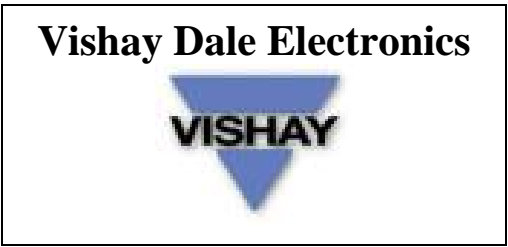


## **Pollution Prevention Project Overview**

Industrial Placement Intern: Eric Lueshen  
Major: Chemical Engineering  
School: University of Nebraska-Lincoln



## **The Company**

Vishay-Dale Electronics Company in Columbus, Nebraska is an ISO 14001 certified manufacturer of passive components, primarily resistors and plasma display panels. In operation since 1951, Vishay has five facilities located throughout Columbus, and employs roughly 850 people. Increased media exposure of the harmful affects caused by pollution has produced international awareness and an overall push towards better environmental stewardship, especially in larger industries like Vishay.

## **Project Description**

Vishay employed pollution prevention intern Eric Lueshen during the summer of 2006 to perform a waste assessment and provide technical assistance to help identify potential pollution prevention opportunities, save the company money through reduced energy consumption, and to reduce its environmental impact.

Several projects were undertaken. Alternative solvents were researched to replace the hazardous and harmful solvents toluene, xylene, acetone, and isopropyl alcohol. Two alternative solvents were recommended as acceptable and economical alternatives. A recycler was identified who would pick up specific types of plastic generated at no charge, and the economical analysis for this option was calculated. Over 150 compressed air leaks were tagged and photographed in three plants. The amount of lost energy for these leaks, as well as for the intake air to the compressors and for compressor waste heat, was quantified. Suggestions for fixing and maintaining air leaks, lowering the intake air temperatures for the compressors, and recovering the compressor waste heat were given. Insulation to reduce heat loss from process equipment, ovens, and ducting was also suggested and quantified. More advanced and energy-efficient lighting options were researched, and a quick economic analysis for these options was presented. Options for the improved handling of colored powder epoxy were analyzed.

## **Pollution Prevention Benefits**

The pollution prevention benefits associated with the suggestions made to Vishay include reduced energy use, reduction in hazardous waste, reduction in solid waste, and reduction in harmful air emissions. Intangible benefits of improved company image, reduced noise pollution, increased employee comfort and morale, decreased liability risk, and a cleaner work place may be realized.

## Results

The pollution prevention suggestions presented to Vishay have the **potential to save the business nearly \$417,000 per year**, as well as to help conserve **approximately 7,580,000 kWh of electricity**, eliminate **over 30,000 pounds of hazardous air pollutants (HAPS) and volatile organic compounds (VOCS)**, divert **almost 29,500 pounds of solid waste** from the landfill each year, and eliminate **26,000 pounds of hazardous waste**. These suggested pollution prevention opportunities are summarized in Table 1 below. Cost and savings estimates are based on information from the facility and vendors; actual costs and savings may vary.

**Table 1: Summary of Pollution Prevention Suggestions**

<i>P2 Opportunity</i>	<i>Potential Annual Savings</i>	<i>Payback Period</i>
Repair leaks in air compressor fixtures	\$48,200	5.5 days
Modify or change location of air intake to compressors	\$7500	8 days
Install heat recovery systems for air compressors	\$141,200	2.5 months
Insulate all heat producing equipment, hoods, & ducts	\$160,880	1 month
Switch to a less or non-toxic solvent	\$18,500	7.2 months
Purchase safer parts-washing baths and dip trays	\$349	11 months
Replace less efficient lamps and ballasts	\$27,675	not determined
Attach a heavy-duty, heat resistant plastic bag to machine & higher buckets with added wheels	\$1521	2 months
Start a plastic recycling system	\$11,460	1 month
<b>Total Potential Savings</b>	<b>\$417,286</b>	