

2012 Case Study

Advantage Metal Recycling

Intern: Emily Schmar
Major: Industrial Engineering
School: Kansas State University

Kansas City, Kansas



Company background

Advantage Metals Recycling (AMR) was founded in 1977 as Galamba Metals Group, originating in Kansas City. Galamba Metals Group was purchased by The David J. Joseph Company (DJJ) in 2008 and renamed to Advantage Metals Recycling, based in Cincinnati, Ohio. Founded in 1885, DJJ is one of the largest metal scrap brokers/processors in the United States.

Every day, AMR buy tons of scrap metal from companies and private citizens. It is collected at its 14 Midwest locations, or picked up by its recycling trucks at commercial yards or plants. Appliances, old vehicles, structural steel, and painted siding are all bought by AMR. All grades of scrap iron and steel, along with aluminum, copper, brass and stainless steel scrap, are also purchased. AMR tries its best to keep as much metal out of land fills as possible by buying it directly.

Project background

Advantage Metals Recycling's three main Kansas plants were assigned to the intern in the summer of 2012. She was asked to look at overall processes of each plant, and try to find ways of improving efficiency and lowering overall costs of production. Small improvement projects were found at the three sites for fuel, water, and electricity usage.

Incentives to change

Advantage Metals Recycling is known for its amount of scrap metal taken in each day. Even though AMR is a recycling company, it wanted to be known for more than only recycling. AMR wanted to be seen by the community as a "green" company and process. This is why Serena Dehoney, the environmental, health & safety Director of AMR, decided to put in an application to the Pollution Prevention Institute. By asking for a 2012 Intern, AMR was committing to trying to improve its process of metal recycling, as well as its daily impact on its surroundings.

Projects reviewed for E2/P2 potential

AMR's Cheyenne plant's first project included auditing of inside and outside lights. The lights inside the buildings are left on almost all the time, day and night. Annual savings of \$12,000 and 80,200 kWh were found by recommending installation of motion detectors into employee rooms, the main office, and the shop. All outside lights were seen as necessary, except for those on machines not in use at all times. The intern suggested making sure employees turn off lights when not in use as a way to prevent wasted electricity. A second project at Cheyenne was to look at the amount of paper towels used and try to find a more environmentally friendly way of hand drying. None of the replacement ideas were recommended because either cost was too high or the idea was not pleasing to the employees. A third project was an air, liquid oxygen, and propane leak audit done with the Ultrasound Probe 9000. With this audit, 5,100 kWh and \$1,250 a year could be saved once the leaks found are fixed. The last project discussed at Cheyenne was changing of its torches. At this time, AMR Cheyenne uses oxyfuel cutting torches; plasma-arc cutting torches were researched. The project was not recommended because the plasma torches are not able to cut as thick of material as the oxyfuel cutting torches, which is what Cheyenne needs.

Projects at 12th Street all included water. One project was a recommendation for dust suppression. After looking into efficient ways of keeping down 12th Street's airborne dust, the intern decided that using an already purchased water trailer would be the best alternative to the watering hose presently used. By implementing the water trailer, 12th Street would save 259,000 gallons of water and \$1,350 annually. The intern found two hoses at 12th Street spilling water over yard's drives. They were found to be back flow from the water-injection system used for the shredder. These hoses were looped back into the system to feed the water away from the ground. This will save 12th Street 147,000 gallons and \$1,000 annually. The

last water project introduced to 12th Street was a way to reduce the amount of city water used in the shredder. The water-injection system is all automatic, so there is no way for an employee to regulate the gallons per minute being pumped. The intern looked into a rain-water-capturing reservoir. A DJJ engineer was brought to the plant to survey the land. He concluded there was no room above or below ground for a reservoir at 12th Street; therefore there was no way to implement a reservoir and decrease the amount of city water being pumped into the shredder. Transport's larger projects focused on its fuel consumption but smaller projects were also found around the plant. Smaller projects recommended were putting solar film on the windows to keep out solar heat from the offices. Purchasing tire-pressure monitoring systems for the tractors and trailers tires, and installing an occupancy sensor for its Coca-Cola machine were also recommended to Transport. This sensor keeps the pop machine running at the right temperature but only turns on for use when someone

is in front of it. Because the machine does not see much activity, if its power is turned down when not in use, it could save Transport about 2,000 kWh and \$300 annually by installing an EnergyMiser® VendingMiser®. The intern also performed an air leak audit at Transport finding 13,000 kWh and about \$1,700 in savings annually once the leaks are fixed. The biggest projects worked on for Transport were performing a light audit for its entryway and shops, and implementing truck skirts. The lighting audit was done to try and cut back on electricity use and getting rid of florescent bulbs in the entryway and metal halide bulbs in the shops. Recommendations were to install motion detectors in the entryway saving 19,000 kWh and \$600 annually, and to purchase four truck skirts saving 6,700 gallons of fuel and \$5,100 annually. Changing of metal halide bulbs to high-bay T5s was not recommended.

Summary of 2012 E2/P2 intern recommendations for Advantage Metals Recycling.

Project description	Annual estimated environmental impact	Annual estimated cost savings	Status
Cheyenne inside light audit	80,200 kWh	\$12,000	Recommended
Cheyenne outside light audit	Not evaluated	Not evaluated	Recommended
Cheyenne paper towel audit	Not evaluated	Not evaluated	Not recommended
Cheyenne air, liquid oxygen and propane leak audit	5,100 kWh	\$1,250	In progress
Plasma cutting torches	Not evaluated	Not evaluated	Not recommended
12 th Street dust suppression audit	259,000 gallons of water	\$1,350	Recommended
12 th Street back flow hose	147,000 gallons of water	\$1,000	Complete
12th Street shredder water reduction	Not evaluated	Not evaluated	Not recommended
Transport truck skirts	6,700 Gallons of Fuel	\$5,100	Recommended
Tire pressure monitoring systems	Not evaluated	Not evaluated	Recommended
Transport entryway and lobby light audit	19,000 kWh	\$600	Recommended
Transport shop light audit	4,000 kWh	\$1,000	Not recommended
EnergyMiser®	2,000 kWh	\$300	Recommended
Solar film	Not evaluated	Not evaluated	Recommended
Transport air leak audit	13,000 kWh	\$1,700	In progress
Total savings *	406,000 gal water, 119,300 kWh, 6,700 gal fuel	\$23,300	
GHG reductions *	157 metric tons CO2e		

* Does not include projects that are "not recommended" or "further research is needed."