



G&K Services



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Company Background

G&K Services was founded as a dye house in Minneapolis, Minnesota in 1902. They have since expanded into an industrial laundry facility that rents workplace uniforms, towels, floor mats, linens, and many other reusable textiles to a wide range of industries. In addition, G&K Services provides a direct purchase program for garments, facility cleaning, and safety products. G&K Services is based in Minnetonka, Minnesota and has three laundry processing facilities in the Twin Cities as well as others throughout the state and across the U.S.A and Canada.



“Working with MnTAP and G&K Services gave me the opportunity to learn about an industry and an area of engineering I previously knew little about. This internship allowed me to apply the skills I’ve gained in school to real world challenges and help G&K Services achieve its environmental stewardship goals” -KV

Project Background

G&K Services is committed to incorporating environmental stewardship into everything they do; it is one of their core values. This project was focused on waste reduction at one of their laundry processing facilities in the Twin Cities. This facility, known as Minneapolis Industrial, processes garments, print towels, shop towels, floor mats and mops as well as other reusable textiles. Two main opportunities for waste reduction were identified at Minneapolis Industrial: solid waste reduction and reduction of chemical oxygen demand (COD) and total suspended solids (TSS) in their wastewater.

Incentives To Change

G&K Services is committed to upholding their core values and this project fits in directly with company goals. From data collected during this project, it is estimated that Minneapolis Industrial generates over 163 tons of solid waste per year. Reducing the amount of solid waste produced would both benefit the environment and save the company money on waste removal. In addition, in recent months, the concentrations of COD and TSS measured in the wastewater have been higher than in the past. This has led to a significant increase in the strength charge that is billed to the company quarterly by the Metropolitan Council. G&K Services is interested in treating their wastewater to remove these contaminants, which will lower the strength charge and the cost of sludge removal.



SOLUTIONS

Update the Current Employee Recycling Program

The Minneapolis Industrial plant has a recycling program in place for employees. Recycling containers are available for cans, bottles, and cardboard in various locations throughout the plant. Participation in the current program could be increased by adding additional recycling

containers, pairing recycling containers with trash cans, providing additional employee education, and placing multilingual pictures with signs by all recycling containers. These updates would add an element of convenience to the current recycling program and encourage employee participation. If this option succeeded in diverting 75% of the recyclables currently thrown in the trash, 3,600 pounds per year of solid waste would be reduced, saving the company around \$190 per year.

Recycle Additional Items

In addition to the items currently recycled at Minneapolis Industrial, there are opportunities to recycle even more of the solid waste generated at the plant. Miller Waste Mills is a textile recycler in Winona, Minnesota that is currently working with G&K Services to implement a recycling program at another plant in the Twin Cities area. Miller Waste Mills is willing to take clean textiles, clean plastic film, damaged floor mats and hangers. If Minneapolis Industrial implemented this recycling program and 75% of the textiles, clean plastic, floor mats, and hangers generated yearly at the facility were recycled, the amount of solid waste generated would be reduced by more than 168,000 pounds per year, saving the company over \$10,700 per year.

Consider Implementing a Wastewater Treatment System

Textiles processed at Minneapolis Industrial are often heavily soiled. Washing these textiles leads to high concentrations of chemical oxygen demand (COD) and total suspended solids (TSS) in the wastewater leaving the plant. Three different wastewater treatment systems were assessed for effectiveness, feasibility, and cost of implementation and operation. The three treatment systems analyzed were: a dissolved air flotation system (DAF), a wastewater centrifuge, and a Norchem UltraPure ceramic filtration system. It was found that with

all three systems the cost of yearly operation exceeded the estimated cost savings in terms of reduced surcharges and sludge removal costs. The system that showed the highest cost savings, most waste reduced, and highest removal efficiency was the Norchem system. This treatment system also has the option of water reuse without any additional equipment required. With the Norchem system it is estimated that 1,700,000 pounds of COD and 233,000 pounds of TSS could be reduced yearly. This would save the company approximately \$251,800 per year.

Although none of these options currently show cost savings greater than yearly operating costs, wastewater treatment should still be considered. Of the three options analyzed, the Norchem UltraPure ceramic filtration system proved to be the best option for waste reduction and cost savings. However, other types of wastewater treatment should be analyzed and future strength charges should be monitored. The right treatment option for this specific plant will balance efficiency and cost.



Recommendation	Annual Reduction	Annual Savings	Status
Add additional recycling containers	3,600 lbs	\$190	Under review
Employee recycling education			
Recycle damaged textiles, floor mats, clean plastic film, and hangers	168,000 lbs	\$10,700	Under review
Install a Norchem Ultrapure wastewater treatment system	1,700,000 lbs COD, 233,000 lbs TSS	\$251,800	Under review