Lear Corporation

CASE SUMMARY 11

LEAR CORPORATION

Iowa City, Iowa
Johnson County

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Major: Engineering Mechanics
School: Iowa State University

The Company

Lear Corporation, a Fortune 150 company headquartered in Southfield, Michigan, focuses on automotive interior systems and is the world's fifth-largest automotive supplier. Net sales in 2001 were $13.6 billion. The company's world-class products are designed, engineered, manufactured, validated and delivered by over 100,000 employees in more than 300 facilities located in 33 countries. Lear Corporation, Iowa City Plant, manufactures instrument panels, armrest and consoles for automotive industries. The major customers for this plant are Daimler Chrysler, Ford, GM and Toyota. The number of employees for this plant is about 850.

Project Background

The plant is ISO 14001 certified and has a team, called the P2 Group, dedicated to pollution prevention and energy efficiency. This group is motivated to identify and implement pollution prevention/energy efficiency (P2/E2) options. Lear focused on developing P2/E2 options to cut down expenses and reflect Lear's dedication towards environmental improvement. In particular, the internship was focused on reducing environmental impact of paint processes and energy consumption.

Incentives to Change

- Economic: Potential economic benefits could be achieved by source reduction of paint and paint filters. In-plant treatment of paint flush wastewater would save disposal cost. Efficient energy usage could offset the extra amount of utility cost Lear would incur for new business coming in this year.
- Waste Reduction: By source reduction and in-plant reuse Lear, Iowa City Plant, would hit the top notches of 'Waste Management Hierarchy'. Reduction of paint usage, in-plant treatment and reuse of paint wastewater portray Lear's commitment towards pollution prevention.
- Energy Conservation: Energy efficiency projects to reduce the electrical energy and natural gas usage would help in energy conservation.

Results

Four pollution prevention/energy efficiency projects are developed. Besides the main pollution prevention projects, a database has also been created, which contains over four hundred specific P2/E2 projects tracked down from the original list of Six Sigma Projects on *'LearNet Sigma TRACK Online'*. This database could be put on the **'Corporate Environmental Web Page of Lear'** and used to implement certain environmental projects worldwide.

An in-plant treatment procedure was developed to treat the waterborne paint flush wastewater. This would potentially divert 36,000 gallons of Special Non-Hazardous Wastewater from out-of-

P2/Energy efficiency Option	Waste/energy reduced	Waste disposal cost savings	Raw materials/	Production cost savings	Total cost savings	Status
Paint wastewater in-plant treatment	35,000 gallons/ year	$23,360/year			$23,360/year	Implementation in progress
Paint filter waste reduction (total)	128 tons/year	$9,832/year	$242,414/year	$346,937/year	$593,183/year	Implemented[1]
Paint transfer efficiency optim.	40,000 gallons/ year		$1.3 million/year		$1.3 million/year	Recommended
Repair compressed air leaks	1.8 million kWH/ year		$89,240/year		$89,240/year	Implementation in progress
Optimization of plant lighting	1.7 million kWH/ year		$84,883/year		$84,883/year	Implementation in progress
Repair defective steam traps	10,000 MMBtu/ year		$34,332/year		$34,332/year	Recommended

[1]Implemented for Cell 4. Recommended for other cells.

plant treatment and would save $23,360/yr for the plant. The payback period would be 3 months.

Frequent filter changes were leading to high filter cost, disposal cost and loss in production. Filter change period was optimized for Cell-4 paint booth and also recommended for other paint booths. This would divert 128 tons of solid waste from the landfill, and reduce the landfill cost by $9,832/ yr. Potential source reduction of filters would save $242,414/yr. Optimizing filter change would enhance production and save $346,937/yr. For Cell-4 the payback is immediate and for other Cells, the payback is only 2 months.

Lear, Iowa City Plant, purchases huge amounts of paint for painting operations, costing about $3.5 million/yr. But the plant lacks a proper measurement system for the paint transfer efficiency. Any improvement in the transfer efficiency could lead to a huge amount of cost savings for the plant. A transfer efficiency measurement system has been developed and implemented. The overall transfer efficiency of the plant was estimated as 25%. Electrostatic painting is proposed, which could save $1.3 million/yr. by increasing the transfer efficiency to 50%. This would also reduce filter usage and air emissions. The payback period is 2 months only.

Lear, Iowa City Plant is spending about 2 million dollars for energy consumption every year. Different sources of energy savings were identified for the plant:

This would result in energy reduction of 1.8 million kWh/yr, leading to a cost savings of $90,000/yr.

This would result in energy reduction of 1.7 million kWh/yr. leading to cost savings of $85,000/yr.

This would result in energy reduction of 10,000 MMBTU/yr. leading to cost savings of $35,000/yr.

Lear, Iowa City Plant, is expecting more business by the end of this year. This would potentially increase the energy usage to run more equipment. The ideal situation would be to offset the extra amount of energy required for running new equipment by the amount of energy saved by energy conservation projects.