

NYSP2I Assists Three Brothers Wineries & Estates LLC with Sustainable Water and Energy Management

Located in Geneva, New York, Three Brothers Wineries & Estates LLC (Three Brothers) has a winery, cidery, microbrewery, and café on site. Three Brothers offers an expansive selection of hand-crafted wine, microbrews, hard cider and soda. In the last 10 years, the company has grown from 2 full time employees to over 20. In the last 5 years, Three Brothers was named a Top 100 Company in the greater Rochester region three times.

Challenge

Due to the size of the operation, approximately one million gallons/year of well water is needed for production and hospitality. The water is pretreated for use in the facility. This water is stored in tanks with a total storage capacity of 6,000 gallons. During busy periods, the demand often exceeds available water supply, so Three Brothers relies on water that is purchased and trucked into their facility, costing around \$10,000 per year. Significant amounts of energy are also used in production. Three Brothers would like to become more sustainable by implementing cost-effective measures to save water and conserve energy.

Solution

The New York State Pollution Prevention Institute (NYSP2I) collaborated with the Cornell Extension Enology Lab (Cornell) to perform an on-site assessment to better understand Three Brothers current operation and identify opportunities to reduce water and energy use. The following areas were analyzed during the on-site assessment: cleaning with hoses; restroom water use (toilets and faucets); CIP (clean-in-place) tank cleaning with spray balls, mobile CIP system; keg cleaning, preheating of well water prior to reverse osmosis processing and membrane maintenance, energy use as related to insulation on piping, location of chillers and chiller use, glass washers, food preparation and utensil cleaning.

Results

The work performed by NYSP2I and Cornell led to key findings that could potentially benefit Three Brothers in regards to water and energy use:

- Low flow spray nozzles for inside cleaning hoses can potentially reduce water use by 36-45% compared to the existing nozzles.
- Ultra low flush toilets indicate potential reductions of 50%, compared to the current units.
- Lower flow CIP spray balls, if implemented, would potentially reduce tank rinse water by up to 96%.

CHALLENGE

- Three Brothers wanted to identify cost-effective water management options and energy savings opportunities at their wineries and estates

SOLUTION

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RESULTS

- The work performed by NYSP2I and Cornell led to key findings that could potentially benefit Three Brothers in regards to water and energy use
- Average daily savings could be as high as 1,057 gallons if all the identified water saving opportunities were to be implemented
- An aggregate analysis indicates that the payback to implement all identified options is less than one year



- The reverse osmosis unit in well water pre-treatment can be maintained at a higher efficiency for a longer period of time with routine cleaning of the membranes.
- Chiller location on the back of the winery building may be affected by air currents around the building. The chiller may be affected by the air currents and would be better used as the backup chiller and use another chiller as the primary chiller for better energy efficiency.

The average daily savings could be as high as 1,057 gallons if all the identified water saving opportunities were to be implemented. Estimated equipment costs for all the water improvements is \$7,000 (excluding labor) with a potential annual water savings of 385,800 gallons. An aggregate analysis indicates that the payback to implement all identified options is less than one year, based on the cost to purchase water needed to supplement the on-site water supply.

TESTIMONIAL

“Working with the NYSP2I at RIT is exactly what a growing business in our line of work needs. With the help of NYSP2I we able to collect, organize and analyze real numbers that could save us real money.”

– Erica & Justin Paolicelli, Partners
Three Brothers Wineries & Estates LLC

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