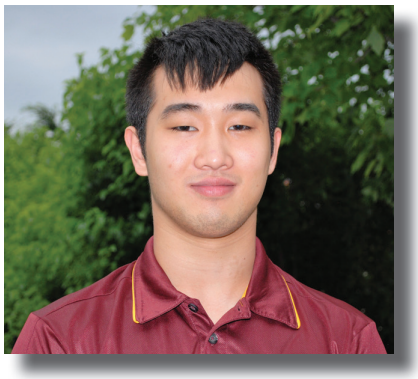
Health Systems Coop. Laundries



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Company Background

Health Systems Cooperative Laundries (HSCL) is a cooperative association that processes linen from 31 hospitals and 600 clinics in the Minneapolis-Saint Paul metropolitan area. Its water usage is much more efficient than a conventional laundry due to its size, standardized linen, and tunnel washer technology.

"Working at my host company of Health Systems Cooperative Laundries has been a great experience. I don't think I will ever be able to look at laundry or water the same way again. I am very grateful to the staff at MnTAP and HSCL for their help while I was trying to understand the process. I've grown as an independent thinker and as an engineer, and I feel much better prepared to face challenges with the skills I've learned during this project." ~ JB

Project Background

Based on data from 2018, the plant is projected to consume 30 million gallons of water, 1,200,000 therms of natural gas, and 3.5 million kWh of electricity in 2019. Most of the water is used in three main tunnel washers and three medium washers. The third tunnel washer was added last year to accommodate volume growth and allow for more efficient washing of more linen. Research provided the identification of opportunities for increased water and energy efficiency. A similar balance was completed for natural gas. The three primary sources of gas consumption are the two boilers, dryers, and space heaters.

Incentives To Change

In the past year, HSCL has seen 12% volume growth due to the addition of two new clients. This means an additional 4 million pounds of laundry annually. As such, HSCL is looking for ways to improve operations while lowering costs for its member hospitals and clinics.

"The MnTAP intern program provided us with some great resources and insight. Josiah gave us a fresh view of our equipment and use of energy through his detailed recommendations – some of which have already been implemented. We even shared his final report and presentation with several other plants in our company, as we all have similar equipment."

~ Lori Nyberg, PMP
HSCL Project Manager

Solutions

Regular Maintenance of Air and Steam Trap Leaks

An audit of the compressed air and steam distribution systems identified five steam trap leaks resulting in an opportunity to save approximately 180,000 gallons of water and 1,300 therms, or $2,500 if sealed correctly. In addition, air leaks found throughout the plant present an opportunity to save about 4,700 kWh, or $400 per year.

Increase Load Weight in Medium Washers

Medium washers are hand-loaded, which can lead to under-loading. The average load weight was 150 lbs, though steam dryers can process 400 lbs at a time and the washers can wash 225 or 275 lbs per cycle. Since two loads are dried at a time, washer loads should be increased to 200 lbs. Estimated savings would be 2,300,000 gallons of water, 300 therms, and $2,700 worth of chemicals per year.

Optimize Medium Washer Water & Chemical Usage

Chemicals used in the machine are currently set to accommodate either 225 or 275 lbs of laundry. Scaling down chemical usage for only 200 lbs would result in an estimated savings of 1,100,000 gallons of water, and $1,400 in chemicals per year.

Decrease Dryer Time

Dryers make up a large portion of gas and electricity consumption. Reducing drying time for the 14 gas dryers would result in a reduction of 31,000 kWh, 12,000 therms, and $8,000 per year.

Decrease Operating Speed on Motors

The motors on finishing machines currently operate at speeds too quick for operators to keep up with. Slowing the motors to just above the operators' speed would use less electricity while maintaining the same level of production. An estimated 24,000 kWh and $2,100 would be saved annually.

Decrease Operating Pressure in Air Compressors

All machines on the production floor require an operating pressure at or below 85 psi, yet the air compressor is set at 105 psi. By reducing the air compressor pressure to 92 psi, an estimated 16,000 kWh and $1,500 would be saved.

Catch Mis-fed Linen

Mis-fed linen in the finishing machines needs to be rewashed if it touches the floor. Catching mis-fed linen would save 98,000 gallons of water, 5,600 therms, 14,000 kWh, and $3,700 in chemicals annually.

Recommendation	Annual Reduction	Annual Savings	Status
Fix Faulty Steam Traps	180,000 gallons 1,300 therms 4,700 kWh	$2,500	Recommended
Increase Medium Washer Loads	2,300,000 gallons 300 therms $2,700 in chemicals	$21,900	Implementing
Optimize Medium Washer Water and Chemical Usage	1,100,000 gal $1,400 in chemicals	$11,000	Recommended
Decrease Dryer Time	12,000 therms 31,000 kWh	$8,000	Implemented
Decrease Electric Motor Speed	24,000 kWh	$2,100	Recommended
Decrease Operating Pressure on Air Compressor	16,000 kWh	$1,500	Implemented
Catch Mis-fed Linen	98,000 gallons 5,600 therms 14,000 kWh $3,700 in chemicals	$8,200	Recommended

MnTAP Advisor: Brent Vizanko, Associate Engineer