

Tennant Company



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Company Background

George Henry Tennant founded a wood products company in 1870 and transitioned to manufacturing floor cleaning equipment in the 1930s. Since then, Tennant has expanded to employ 2,932 people in facilities around the world. Its products are used to polish floors in schools and healthcare facilities, clean airport and retail carpets, and sweep factory floors, city streets, and public parks. Tennant manufactures durable floor sweepers, scrubbers, and industrial floor coatings and has been recognized as a leader in innovation. Headquartered in Golden Valley, the company has seven buildings: Headquarters/Plant 1, Coatings Technical Center, Corporate Woods, Innovation Center, Orbio® Technologies, Services Center, and Solutions Center.



"This internship gave me the opportunity to lead my own project, research waste reduction opportunities, and network with people in the sustainability sector."

Project Background

The intern project was focused around two goals: solid waste reduction and water reduction. The waste project involved the development of an inventory of all waste streams at Tennant's Minneapolis facilities. Waste streams include all materials brought into Tennant's facilities that do not ship out as part of sellable product. The ultimate goal was to create a waste map for the Minneapolis sites and use this map to identify waste streams that have the potential to be source reduced, reused, or recycled instead of going to the landfill. The project also involved developing a plan to optimize waste vendors, dumpster sizing, and pull frequency. The water project looked at Tennant's reverse osmosis unit to optimize efficiency and reduce the amount of water being used, as well as to investigate possible uses for reject water.

Incentives to Change

Tennant's sustainability department was interested in finding opportunities related to waste and water reduction at their Minneapolis locations in order to augment existing sustainability initiatives. Tennant partnered with MnTAP to hire an intern to find opportunities for waste reduction, reuse, and recycling,



which could result in decreased material usage and waste as well as cost savings. Tennant was also interested in analyzing the reverse osmosis water system to identify opportunities for improving efficiency and reducing water usage.

Solutions

Waste Reduction & Diversion

Tennant Company's headquarters produces a significant volume of paper waste in offices, food waste in the café, paper towels in restrooms, and outdated electronics. In the plant area of the facility, waste streams expand to include cardboard, plastic banding, plastic film, pallets, scrap-metal, and hazardous waste, such as used absorbents, fork lift batteries, and used oil.

A number of recommendations were made to reduce, reuse, and improve recycling of these waste streams. These recommendations were quantified and prioritized using data from a waste sort that was conducted by Minnesota Waste Wise (MWW), an outside contractor, midway through the intern project. MWW sorted Tennant's waste into various categories like mixed industrial materials, food, paper towels, cardboard, and paper and then weighed each category. The largest waste stream was "true trash," which is comprised of difficult-to-recycle items like sanding disks, Styrofoam cut-outs, and air filters. The next largest waste stream was compostable material at 15% by weight. This included food scraps, compostable food ware, and paper towels from the restrooms. The next largest waste streams were cardboard, paper, and industrial plastics. The information from this process helped Tennant identify areas on which to focus their waste reduction and diversion efforts.

The wastes produced by a facility aren't always found in the trash, but rather in the pocket book. At many of Tennant's buildings, dumpsters were considerably larger than the volume of waste produced. By right-sizing the trash and recycling dumpsters, Tennant

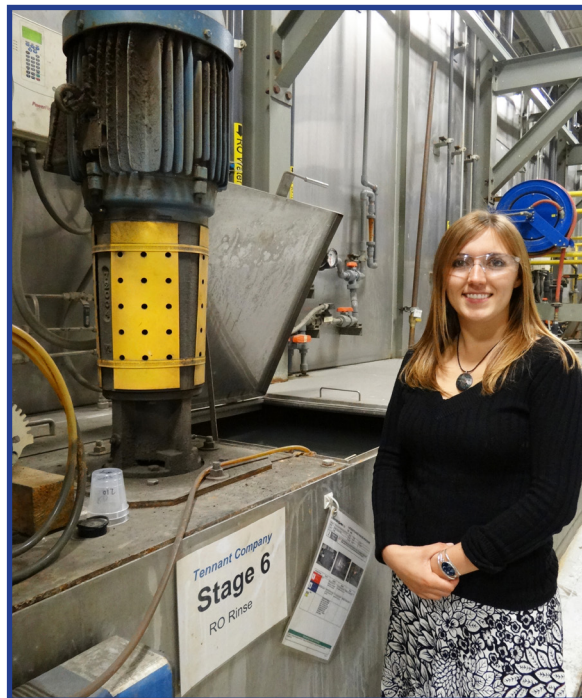


could save \$6,400 in fees and taxes per year. In addition to right-sizing dumpsters, Tennant could save \$3,100 in empty drum ordering costs by collecting metallic dust from laser cutting in 55-gallon drums instead of 30-gallon drums.

RO Unit Efficiency

At Headquarters/Plant 1, the company uses water for irrigation, domestic applications, and production. The paint wash system uses both fresh city water and reverse osmosis (RO) water. The RO unit pre-treats and filters city water before it is pumped across filtration membranes. The process produces discharge water, the volume of which is dependent on the efficiency of the overall system and the quality of the incoming water.

By right-sizing the RO unit pump, Tennant could reduce nearly 490,000 gallons in reject water annually, with a 9 month payback. In addition, by installing proper pre-treatment equipment, Tennant could nearly double the life of the RO membranes and spend less on maintenance costs, for a savings of \$3,600 per year.



Recommendation	Reduction	Annual Savings	Status
Waste reductions	56,670 lbs	\$44,930	Under review
RO unit efficiency + other water recommendations	1,600,000 gallons water 929 kWh	\$18,390	Under review