

Lean, Energy and Environment Assessment and Implementation at Omniafiltra

Omniafiltra is an Italian-owned company specializing in the manufacturing of specialty paper for niche markets, including a variety of filtration media and absorbent boards. The 104,000 sq. ft. building operates 51 weeks per year at three shifts per day and five days a week. Annual electricity usage for the entire facility is 6 million kWh and annual natural gas usage is approximately 53,300 MBTU. The facility also withdraws 150-200 million gallons of fresh water per year from the Beaver River for its manufacturing processes.



Image Courtesy of Omniafiltra, LLC.

Challenge

Omniafiltra has always operated with a sustainable mindset demonstrated by strict quality control utilized in various aspects of manufacturing and management. Omniafiltra is committed to continuous improvement as related to the manufacture of highest quality products with the least amount of resources consumed and minimum amount of waste created.

Omniafiltra wanted to identify improvement opportunities related to chemical usage, energy/waste consumption, waste discharge, and operational costs in the paper making process. The company was already interested in reducing fresh water consumption by installing a wastewater recovery system.

Solution

NYSP2I, in collaboration with Omniafiltra and CITEC Manufacturing & Technology Solutions (CITEC), performed a baseline analysis of the process water used in the papermaking operation to confirm actual flow numbers (water consumption and water discharge) and wastewater quality (feasibility for reuse).

Applicable water recovery technologies were evaluated and the potential energy savings associated with a more efficient and properly-sized motor was calculated. Based on this analysis, a self-cleaning filtration system with a variable frequency drive (VFD) pump were installed. NYSP2I then verified water and energy savings after implementation. Research into finding alternatives for toxic Nonylphenol ethoxylate (NPE) emulsifiers used in the papermaking process was also conducted and resulted in the identification of alternative NPE-free surfactants which can serve as a drop-in replacement which is more expensive per pound but much less is needed to achieve the same results, so the effective annual cost for the new replacement is actually lower than that for the NPE-emulsifier.

CHALLENGE

- Omniafiltra wanted to reduce operational costs from the paper making process and identify improvement/reduction opportunities in chemical usage, energy/water consumption, and wastewater discharge

SOLUTION

- NYSP2I, Omniafiltra and CITEC collaborated to develop a baseline of water usage and discharge
- NYSP2I supported installation of a self-cleaning filtration and wastewater recovery system and identification of a less toxic surfactant

RESULTS

- Omniafiltra installed a \$21,265 self-cleaning filtration system to recover water, with an estimated payback of two years
- Approximately 15.6 million gallons of water could be recovered per year, saving 143,000 kWh and over \$17,000 per year, after installation of the filtration system
- Additional cost savings of \$187,790 due to eliminating the need to pump and raise fresh river water temperature during March

Results/Implementation

Omniafiltra installed a self-cleaning filtration system to recover water. The cost of the system was \$21,265 with a payback of two years. After various system adjustments and testing, the system was fully operational.

NYSP2I evaluated the system performance to confirm reductions and savings. Based on measurements utilizing an ultrasonic flow meter on the installed water recovery loop and estimates provided by the company on production hours per year, it is estimated that the water recovered annually is 15.6 million gallons per year. The reduction in water use results in a decrease in energy consumption of 143,000 kWh and savings of over \$17,000 per year. In addition, the need to raise fresh water temperature to the desired process temperature is also eliminated, resulting in an additional calculated cost savings of \$188,000.

TESTIMONIAL

“As part of our strategy to improve the quality of our processes and products, as well as industrial safety and reduction of environmental pollution, NYSP2I provided an in depth analysis on the visibility of several opportunities to reduce electricity, eliminate the use of toxic materials, and enhance wastewater recovery for reuse. With NYSP2I’s support, we installed a wastewater recovery loop system that has reduced the amount of fresh water withdrawn from the Beaver River for use in our manufacturing processes and resulted in low energy costs.”

– Omniafiltra, LLC.

NYSP2I PARTNERS

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10 Regional Technology Development Centers

Funding provided by the New York State Department of Environmental Conservation.

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