

2019 Case Study

HENKE MANUFACTURING

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Company Background

Henke Manufacturing Inc. is a 90-employee company located in Leavenworth, Kansas, and is a producer of snow and debris management products such as graders, loaders, spreaders, plows, dozer blades, wings and hitches. Established in 1916, Henke Manufacturing Inc. is a leader in its industry that provides, on average, 125 metric tons of quality products per month throughout the United States and Canada.

Project Background

Henke Manufacturing hired a pollution prevention intern to help reduce its environmental impact, develop creative ways to improve the efficiency of its facility, and to aid in sustainability reporting to its corporate office, Alamo Group.

Incentives To Change

Henke Manufacturing is one of the companies in the Alamo Group leading in environmental sustainability. With previous P2 interns identifying a variety of projects available for the company to pursue, Henke wanted the 2019 intern to review these projects, make a push for their implementation, and develop new and creative ways for the company to become more efficient. Based on these goals, the intern pursued seven pollution prevention projects.

Projects Reviewed for P2 Potential

Compressed-air audit

The intern performed a compressed-air audit for both air-compression systems in buildings 1 and 2 using an UE9000 ultrasonic detector from UE Systems to locate and quantify air leaks throughout the facility by measuring

decibel (dB) values. Employing a leak-survey app developed by UE Systems, the intern calculated the environmental, financial and electrical impact that would result from repairing the 42 leaks that were found in the system. A total 97,000 kWh and \$14,700 in annual savings was identified during this project.

Solar panel evaluation

The intern evaluated the effect of installing solar panels on the roof of the two Henke Manufacturing buildings to increase the facility's renewable energy usage. After interviewing two solar panel companies and having draft designs and quotes developed, the intern found that Henke would have the ability to produce 327,000 kWh annually with the panels. This would result in \$46,000 of annual savings and increase Henke Manufacturing's renewable energy usage to 67%.

Solvent recovery

Henke Manufacturing uses a solvent recycler to recover used acetone that results from cleaning its paint lines and painting tools. The intern, aware that the solvent recycler was not operating at a high efficiency, worked with Henke's maintenance department to attempt to improve this efficiency. It was determined the unit needed to be replaced, so the intern located two replacement units that would double Henke's processing capacity and create redundancy in case one of the units needed maintenance. The improved efficiency and capacity of these machines would save Henke \$10,592 annually and reduce disposal of used acetone by 3,894 lbs.

T5 lighting replacement

Henke Manufacturing has been in the process of replacing all T8 CFL tube lighting with T8 LED lighting throughout the facility. However, Henke also has multiple T5 fixtures in use. The intern used a BOVKE environmental meter to measure luminescence on the shop floor. It was found that light levels were below recommendations for detailed machine work and welding. This allowed the intern to quantify the electrical savings and environmental impact available by switching to LEDs, while also increasing light levels in the shop to create a safer and more productive workspace. Total savings from replacing the T5 CFL fixtures with high - output T8 LEDs would be 48,000 kWh and \$5,600 annually.

Occupancy light sensors

The intern noticed lights were often left on all day, or most of the day, in the facilities' bathrooms. To quantify this issue, the intern mounted HOBO occupancy/light meters on the door frames within the bathrooms and recorded data for approximately three days. Based on the resulting data, it was found that lights were left on often more than 60% of the time, whereas the bathroom was only occupied 9-40% of the time. The intern then quantified the savings available if motion-sensing light switches were implemented and found that 3,338 kWh could be reduced annually. This would save Henke \$407 a year in electricity expense.

Summary of 2019 P2 intern recommendations for HENKE MANUFACTURING

Project	Annual estimated environmental impact	Estimated cost savings (\$/year)	Status
Compressed Air Audit	97,000 kWh	\$14,700	60% Implemented
Solar Panel Evaluation	472,000 kWh	\$46,000	Recommended
Solvent Recycler	3,894 lbs. of waste avoided being disposed	\$10,592	90% Implemented
T5 Lighting Replacement	45,000 kWh	\$5,184	Recommended
Occupancy Light Sensors	3,338 kWh	\$407	Recommended
Total ¹	617,338 kWh 3,894 lbs. of waste	\$76,883	
GHG reductions ^{1,2}	650 metric tons CO ₂ e		

¹Does not include projects "not recommended" or with "more research needed".

²EPA P2 GHG Calculator with Cost, Apr. 7, 2016