

Waste Reduction at Miller Manufacturing

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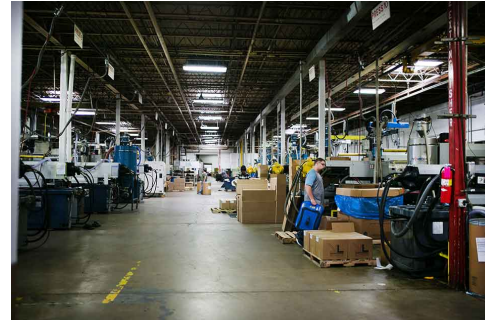
Driven to DiscoverSM



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Company Background

- Owned by Frandsen Corporation
- Injection molding Company
- Farm, ranch, and pet products
- Location: Anoka, MN
- 220 employees
- Operates 24 hours a day, 6 days a week



Incentive to Change

- To effectively reduce waste and reevaluate company practices to better the environment, the workplace, and to save money

- Miller has green initiatives with goals of:

- Utilization of recycled plastic resin
- Investment in energy efficient lighting technologies
- Use of recycled material in many of our products

Waste Sort

•Project Analysis

- Held 1 day's worth of trash
- Sorted into categories by type of trash:
 - Cardboard
 - Recyclable material
 - Product
 - Resin
 - True trash
- Weighed and quantified

•Cost analysis

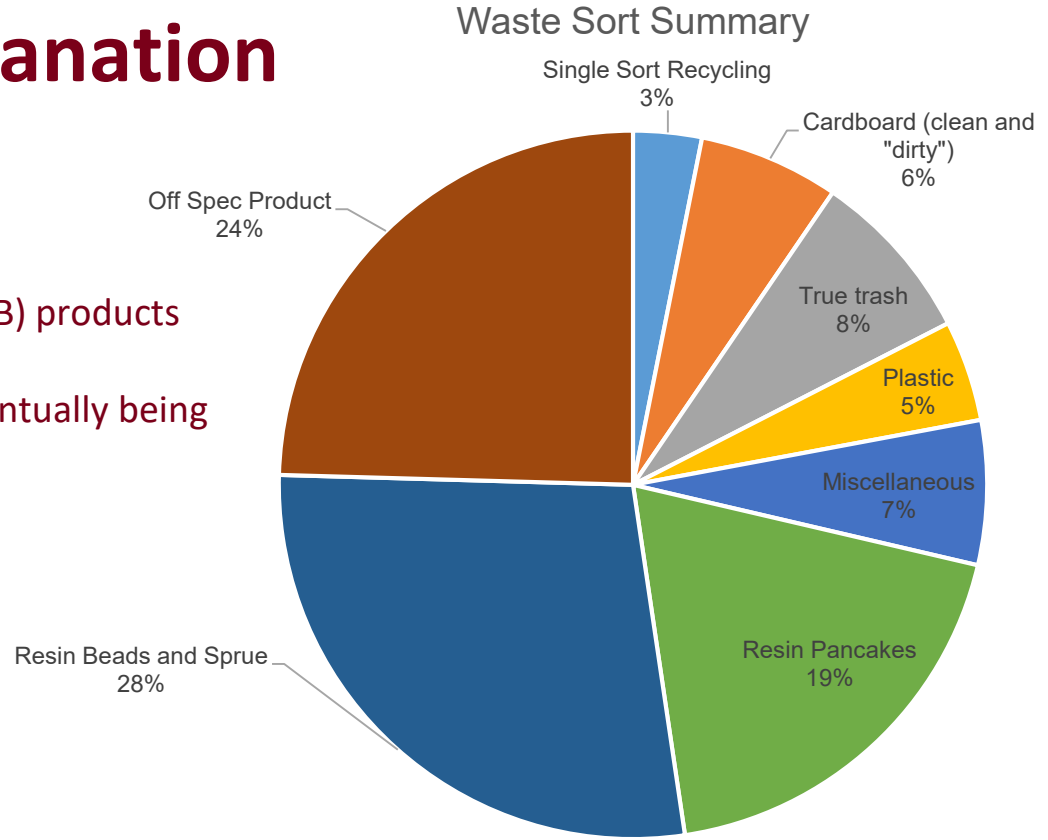
- Cost of disposal
- Cost of raw materials



Diagram & Explanation

•Variations:

- Day to day variation
- Material Review Board (MRB) products not counted
- Material in regrind area eventually being scrapped



Recommendations

Implement Single Sort Recycling

- **Project analysis:**
 - Bottles, cans, paper
 - Waste Wise and Anoka County
- **Costs analysis:**
 - Recycling materials needed
 - Recycling pick-up costs
 - County grant funding for improving recycling options
 - Raw material purchase

Regrind Reclamation

- **Project analysis:**
 - Removing handles and stickers from products
 - Regrind sprue
 - Re-purposed grinder for polycarbonate
- **Liner-less Labels**
 - Source reduction



Lighting Upgrades

- **Find a vendor**
 - New LED lights throughout facility
 - Implement light sensors
 - Increase lumen levels
 - Recycle materials
- **Most important areas: Molding and Assembly**
- **Finalize project details**



Recommendations

New LED throughout entire facility

•Project Analysis:

- Reduce electric costs by 50%
- Increase lumen levels by 20%
- Standardize design layout
- Create a safer workplace environment

•Cost analysis:

- Working with the local Utility company and tax programs to lower overall costs of project
- Payback period of ~1year
- CARES Act

Solutions

Recommendation		Annual reduction	Total cost	Annual savings	Payback period	Status
Electrical Savings	Switch to LED lights	464,000kWh	\$184,000	\$43,000	1 year	Implementing
	Fix air leaks	94,500kWh	\$2,660	\$8,000	4 months	Implementing
Waste Sort Savings	Implement single stream recycling system	10,400lb	\$540	\$530	N/A	Implementing
	Regrind Reclamation	53,000lb	\$0	\$3,300	Immediate	Investigating
Cardboard Reduction Savings	Reduce size of cardboard sheets	620lb	\$0	\$9,000	Immediate	Implementing
	Sell gaylords	7,000lb	\$0	\$2,000	Immediate	Implementing
	Using reusable shipping containers	16,500lb	TBD	\$23,500	TBD	Investigating
Other Savings	Liner-less Labels	4,780lb	TBD	\$240	N/A	Investigating

Personal Benefits

- Thank you to Miller Manufacturing and MnTAP for providing me guidance and advice while allowing me to gain experience and make a lasting contribution.

