



ARROW LINEN SUPPLY CASE STUDY

WATER & ENERGY SOLUTIONS

redefining efficiency since 1969

Arrow Linen and **Supply Co., Inc.**, a fourth-generation, family-owned food, and beverage laundry company was facing tougher wastewater restrictions for Biochemical Oxygen Demand (BOD) and Chemical Oxygen Demand (COD). With looming restrictions coupled with water and fuel costs, Arrow Linen choose Kemco's patented water recycling process, KLEENWATER™ system, that utilizes ceramic membrane filtration (CMF) and reverse osmosis (RO).

Project Overview

For more than 65 years, Arrow Linen and Supply Co. has served the Food and Beverage linen laundry needs in the New York City area. In 2013, Arrow constructed a new plant in Garden City, NY. At the time Nassau County had lenient discharge limits requirement of Arrow Linen. As the county updated wastewater plans and regulations, it became apparent Arrow Linen would fall under a mandate to reduce BOD/COD discharge. The action taken by Nassau County resulted in Arrow Linen exploring wastewater solutions that would reduce their BOD/COD discharge limits to remain compliant with permit requirements.



Solution Overview

To achieve these goals, Kemco Systems proposed both a DAF and Kemco's Patented KLEENWATER™ System, consisting of a ceramic microfiltration system, followed by reverse osmosis. Each technology was explored in full detail. Operational costs of each system, the effectiveness of treating for BOD/COD reduction, footprint and overall costs of the system, were all considered.

Arrow Linen's intention was to garner as much water and energy savings as possible. An effective DAF system requires space for an equalization tank, which Arrow Linen didn't have. With the expected cost increase of water and sewer, Arrow Linen selected Kemco's KLEENWATER™ System. This cost-effective patented water recycling system will lower water use, reduce greenhouse gas emissions and contribute to achieving the BOD discharge level requirements of the city.

Project Challenges

The project faced one major hurdle: overcoming a limited footprint in the boiler room for new equipment. Kemco's design had to allow for serviceability of existing and new equipment, as well as concern for the maintenance team performing service.

Kemco worked with the client to modify not only the design of the equipment but to rework the layout of the space and provide interactive 3D renderings, allowing the client to view the proposed layout from the owner's eye-level perspective. After several iterations, a final layout and overall project design were finalized. The overall layout included tanks, a ceramic membrane filtration unit and the reverse osmosis unit.

To achieve a clean and professional looking installation without having the equipment spread out, a mezzanine was included in the design. A typical ceramic membrane filtration unit is short and wide, but for this project, modifications were made that resulted in a taller, thinner, rowed design to accommodate the available space.

Arrow then contracted the mezzanine while Kemco made the footprint of the equipment work with ease. Extra attention was taken for the stairway to the mezzanine so it met OSHA requirements, maximized personnel movement in the space, and be removable to support boiler access. Overall, layout and design modifications allowed for a successful installation process, and even with the increased amount of overhead piping, the patented KLEENWATER™ water recycling system was successfully integrated into the existing boiler room.

Results

This solution presented Arrow Linen with high-quality recycled water, at up to a 72% recycle rate, virtually virus free, for use in their Milnor continuous batch washers. The KLEENWATER™ water recycling system presents a cost-effective means of removing emulsified, suspended and dissolved contaminants from wastewater without utilizing high volumes of chemicals. The plant now meets the city BOD discharge requirements while significantly reducing water use, chemical costs and gas usage.

