



CASE STUDY: A Resource Recovery Cooperative

Eagle Alloy, Inc. & Resource Recovery Corporation Muskegon, Michigan

Eagle Alloy, Inc. has been in operation since 1979. They use both airset and shell molding techniques to produce medium and high quantity production runs of various cast metal parts. Since 1995, Eagle Alloy has been sending its foundry sand to Resource Recovery Corporation to be used in various beneficial reuse applications. Resource Recovery Corporation is a cooperative (Eagle Alloy is one of the founding members) focused on recycling foundry sand from a large number of foundries in the region.



Photo 1: Co-product sand waiting to be processed.

Eagle Alloy sends 100% of its shell sand, about 12,000 tons annually, to Resource Recovery's facility, which is about 25 miles from the foundry. Once there, the sand is screened to remove metal – which is recycled back into the melt process at one of the participating foundries – in preparation for one of several various reuse applications. Asphalt Paving, Inc. uses the sand as an ingredient in its asphalt mixes, while Allied Waste uses the sand as part of a landfill leachate collection system. One of the most recently developed applications uses the sand as an ingredient in manufactured specialty soils (e.g. turf mix, bedding mix, etc.). RRC produces the soils by

blending their processed sands with leaves, grass, other yard waste, and natural soils. The finished products are then sold in bulk quantities through a distributor. RRC personnel handle all necessary engineering and design work for this project and other reuse projects as well.



Photo 2: Metal being recycled out of the foundry sand.



Photo 3: Sand after processing.

This cooperative was formed by a group of foundries with two goals in mind: (1) to become good environmental stewards and (2) to reduce disposal costs for their co-products in the process. While the participating foundries pay Resource Recovery Corporation a fee to take the sand and cover RRC's

operating costs, the cooperative distributes its profits back to the foundries in the form of rebates. As a result, the foundries end up saving money on disposal costs for their co-products.

While saving money on disposal costs is the biggest advantage afforded by this arrangement, others are to be found as well. The end users of the reused sand avoid mining virgin sands, and the process sand performs well in most applications. One challenge is that the sand is too fine to make up a large percentage of most asphalt mixes. Another challenge is the transportation costs, which are generally the single most costly

element of running the entire operation. This is not unique to this particular operation, however, as transportation costs constitute a significant challenge for all beneficial use applications.

Resource Recovery Corporation noted that the most important part of the business is to maintain a continual focus on customer needs. RRC also noted that they essentially have customers on both sides of their operation. They must serve and be responsive to both the foundries that send their foundry sand to RRC and the end users of the processed sand.



Case Study: Eagle Alloy, Inc.: A Resource Recovery Cooperative

Personnel

Foundry: Eagle Alloy, Inc.

Engineers: Resource Recovery Corporation

Marketer and Processor: Resource Recovery Corporation

End Users: Asphalt Paving, Inc.
Allied Waste
Resource Recovery Corporation

Regulatory Agency: Michigan DEQ

Site

Foundry Location: Muskegon, Michigan

Recycling Location: Coopersville, Michigan

Site Description: Foundry sand from Eagle Alloy is sent to Resource Recovery Corporation, a foundry sand recycling facility, where it is screened and prepared for use in several beneficial reuse applications. Asphalt Paving, Inc. incorporates the sand into asphalt mixes, Allied Waste utilizes the sand for leachate collection, and Resource Recovery uses the sand to manufacture specialty soils.

Materials Utilized

12,000 tons of shell sand annually.

Project Costs and Benefits

Costs Include:

- RRC's operating costs for screening, processing, and marketing the sand are shared by the foundries.
- Transportation costs are often quite substantial.

Benefits Include:

- After processing, the foundry sand performs well in all the applications described.
- Using foundry sand limits the need to mine virgin sands.
- Cost savings are passed on to the foundries that participate in the recycling program.