

Large American Brewery Performs Water Usage Study

A large brewery partnered with MAVERICK to perform a water balance and usage study.

Objective

The main objective of this assessment was to provide investigative and evaluation services to perform a water balance study at the brewery, including investigation of how to reduce and utilize all reclaim water produced.

Results

MAVERICK finalized the results in a report that outlined the team's findings and recommendations. The report consisted of a breakdown of water usage in the brewhouse, powerhouse, filling and packaging areas. Specific opportunities to reduce the amount of reclaim water produced and utilize existing reclaim water were detailed. Opportunities involving the production and utilization of reclaim water could result in savings of over 250,000 gallons of water per day. Additionally, substantial energy savings could also be realized by utilizing heated reclaim water instead of discharging it.



Solution

The average and maximum total daily brewing water used in the various areas was determined by taking into account brewhouse capacity, brew recipes, press / pack requirements and clean-in-place (CIP) requirements.

Brewhouse capacity was calculated by identifying the number of brews per day and by choosing a representative brew recipe. Reclaim water is water used in the brewing process which is not specifically part of the brew itself. The amount of reclaim water was determined per brew. This water is reclaimed and stored locally in the brewhouse and also in the powerhouse.

The team identified the distances and size of transfer piping between major pieces of brewery equipment and calculated the volumes of transfer piping. Using the volumes and frequency of use, it was possible to determine the press / pack requirements.

CIP requirements were based on the number of brewhouse vessels, wash frequency, flow rate and duration of CIP circuit steps.

Utilizing process flow diagrams (PFDs) and piping and instrumentation diagrams (P&IDs) along with totalized data for existing flow meters located throughout the facility, it was possible to analyze losses of reclaim water in the process.

The team converted the daily totalized flow meter readings into flow rates and developed the overall water balance. Once the water balance was analyzed, the discrepancies in the flow balance were evident and highlighted the loss areas.

Many potential opportunities for water savings were identified, including the following:

- » Eliminate cooling of mash water in the brewhouse to reduce the creation of reclaim water.
- » Optimize the mash water coolers to reduce the creation of reclaim water.
- » Utilize reclaim water in many areas to reduce the need for purchased plant water. Those areas included pasteurizer makeup, alternate reclaim tank makeup, filtered water for keg washing and seal water for pumps.

The study consisted of on site trips to the brewery and off site time reviewing gathered information, researching solutions and determining recommendations.

In summary, through the utilization of heated reclaim water in place of plant and filtered water, as well as the reduction of reclaim water creation, the brewery has the potential to realize substantial energy savings and savings of over 250,000 gallons of water per day.

The MAVERICK Difference

MAVERICK's extensive brewing experience allowed the team to analyze specific areas where reclaim water could be utilized instead of city water. Knowledge of the brewing process also led to recommendations to reduce the amount of reclaim water produced.



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