

Haldex Brake Iola, Kansas



Intern: Dawn Larson
Major: Mechanical Engineering
School: Kansas State University

The Company

Haldex Brake is a manufacturer of brake components for heavy duty machinery, trucks, and buses. The Iola plant is part of the Commercial Vehicles Division which means they manufacture parts for trucks and heavy machinery. This plant employs 230 people and is about 150,000 square feet in size.

The Project

Dawn Larson's project had three prongs: the chemical finishing department, lighting, and alternative energy research. Since the plant became ISO 14001-certified, it has greatly reduced its energy consumption and water consumption, but Haldex also realized the need for continuous improvement. The chemical finishing department is still the largest water user in the plant, and the re-lighting project is now in phase 4. The company also has a lot of interest in alternative energy sources as a way to decrease their carbon footprint and to further reduce their energy use.

Projects Reviewed for P2 Potential

The first project was two improvements to the impregnator line in the chemical finishing line. It had a hot-air dryer (two 15kW heaters) that ran all day; it used 70,000 kWh a year (\$5,490 a year). It was a very simple correction to make; Larson suggested a timer be installed. The \$50 timer and conduit saves 64,000 kWh and \$5,000 a year. Next on the impregnator was the overflow rinse tank. It used approximately 740,000 gallons of water a year which cost Haldex \$4,100. This fix was easy. They re-routed the plumbing so the clean water would flow from the bottom instead of the top. This allowed them to reduce the flow rate and add in a flow meter. It is now set at two gallons per minute instead of five. This was a free improvement that saves 444,000 gallons of water a year (\$2,500). Larson also insulated two of the tanks on the chromate line. This allows them to reduce heat-up times in the morning and keeps the heaters from working as hard to maintain temperature. They will save approximately \$1000 a year and 13,000 kWh.

Next was lighting. Haldex is now on phase 4 of the re-lighting project. Larson's task was to tabulate what fixtures were left in the plant and to recommend what to switch to. Most of the remaining fixtures were in support areas and office areas; all still had T12 lamps. She found from their light supplier that there were two retrofit kits available, one

for eight-foot fixtures and one for the office troffers. Both are more simple and cheaper to use than buying new fixtures. The company will primarily be using T8 bulbs with electronic ballasts after the re-lamping. Haldex will save \$20,000 a year and 260,000 kWh.

Finally, there was research into alternative energy. Unfortunately Larson does not recommend that Haldex attempt to implement an alternative energy such as a solar array, solar thermal water heating, or a wind turbine. The company uses approximately 3 million kWh a year. This is several times what a house would use in a year, which is the scale used for of these applications. The local electric buy-rates are low, which would also increase the payback time for these kinds of projects. Larson did recommend they look into solar lights and other smaller applications.

Project	Annual Cost Savings	Environmental Results	Status
Hot-air dryer	\$5,009.16	64,220 kWhs	[Implemented]
Overflow rinse water	\$2,502	440,000 gallons	[Implemented]
Heater insulation	\$1,013.39	12992.2 kWh	[Implemented]
Lights	\$20,709.43	265,503 kWh	[In Progress]
Alternative energy	\$00.00	N/A	[Not recommended]

Conventional Air Pollutants and Green House Gases Diverted in Standard Tons

	SO2	CO	NOX	VOC	PM	
Total for all sectors						
	CO2	CH4	N2O	CFC		
Total for all sectors	299.2439					