Electrolux Home Products

COMPANY BACKGROUND

Electrolux Home Appliances is a Swedish company that has grown from the world's first household vacuum cleaner company to one of the leading household appliance manufacturers in the industry. As a worldwide competitor, Electrolux is well aware of the importance and responsibility of taking a role in sustainability and environmental protection. Electrolux sells more than 40 million products to 150 countries worldwide. Products manufactured by Electrolux include vacuums, refrigerators, dishwashers, washing machines, dryers and ranges. Some well respected brands under Electrolux ownership include of Electrolux, AEG-Electrolux, Zanussi, Eureka and Frigidaire. In 2005 Electrolux had revenue of $16.3 billion and employed more than 59,000 people.

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PROJECT BACKGROUND

In 2006 Electrolux hosted a Pollution Prevention intern to investigate electrical use at the Webster City factory. Electrolux was pleased with the work of the first intern and decided the Pollution Prevention Intern Program could benefit the paint and wastewater area of the plant. The focus of this project was to review waste streams, optimize recycling programs and reduce hazardous waste disposal.

INCENTIVES TO CHANGE

With an increase in production, Electrolux has seen higher flow rates through the wastewater area. With more chemicals and impurities going through the system, it was important to stay under the city wastewater zinc and nickel limits. Electrolux was looking for a cost effective process and equipment changes to treat and reduce pollutants at the source. Areas that needed improvement included wastewater, Electrocoat (E-coat) paint line, powder coat paint line, and liquid coat paint line.

RESULTS

One Coat Electrocoat System

The current E-coat system is only used as a primer coat. If a one-coat Ecoat system could be implemented, the liquid coat line and curing oven could be completely eliminated. More research in the quality engineering department is needed for this proposed project.

NT1 Project

On the E-coat paint line, a zinc phosphate pretreatment process is used to wash, seal and improve adhesion quality of the paint. Zinc phosphate has very high metal levels and requires heat to be effective. The proposed switch to the chemical NT1 would nearly eliminate zinc from the wastewater stream and would not require heating. Rinse water could be recycled to an earlier rinse stage, thus reducing water demands. This project has minimal implementation cost as existing equipment can be used.

Zinc/Nickel Sludge Relocation

The current wastewater stream is filtered to remove zinc and nickel. This filtering process creates 160 tons of solid waste a year. Efforts through the Iowa Waste Exchange were made to find a company that could use the sludge in their production process.

Sludge Dryer

If the sludge relocation project is not successful, the next suggestion is to install a sludge dryer. A sludge dryer would help reduce the disposal cost of the waste by reducing the water weight by up to 60 percent. Because the disposal cost is based on weight, this would have an estimated cost savings of $30,000.

Wastewater PLC

Wastewater is treated with metal coagulation chemicals to drop metals to the bottom clarifiers, where it is filtered out. When the clarifiers are not operated correctly, the coagulated metal can flow to the top and exit with the clean water. A PLC (Programmable Logic Controller) would control the pH of the water, the chemical feeds, the dropping of the metal presses, and the operation of the clarifiers. The project would save $25,000 in annual chemical use with a two-year payback, as well as improve effluent quality.

Air Knives Project

In the pretreatment process for powder coat, a problem existed with water and chemical carry over from one stage to another. Spray on the parts was not dripping off early enough and would fill the next stage, causing it to overflow to the wastewater drain. Air knives were installed to blow dry the parts before they reach the next stage. The project is estimated to save 3 million gallons of water and $20,000.

Paint Filter Change

The paint filters used in the liquid paint booth need to be changed frequently. A higher quality filter would decrease change out and lower disposal cost. This would reduce hazardous solid waste that is currently sent to the landfill.

Project	Annual Cost Savings	Environmental Results	Status
ONE COAT E-COAT	TO BE DETERMINED	GREEN HOUSE GASES 130 TONS HAZ. WASTE	**PROPOSED**
NT1 PROJECT	$250,000	GREEN HOUSE GASES 40 TONS SOLID WASTE 1,600,000 GALLONS WATER	**TRIAL IN PROGRESS**
ZINC/NICKEL SLUDGE	$65,000	160 TONS SOLID WASTE	**TRIAL IN PROGRESS**
SLUDGE DRYER	$30,000	TRANSPORTATION FUEL	**PROPOSED**
WASTE WATER PLC	$25,000	CHEMICAL USE EFFLUENT QUALITY	**PROPOSED**
AIR KNIVES PROJECT	$20,000	3,000,000 GALLONS WATER	**IMPLEMENTED**
PAINT FILTER CHANGE	TO BE DETERMINED	SOLID WASTE VOC'S	**TRIAL IN PROGRESS**

Air Pollutants Diverted in Tons

	Total for all sectors
SO2	26.31
CO	3.16
NOX	12.61
VOC	1.57
PM	0.66

Green House Gases Diverted in Tons (CO2 Equivalent)

	Total for all sectors
CO2	4,932.36
CH4	441.53
N2O	2.33
CFCS	60.47