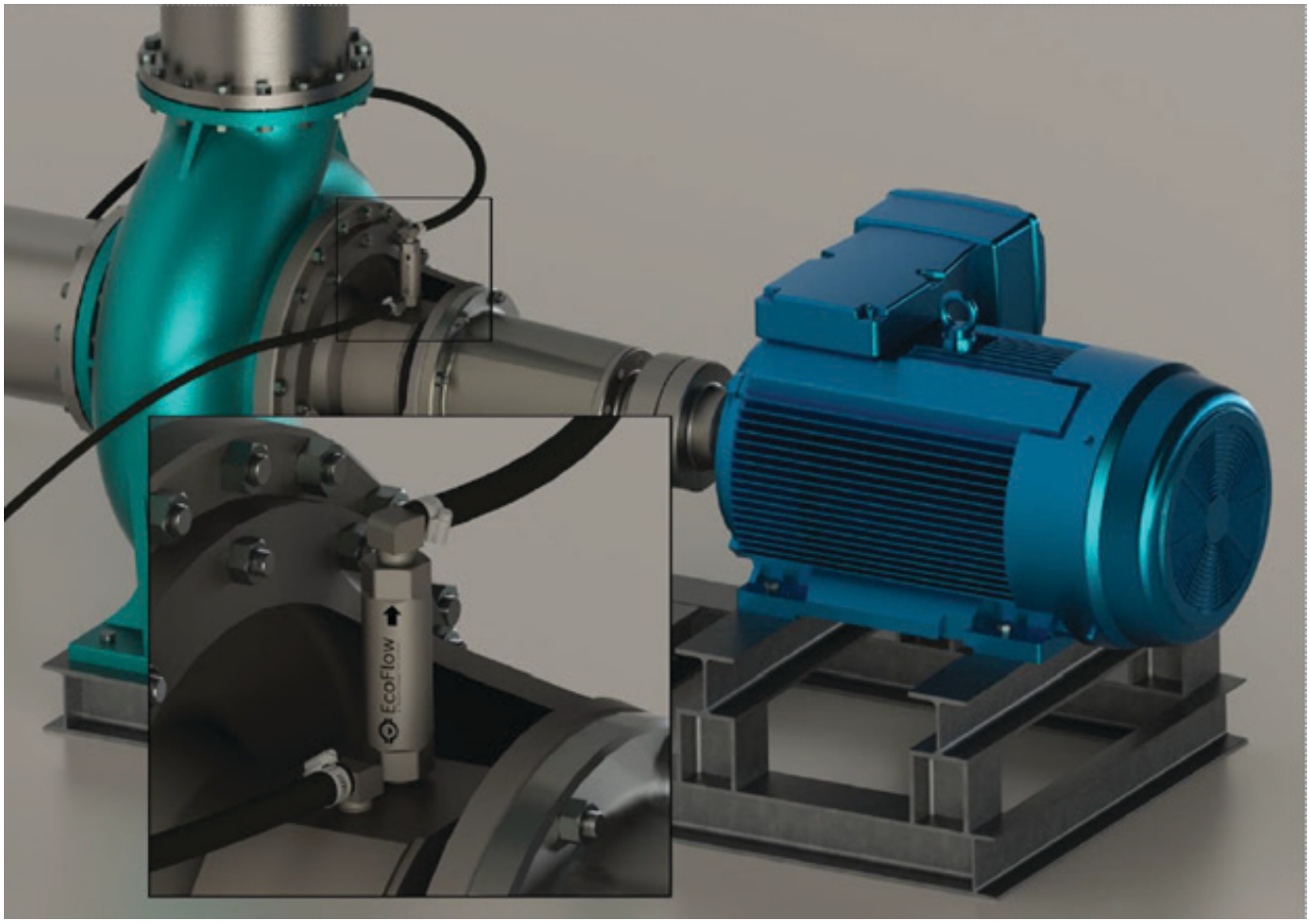
reduced maintenance expenses and provided an opportunity to use double mechanical seals in a situation that otherwise would not have been possible:

"EcoFlow® allowed us to install double mechanical seals in places that we couldn't have done so without an expensive closed-loop seal water system. Now we run water to the seal and let the small amount of water the valve lets pass go to drain. We no longer spec pumps with anything other than a mechanical seal. 100% of our replacements are now either a single or double seal, and each double gets the EcoFlow®", said their maintenance planner.

Along with double mechanical seal flush applications, the plant has also found EcoFlow® valves to be useful in other ways:

"Primarily, we use them for seal flush applications and have them on three seals that cost $12,000 each. That being said, we also installed 110°F valves on the bearing cooling water outlets on our boiler feed pumps and boiler feed turbines.

Those just had city water running open through them and used 50 gallons an hour between the three. Now they use 50 gallons a day if that, and bearing temperatures only went up 5 degrees."



This is a sample installation

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Results

By installing EcoFlow® valves, the plant drastically decreased maintenance costs and reduced the amount of water sent to the drain.

"The seal manufacturer states that we should need 2.6 GPM to keep the seal below 180°F though the 135°F EcoFlow® is putting out about 0.05 GPM."

To illustrate the water savings that can be realized with a single EcoFlow® valve based on the numbers above, let's assume the seals operate for 8 hours per day, 5 days per week. That equates to 2,080 hours of operation annually.

Seal Mfr Recommendation: 2,080 hours x 2.6 GPM x 60 minutes = 324,480 gallons per year

EcoFlow® : 2,080 hours x 0.05 GPM x 60 minutes = 6,240 gallons of water per year

This equates to a savings of roughly 318,000 gallons of water annually

for <u>every seal</u> equipped with EcoFlow® .

The plant and its maintenance planner have also been highly satisfied with EcoFlow's other benefits:

"Also, note that it needs no attention when the pump shuts off. It just dribbles until the seal cools off and shuts off. A pleasant side effect of this valve is the ability to leave the feed water on even while the pump is not running. It eliminates any possibility of starting the seal dry by our process people forgetting to turn on the water.

That alone will save us several seals a year. We could not use a seal before because we could not allow more than a couple of gallons an hour of water to the drain. Your valve dramatically decreases the water usage and, as a result, reduces the amount we send to drain."

As ThermOmegaTech's EcoFlow® valves continue to prove their value, the plant has started to take additional steps to expand their EcoFlow® installation yet again:

"We installed a seal water booster system this year to put water to 23 more pumps that had packing last year and will have double seals when we start up next year, specifically because of the valves.

We'd like to put a recirculating system in at some point, but the small amount of water we give up through the valves doesn't warrant trying to save it."