



Industrial Placement Intern: Ashley Baltes

Major: Chemical Engineering

School: University of Nebraska- Lincoln

Company Background

Appleton Electric is one of the many quality electrical parts manufacturing brands of the EGS Electrical Group, a division of Emerson Industrial Automation. Appleton produces a variety of electrical installations for harsh conditions including; conduit bodies, junction boxes, light fixtures, liquid-tight connectors, and couplings. The EGS Appleton plant in Columbus, NE receives parts from foundries and then grinds, machines, plates, powder coats, and assembles the final product.

Project Description

EGS Appleton sought assistance from a UNL Partners in Pollution Prevention (P3) intern during the summer of 2008 with a variety of waste minimization projects. A majority of the time was spent quantifying the waste produced by the rack and barrel electroplaters and determining ways to reduce rinse water consumption, plating bath dragout, and wastewater treatment sludge. The powder coat curing ovens and steam boilers were also analyzed.

Pollution Prevention Benefits

Several recommendations were offered that were designed to minimize the amount of raw materials used and waste produced. The cost savings and waste reductions are presented in Table 1 below.

Table 1. Potential Pollution Prevention (P2) Savings

P2 Opportunity	Annual Cost Savings	Annual Waste Reduction
Rack Plater		
Dragout Reduction	\$34,000	13.5 tons hazardous waste
Rinse Water Use Reduction	\$20,000	5 million gallons water
Energy Use Reduction	\$2,100	76,000 kWh
Barrel Plater		
Dragout Reduction	\$66,500	18 tons hazardous waste
Rinse Water Use Reduction	\$11,000	2.8 million gallons water
Rinse Water Filtration and Reuse	\$6,000	1.5 million gallons water
Infrared Powder Coat Curing Oven Installation	\$67,000	7,350 million BTU natural gas
Tank and Pipe Insulation	\$2,300	150 million BTU natural gas
Total	\$209,000	

Additional indirect benefits, i.e., benefits not directly linked to monetary savings, include:

- Improved public image as a leader in the water conservation effort.
- Reduction in the work load of the facility's water treatment center.
- Reduction in greenhouse gas emissions by 50 metric tons CO₂ equivalent/year due to reductions in electricity use