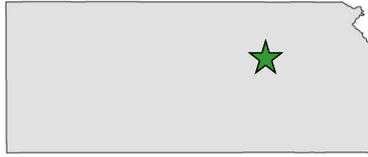


2014 Case Study

GTM Sportswear

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Company background

GTM ("Greek To Me") Sportswear is well known for its customized uniforms, warm-ups and practice apparel for college, school and club sports teams. It was established in 1989 and has outfitted more than 1.1 million sport teams in the nearly 25 years since its inception. GTM has turned into a \$72 million company that develops and produces the majority of its products, oversees its own channels of distribution and generates an average annual growth rate of 25 percent. The headquarters of GTM Sportswear is in Manhattan, Kansas. GTM Sportswear employs nearly 900 team members for different departments – accounting, information technology, sales and marketing, design, embroidery, heat transfer, screen print and sublimation print (cut and sew), including a nationwide sales team, inside support team and an in-house production facility. Its mission is to "Make it Personal" and the company strongly believes in teamwork in the pursuit of business success. The team works hard and spends countless hours to ensure dependable apparel with the right quality and right price for a number of sports, including baseball, basketball, cheerleading, dance, football, golf, gymnastics, lacrosse, soccer, softball, swimming, tennis, track, and volleyball.

Project background

GTM management is persistently seeking ways to assemble apparel while maximizing production efficiency and minimizing environmental damage. Fabric is the most important raw material in GTM's production process. As a summer intern, I mostly focused on how to reduce the fabric consumption in the manufacturing process and how to more efficiently utilize fabrics (*i.e.*, decrease fabric consumption). Since the Cut and Sew (sublimation) Department uses the most fabric, I worked closely with this department to understand its fabric utilization pattern and determine ways to reduce waste. The pollution prevention project for summer 2014 includes reduction of fabric waste through its efficient utilization

and its subsequent energy consumption and greenhouse gas (GHG) emission. Although other wasteful practices (*e.g.*, compressed air leaks and wastewater for washing printing screen) were discovered, wasting fabric was one of the most significant. Table 1 shows a summary of the project I worked on, along with its environmental impact, annual cost, and current status. The most impressive issue is that there is no cost of implementation; implementation of these recommendations does not require investing additional financial resource or hamper production efficiency.

Incentives to change

GTM Sportswear is the only apparel manufacturer Manhattan, Kansas and is one of the largest users of the county's landfill and the city's water. The plant utilizes water, fabric, dyes and chemicals. It produces large amounts of waste in many forms, all of which leads to increasing energy consumption. Since fabric is the main raw material, GTM realizes that reducing fabric waste will improve its environmental standing, while reducing manufacturing cost and energy costs simultaneously. To obtain these benefits, GTM has partnered with the Pollution Prevention Institute to allow interns to focus their efforts on environmental projects that save GTM's money. As reducing fabric wastes directly correlate to cost savings and pollution prevention, GTM recognizes the benefit of reducing their raw materials and utilities usage.

Projects reviewed for E2/P2 potential

My project involved a fabric waste audit through determining existing marker efficiency or fabric utilization percentage in the production line for volleyball jerseys. The marker plan revealed only a 40% fabric utilization, which meant GTM utilized only 40% fabric as garments from the total fabrics for jersey production. In other words, 60% of a fabric roll is wasted in the volleyball jersey production process. This is below the industry standard of 90 to 97

percent for basic apparel, and 80 to 85 percent for fashion apparel. After implementing an effective marker plan and standard operating procedure, I concluded it was possible to save 5,919 yards of fabric, 5,919 yards of transfer paper, and 5,919 yards of Kraft paper, for a total of \$37,495.

Other than direct savings on fabric and paper consumption and purchasing costs, there are also indirect savings from energy conservation GHG reduction from fabric manufacturing, cost and GHG reduction in fabric transportation from manufacturer to GTM sportswear, reduced electric energy consumption from further operations in GTM Sportswear, and GHG emission reduction for discarding waste fabric from GTM.

Since it was possible to save 5,919 yards of fabric, and each kilogram of fabric requires 50.52 kWh electric energy to produce, GTM Sportswear indirectly avoids 299,023 kWh in energy consumption, 135 MTCO_{2e} emissions, and \$32,025 (@ 0.1071/ kWh).

Although it is obvious the reduction of transfer and Kraft paper consumption also results in a significant GHG emission reduction, lack of information regarding environmental damage to produce transfer and Kraft paper made it impossible to quantify their environmental impacts.

I also calculated GHG reductions of 0.63 MTCO_{2e} associated with transporting the fabric from Texollini (Long Beach, California) to GTM Sportswear (1,519 miles). Due to lack of information, I could not calculate GHG reduction associated with the

transportation of transfer paper and Kraft paper.

Reduced energy consumption for 5,919 yards of fabric passing through the sublimation printer, the presser, and the cutter contributed direct savings of 1,596 kWh and \$153.

Finally, I did some process improvement activities through wrapping 1" elastic band around the fabric spreading roller in a spiral manner which stopped creating fabric waviness (bumping) and helped operator for smooth fabric feeding to the cutter. It helped to maintain accurate cut paths for sewers to spend less time in trimming and more time in sewing, leading to greater efficiency and energy consumption reduction. This wrapping elastic helped reducing the necessity of employing two cutting operators simultaneously.

Summary of 2014 P2 intern recommendations for GTM Sportswear

Project description	Annual estimated environmental impact	Annual estimated cost savings	Status
Reduction in fabric waste (Solid waste)	5,919 yards	\$31,844	Implemented
Reduction in paper waste (solid waste)	5,919 yards (transfer) 5,919 yards (Kraft)	\$5,651	Implemented
Electricity savings	300,620 kWh	\$153	Implemented
Vehicle miles reduction	0.63 MTCO _{2e}	\$5,965	Implemented
Total savings *	17,757 yards solid waste; 300,620 kWh; and 0.63 MTCO_{2e}	\$43613	
GHG reductions *	137 metric tons CO_{2e}		

* Does not include projects that are "not recommended" or "further research is needed."