A Team Approach to Sustainable Manufacturing

In 2013, MMTC-West developed a new "Zero Waste to Landfill" User Group to assist regional manufacturers in finding ways to divert landfill waste with a goal of achieving zero waste going to a landfill. The group consisted of 10 West Michigan companies representing a variety of industries (ADAC Automotive, Crystal Flash Energy, DeWys Manufacturing, Grand Rapids Label Company, Haworth, Herman Miller, Landscapeforms, Light Corporation, Trendway Corporation, and Western Michigan University).

The Problem

Achieving "zero waste to landfill" status isn't a simple recycling initiative. While many byproducts of the manufacturing process can be easily recycled, like metal scrap, plastic scrap, and packaging materials; other problematic waste materials present a more difficult challenge. The members of the user group worked together to identify "problematic waste materials" in each of their companies, and established the following list:

- Powder coat waste
- Mixed wood and sawdust waste
- Pressure sensitive labels
- Grinding discs, pads and filters, and sanding belts
- Fly ash
- Vinyl scrap
- Gypsum waste.

The companies identified these waste materials as preventing them from achieving zero waste status. The challenge then was determining how to handle these materials in an innovative and effective way.

The Solution

Identifying and determining waste solutions for problematic materials often requires a group effort. Many times, small and medium-size manufacturers simply do not generate enough volume of waste to warrant a new, specific contract to handle that problematic material.

There are a number of benefits of forming a user group of manufacturers to address these challenges. Bringing together companies in a collaborative environment enables accelerated, low cost learning. It also aggregates expertise so that new issues and problems can be researched and implemented with less effort. By aggregating data and volume information, the user group found it easier to attract attention from industrial recycler and recycling brokers.

Numerous recycling vendors were interviewed and several new material recovery technologies were identified. Through the process, each company discovered new solutions to their own problematic materials.

Haworth

Located a new recycling source for powder coat waste helping them achieve a stated zero waste to landfill designation for their West Michigan locations. Smaller companies with powder coat waste that would not normally have enough volume to interest a recycling company are now able to aggregate their waste at Haworth and take advantage of larger volume recycling. As a result, Haworth was able to lower its overhead expenses and reduce the cost of disposal for smaller companies.

Grand Rapids Label

Identified potential new outlets for many of its specialty label papers and films that would allow them to significantly reduce the amount of waste sent to disposal, generate new revenue from the sale of the waste and invest in upgrading their recycling equipment.

> "Working with the Zero Waste to Landfill User Group has helped Haworth identify alternatives to disposal and helped some of the smaller manufacturers find recycling opportunities by combining their waste materials with ours. By themselves the smaller companies would not be able to attract the interest of a recycler, the program helps divert waste and saves members disposal costs."
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> *Bill Gurn, Manager of Facilities Maintenance at Haworth Corp.*

Herman Miller

Provided a tour at its Holland GreenHouse assembly plant to user group members to show its internal recycling system and how it organizes its production plants and staff to hit the zero waste goals established by the company. The tours provided great insight on how to establish more effective systems for members with newer recycling systems.

Landscapeforms

Is working with one of the recycling companies that presented to user group, testing a closed loop filter recycling system. New filters from the recycling company will be installed and later collected instead of using the normal landfill disposal.

Trendway

Achieved a zero waste goal by working with its recycling vendor that has successfully responding to waste challenges the company was experiencing. The partnership worked so well, the recycling company was invited to present to the user group.

Light Corporation

Is participating with Haworth, providing its powder coat waste to combine with Haworth's powder coat waste.

ADAC Automotive and DeWys Manufacturing

Were able to update and refresh their internal recycling and waste reduction strategy by gaining insight from other member company's programs and new knowledge gained from recycling company interviews.

Michigan Manufacturing Technology Center-West

Crystal Flash

Was extremely helpful to the user group in identifying new recycling technologies and offering to collect samples and work with their recycling contacts on behalf of the members. This included collecting samples for powder coat waste, sand paper and sanding disks and working to help identify alternative fuel options.

Western Michigan University

Shared its experiences of using engineering students to assist local manufacturers in designing and implementing Zero Waste to Landfill programs. Student intern programs were offered to user group members.

Results

Through these group discussions and learning, the group determined that powder coat waste handling was the most costly problematic material for the group. Based on aggregating each company's data, the group found:

- Average price for virgin powder coat: $3.47/pound

- Average powder coat transfer efficiency: 63% (how much material adheres to the product)

- Approximately 4 million pounds of powder coat waste was generated each year by the group.

- 68% of the powder coat waste ended up in the landfill.

- $0.005 (1/2 of 1 cent) is added to the cost of each pound of waste transported to a landfill.

After looking at the facts were clear, powder coat is being used in large quantities, it is expensive, and it generates a large amount of waste. The major issue is that the raw material cost of purchasing too much powder coat is much greater than the cost of disposing of the waste.

- 4,000,000 (lbs. powder coat used) x 40% (waste) = 1,200,000 pounds landfilled

- 1,200,000 x $.02/lb. (paid by the recycler) = $24,000 revenue

- $70/ton (deferred disposal costs) x 600 tons = $42,000 saved

$24,000 in revenue + $42,000 deferred costs = $66,000 Total Estimates Savings