

CASE SUMMARY

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Winnebago

WINNEBAGO INDUSTRIES, INC. Forest City, Iowa (Winnebago County)

INTERN: Micah Schreur

MAJOR: Mechanical Engineering

SCHOOL: Dordt College

The Company

Winnebago Industries, Inc. is a leading United States manufacturer of self-contained recreational vehicles, used primarily in leisure travel and outdoor recreation activities. The company produces about 10,000 motor homes annually and has over 3,000 employees.

Project Background

Winnebago has demonstrated a commitment to waste reduction through implementation of programs to reduce wastes by diverting many landfilled waste streams to a recycling program. Winnebago currently recycles 70% of all waste generated in the plant. This amounts to approximately 22,000,000 pounds per year of waste materials that are diverted from the landfill to their recycling program.

Winnebago's proposed project was to further reduce the amount of solid waste that was being sent to the landfill.

Incentives to Change

Prior to the internship, Winnebago landfilled all of the waste carpet, trunk liner, and plastic film from a production line. The line four painted plastic and headliner was also being landfilled.

Results

The carpet, foam, fabric, trunk liner and various other materials are cut in the Stitchcraft facility on a computerized cutter that maximizes the amount of material that can be used.

In order to recycle carpet, its chemical composition needs to be known. The intern sent samples of each kind of carpet to a recycler. Following the extraction of the raw material caprolactam from the nylon carpet, the waste carpeting will be used in residential and commercial carpet applications as well as in engineered plastics, automotive parts, sporting goods, and packaging.

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Winnebago now recycles waste carpet, head liner, trunk liner, and plastic film, eliminating almost 500,000 pounds of waste annually from the landfill and saving over \$13,000 in transportation and disposal cost. In addition, Winnebago is being paid \$.07/lb for the carpet, generating a revenue in excess of \$21,000 per year.

Project Summary Table

Waste Reduction Option	Waste Reduced (lbs/year)	Cost Savings	Status
Recycle Carpet	300,000	\$29,000	Implementation in Progress
Recycle Trunk Liner	50,000	\$1,300	Implementation in Progress
Recycle Bristle Block	3,600	\$100	Implementation in Progress
Recycle LDPE (Stitch)	20,000	\$17,000	Implementation in Progress
Recycle LDPE (Line 4)	11,000	\$500	Implementation in Progress
Improve Polystyrene Recycling Efforts	44,000	\$4,000	Implementation in Progress
Recycle Headliner	100,000	\$3,000	Implementation in Progress
Total	484,600	\$35,600	

Other Waste Reduction Opportunities

Waste Reduction Option	Waste Reduced (lbs/year)	Cost Savings	Status
Install Wood Grinder	3.5 million	\$59,000-\$84,000	Recommended — Further Study Needed
Examine Quality and Handling of Sticks	200,000	N/A	Further Study Needed
Reduce/Reuse Wypalls	N/A	N/A	Further Study Needed

Winnebago has already diverted 480,000 lbs. from the landfill, with a potential landfill diversion of up to 4 million lbs. annually.