CASE SUMMARY 4

CNH-Case

CNH-CASE CORPORATION

Burlington, Iowa
Des Moines County

Intern: Lee Strait
Major: Environmental Engineering
School: The University of Iowa

The Company

CNH-Case Corporation is a world leader in the production of agricultural and construction equipment. Revenues in 2002 totaled $10 billion. The Burlington facility assembles tractor loader backhoes, forklifts and crawler dozers (the dozer line was phased out during intern's stay).

Project Background

CNH-Case Corporation has a metal recycling program, a pallet reuse program and a solvent recycling system. The company also recycles cardboard and office paper in low volumes.

Incentives to Change

CNH-Case Corporation desired to lower its corporate Paint Exposure Index (PEI) Score, reduce Volatile Organic Compound (VOC) emissions, reduce water usage and reduce solid waste generation.

Results

Six opportunities for potential annual savings are:

1. **Use Higher Solids Paint** - $39,964. The paints currently in rotation at CNH-Case have low solids and high VOC and HAP (Hazardous Air Pollutant) concentrations. By switching to higher solids, paint, total paint and solvent usage will decrease by 4,800 gallons per year. By switching three spray paints, emissions of VOCs will be reduced by 10.5 tons (4.3 tons are HAPs). Purchasing costs will be reduced by $39,800. The e-coat will not show immediate improvement as it takes 10 years to completely switch out the paint. After 10 years, VOC emissions will be reduced by 6.6 tons per year (6.0 tons are HAPs). Purchasing costs for the e-coat paint will be reduced by $200 per year. There are no implementation costs involved with this project. This project is in the process of being implemented.

2. **Reroute Rinse Water**- $7,500. CNH-Case has implemented a plumbing scheme that takes water from one rinse stage of the e-coat rinse system and uses it in two other rinse stages. Implementation costs were about $2,900. The payback period for this project is five months. Water use was reduced by 4 million gallons per year, with a savings in both water and sewer costs.

3. **Expanded Cardboard Recycling** - $15,700. Case produces more than 30 tons of solid waste per month with about 75 percent being recyclable cardboard. Five cardboard-only dumpsters were placed around the plant in addition to the cardboard balers that were already in place. Cardboard recycling at Case could divert more than 22 tons of waste from the landfill each month, or 270 tons per year. Cardboard recycling can save Case $8,370 in tipping fees and produce $5,000 to $10,000 in revenue from the sale of the cardboard. The payback period for this project is 1.8 months. This project is in the process of being implemented.

4. **Plastic Thread Protector Reuse** - $8,650. Borghi USA, Inc. manufactures hydraulic pipes for Case. Each of these pipes is shipped with two plastic thread protectors, for a total of 450,000 caps annually. The purchasing cost of these caps is $23,000. Most caps are in good shape after being removed from the pipe so reuse is possible. Savings could total $8,650. However, this project has been deemed infeasible due to handling requirements.

5. **Compressor Water Efficiency**- $8,560. CNH-Case has two identical air compressors that are rotated on a monthly basis. It was observed that one compressor used 1.5 million gallons of cooling water per month more than the other compressor. By closing the cooling water outlet valve, water flow was reduced by 3.6 million gallons per year while still keeping the oil and outlet cooling water temperatures within reasonable limits. Thermostatic Control Valves can be installed on both compressors to keep the critical oil temperature constant while using only the cooling water needed. The valves would also account for changes in incoming air and water temperatures and seasonal changes. Initial estimates indicate that at least 8 million gallons per year and possibly as high as 12 million gallons per year of water can be conserved. Thermostatic control valves could lead to cost savings of $12,840.

6. **Non-Scheduled Compactor Pickup** - $8,800. Case has one trash compactor on twice-weekly scheduled pickup. Receipts from Waste Management show that this compactor was being sent to the landfill with an average weight of 2 tons. The compactor is capable of holding load weights of 6 to 8 tons. If this compactor were picked up once every 10 days instead of twice weekly, economic savings could be as much as $8,800 in the form of saved hauling fees. Environmental savings, because of reduced travel with the compactors, amount to approximately 150 gallons of gasoline. This project is awaiting approval from Case maintenance staff.

Project Summary Table

Waste Reduction Option	Waste Reduced	Raw Materials Saved	Annual Cost Savings	Status
Use higher solids paint	17 + tons VOCs	4821 gal paint and solvent	$39,964	Implementation in process
Reroute rinse water	4 million gal water	4 million gal water	$7,500	Implemented
Expanded cardboard recycling	270 tons/year	270 tons cardboard/ year	$15,700	Implementation in process
Plastic thread protector reuse	2000 lbs/year	2000 lbs/year	$8,650	Infeasible
Compressor water efficiency	12 million gal water	12 million gal water	$8,560	Partially implemented
Non-scheduled compactor pickup	—	150 gal gasoline	$8,800	Implemented