



Ball Corporation



Company Background

Ball Corporation is a global leader in innovative, sustainable metal packaging for beverage, personal care, and household products headquartered in Broomfield, Colorado. It was founded in Buffalo, New York in 1880 by Frank C. and Edmund B. Ball and was then known as the Wooden Jacket Can Company. Ball Corporation has come a long way since then and has more than 100 international locations and 17,500 employees. Ball Corporation's St. Paul facility makes aluminum beverage cans, and employs approximately 200 people.



Sayandee Biswas

Chemical Engineering
University of Minnesota, Twin Cities

"This summer has been a great learning experience. I was extremely happy to make a difference by implementing changes which helped preserve scarce natural resources. MnTAP empowered me to do my part in building sustainable processes and a greener future." ~ SB

Project Background

The project at Ball Corporation focused on improving systems for tracking the water usage in different segments of the plant and trying to reduce the total water consumption of the plant. Water is used in the can manufacturing process: to create the lubricant which allows the cans to be worked, to wash off the lubricant in a 7-stage washer, in the wastewater treatment system, and in the cooling tower. The 2018 water consumption of the plant was approximately 26 million gallons, costing the company \$250,000.

Incentives To Change

Water scarcity, quality and discharge are operational and reputational risks for Ball Corporation and their value chain partners. Reduction in water consumption reduces a significant cost to the business and helps them meet corporate efficiency targets for gallons of water consumed per can. Ball also focuses on environmental and social sustainability and is widely recognized for its sustainability efforts around the globe. Therefore, Ball continuously implements projects directed towards water savings and has created a culture of water conservation by appointing water champions in each of its facilities.

"Our MnTAP intern was energetic and truly motivated to make a difference in our plant operations. After some discussions about water savings opportunities, he investigated the solutions, proposed the equipment and assisted in the installation. The results were immediate savings of water and some potential projects for future implementation."

*~ Mike Cloud
Engineering Manager, Ball St Paul*



Solutions

Reusing Treated Wastewater in the Lime Silo

A system to reuse wastewater for the lime silo was present, however, it was not being used as it lacked reliability. This system was restarted by cleaning the existing pipes which were blocked with sludge. Additionally, a float valve was installed to supplement the treated wastewater supply with tap water if needed.

This makes the system more robust by preventing failure in the unlikely event of low supply of treated wastewater. This project has saved 9-10 GPM amounting to almost 5 million gallons annually.

Reusing Treated Wastewater for Polymer Delivery

Anionic polymer is added to the wastewater treatment system as a flocculant. To activate and disperse this polymer, fresh tap water was being used. A pump system was installed which allowed the treated wastewater to be used for the application. This system led to a savings of 2 gpm, amounting to a million gallons annually.



Adding Tap Aerators

The washroom within the factory floor did not have aerators on the taps. To maintain quality, the plant requires its employees to wash hands every time they return to work. Installing aerators helped save 33,000 gallons of water annually by reducing water usage per hand wash.

Replace Compressed Air with Blowers

After defective cans are removed from the production line, compressed air was used to carry them to a recycle drum located about 10 feet away. This compressed air line was replaced with a blower which is capable of carrying the cans more efficiently. The change saved almost 5 million kWh of energy and \$350,000 annually. Reducing the compressed air usage has also decreased the heat load allowing a more efficient cooling tower management.

Recommendation	Annual Reduction	Annual Savings	Status
Reuse Water in Lime Silo	4,700,000 gallons water	\$44,000	Implemented
Reuse Water in Polymer Delivery	1,000,000 gallons water	\$10,000	Implemented
Adding Tap Aerators	33,000 gallons water	\$300	Implemented
Replace Compressed Air with Blowers	4,700,000 kWh	\$350,000	Implemented

MnTAP Advisor: Jane Paulson, Sr. Engineer