

Fansteel Wellman

CASE
SUMMARY

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FANSTEEL WELLMAN DYNAMICS

Creston, Iowa
Union County

Intern: Matthew Jones
Major: Industrial Technology
School: Iowa State University



The Company

Fansteel Wellman Dynamics specializes in manufacturing premium quality aluminum and magnesium sand castings. They are best known for producing large, complex castings, primarily for aerospace applications, featuring high strength, close tolerances, and near perfect integrity. They bring 39 years of advanced casting technology experience to solve their most difficult problems.

Project Background

Currently, Fansteel Wellman Dynamics has an environmental program that allows them to handle potential issues quickly. Even though this program is implemented, the company wished to gain assistance from the Iowa DNR P2 program in the areas described below.

Incentives to Change

Fansteel Wellman Dynamics would like to eliminate the use of hexavalent chrome, implement an office paper and cardboard recycling program, reduce wooden pallet waste, and locate alternate avenues for spent foundry sand use. With the use of P2 services, Fansteel Wellman Dynamics desires to improve their environmental standing.



Results

Opportunities for potential annual savings:

1. **Hexavalent chrome alternative** - \$19,500

By implementing one of the four recommended alternatives to hexavalent chrome, Fansteel will be able to reduce waste output by 38 tons of chrome sludge and eliminate the need for 10 tons of sodium metabisulfite chemical treatment, saving \$19,500 annually.

2. **Cardboard baler** - \$3,340

With the addition of a baler, Fansteel would eliminate the monthly fee of \$143 for the 6 cubic yard container and generate \$1,620 in revenue annually by selling the bales to a local recycler. The intern applied for the Iowa DNR's SWAP grant for recycling projects, requesting a \$2,800 grant for the purchase of the baler.

3. Office paper - \$565

An office paper recycling program has been implemented using disregarded fiber drums, plastic recycling containers, and a numbering system. With this program, \$565 will be received for recycling approximately four tons of white office paper.

4. Pallet recycling - \$3,100

A pallet recycling program, using a local pallet recycler, will reduce the wooden solid waste output by 45 percent (nine tons) and save \$3,100 annually.

5. Waste container efficiency - \$3,700

By auditing the previous waste container needs for the facility, the intern recommended the elimination of seven 1-cubic yard containers from the waste management plan, saving the company \$3,700 annually.



6. Foundry sand reuse - \$100,200

A total of 1,890 tons of foundry sand can be diverted from the in-house landfill to the local landfill for use as intermediate cover. With this option the company will greatly extend the lifespan of their in-house landfill, saving a projected \$100,200 annually for each year the landfill lifespan is extended.

7. Wastewater - \$770

Through the use of pH meters, possible reductions in water consumption can be achieved in one of the facility's corrosion resistant processes. Approximate water savings involve 424,080 gallons per year and cost savings of \$770.

8. Lighting improvements - \$5,450

By switching from a magnetic ballasts lighting system to an electronic system, Fansteel will be able to reduce energy consumption by 118,000 kWh and save \$5,450 annually.

The proposed outcome of these projects are the reuse or elimination of 1,941 tons of solid waste, 118,000 kWh of energy demand, 424,080 gallons of water demand, and a cost savings of over \$136,625 per year.

Project Summary Table

P2/Waste Reduction Opportunity	Waste Reduced Per Year	Raw Materials Saved	Annual Cost Savings	Status
Hexavalent chrome alternative	38 tons of chrome sludge	10 tons of treatment bisulfite	\$19,500	Further research needed
Cardboard baler			\$3,340	Implemented
Office paper recycling program	4 tons of paper		\$565	Implemented
Recycle wooden pallets	9 tons of wooden pallets		\$3,100	Implemented
Waste containers reduction			\$3,700	Implemented
Foundry sand recycling	1,890 tons of sand		\$100,200	Further research needed
Brown paper recycling				Recommended
Wastewater reduction		424,080 gallons of water	\$770	Further research needed
Update lighting system	118,000 kWh		\$5,450	Recommended