

DANFOSS POWER SOLUTIONS INC.

AMES



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COMPANY BACKGROUND

Danfoss Power Solutions Inc. is a world leader in the design, manufacture and sale of engineered hydraulics. Most of the electric systems and components are used in mobile equipment. Danfoss Power Solutions, located in Ames, Iowa, is the North America headquarters of these operations. The facility employs more than 1,000 people on 3 shifts, 24 hours a day/5 days a week. The company strives to be a good corporate citizen and demonstrates a concern for the wellbeing of employees, communities, and the environment, in addition to the customers they serve.

PROJECT BACKGROUND

Danfoss Power Solutions Inc. is currently in the planning phase of implementing an environmental management system (EMS). The EMS calls for an attitude of continuous improvement on environmental concerns, which matches nicely with the focus of this summer's projects. The warehouse recycling project focused on diversion of solid waste from the landfill. The goal of the compressed air projects was to reduce energy use while avoiding any negative effects on productivity.



INCENTIVES TO CHANGE

Danfoss Power Solutions Inc. changed hands recently and the new owners have a strong passion for the environment. Along with the environmental benefits of the projects there is a space benefit. The warehouse facility is generating seven to twelve dumpsters filled with three yards of solid waste per day, and space for more dumpsters is limited. Implementation of a recycling program and baling the recyclable materials would ease the overall need for additional space and increase landfill diversion.

RESULTS

Warehouse Recycling: Danfoss Power Solutions Inc. operates a warehouse facility that ships and receives parts from all around the world. The facility attempts to reuse as many of the packaging materials as they can. Due to the large volume of shipments, much of the materials remain unused and are discarded as solid waste. A commercial single-stream recycling program will be put in place at the warehouse facility, diverting more than 100 tons of cardboard and plastic to an area recycler. The resulting savings could be \$11,640.

Warehouse Recycling – Phase II: A second phase to this project would be to further separate the cardboard from the single-stream materials. Baling the cardboard separately would create a marketable product and could generate savings of more than \$17,364.



Leak Tracking System: An air leak tracking system was created for the main facility that tracks which production cells generate the most leaks, allowing maintenance crews the opportunity to focus on areas that are more prone to leaking. Along with this benefit, the log will display the total amount of money saved per year and the cumulative total.

Parts Washers: Stand-alone parts washers are used to clean parts at various stages in the production process and are major users of compressed air. Adjustments were made to cycle times and rate of air consumption to increase efficiency and reduce associated costs.

Blow-off Guns: A more efficient air nozzle was installed on blow-off guns to increase pressure and reduce the volume of air needed for optimum efficiency. This additional pressure will also decrease the amount of time needed to clean each part, creating a notable increase in productivity. This is expected to add an additional \$6,120 in revenue generated by that work cell. Several other areas of production were evaluated for use of the efficient nozzle. However, custom parts would be needed to retrofit the guns and the added cost would make this change less cost effective in the other work areas.

Compressed Air System

The cost to run the compressed air system at the main facility is estimated to be more than \$180,000. As a result, even a small change on this system will result in substantial cost savings.

Warehouse Air Leaks: A leak detection survey was conducted on the three-year-old compressed air system at the warehouse facility. An ultra-sonic leak detector was used to identify leaks, record them into a log and tag them for repair. Repairing the leaks could reduce the load on a 75HP compressor and save more than \$5,000 a year. A preventative maintenance program will be set up with the main facility to minimize future losses due to leaks.

CONVENTIONAL AIR POLLUTANTS AND GREENHOUSE GASES DIVERTED IN METRIC TONS

TOTAL FOR ALL SECTORS							
CO ₂	SO ₂	CH ₄	N ₂ O	CFC	NO _x	VOC	PM ₁₀
387.51	0.68	4.71	0.06	1.54	0.32	0.01	0.02

PROJECT	ANNUAL COST SAVINGS	ENVIRONMENTAL RESULTS	STATUS
WAREHOUSE RECYCLING	\$11,640	100 TONS	IN PROGRESS
WAREHOUSE RECYCLING – PHASE II	\$17,364	105 TONS	RECOMMENDED
WAREHOUSE AIR LEAKS	\$5,856	87,402 KWH	IMPLEMENTED
LEAK TRACKING SYSTEM	\$2,425	25,373 KWH	IMPLEMENTED
PARTS WASHERS	\$1,811	27,029 KWH	IMPLEMENTED
BLOW-OFF GUNS	\$9,524	49,014 KWH	IN PROGRESS

