BRIDGESTONE AMERICAS TIRE OPERATIONS

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COMPANY BACKGROUND

Firestone Agricultural Tires is a branch of Bridgestone Americas Tire Operations, which specializes in the production of agricultural and forestry tires. Sitting on nearly 120 acres in Des Moines, Iowa, with more than two million square feet underneath one roof, the plant is the largest agricultural tire manufacturing facility in the country. The production from this plant supplies a significant percentage of original equipment and replacement tires in the global agricultural market.

PROJECT BACKGROUND

Recyclable waste streams exist within the facility but some are not being captured in the manufacturing process. The company requested assistance in researching outlets for rubber waste streams and re-structuring the layout of recycling receptacles to divert additional recyclable materials from the landfill.

INCENTIVES TO CHANGE

Currently, two Bridgestone plants in the United States are zero landfill operations. These operations have served as environmental models for the company. The Bridgestone agricultural tire plant is supported by a customer base of farmers and field workers who value air, land, and water quality. To meet customer demand, the company holds each of their facilities responsible for maintaining business practices that promote these values. The plant is also working toward a goal of zero-landfill status.

RESULTS

Dump-Grade Rubber Recycling: Standard procedures for grading non-conforming rubbers, which are not suited to be re-milled in the Bridgestone process, have been evaluated and updated to match a larger customer base. These customers are interested in the material and are equipped with newer technologies to process the scrap. Without an outlet for this material, 240 tons per year was sent to the landfill. It has recently gained value as a raw material for making rubber car accessories and high-grade railway crossings. Diverting this waste stream from the landfill could provide an estimated savings of $13,680 per year.

LDPE Recycling: The capacity for polyethylene recycling on the plant floor has been doubled to accommodate specific areas that generate high quantities of recyclable low-density polyethylene films (LDPE). The films are generated as a result of various quality processes used to protect the tires during transportation and storage throughout the manufacturing process. The expanded collection program is expected to provide a cost benefit of $13,300 through revenue from recyclable plastics and savings from diverted landfill fees.

Trim Rubber Recycling: Trim rubber is a process waste generated in the Final Finish department. These trim pieces were identified as a recyclable waste stream. A separate collection system has been developed to send the trim rubber to a local rubber recycling facility rather than compacting and sending it to the landfill. While it does not yet generate a cost savings, it does divert nearly 54 tons of material from the landfill each year.

Green Tire Recycling: Bridgestone defines tires that have not been vulcanized as "green tires." This waste stream was being sent to the landfill during the initial waste audit. Multiple rubber processing facilities in the Midwest have shown interest and are evaluating test material that's been shipped to their facilities. Annually, up to 480 tons of green tires is expected to be diverted from the landfill once negotiations have been completed for terms of delivery. The savings from diverting these scrap tires from the landfill is approximately $27,360.

Tire Room Paper Recycling: Additions to the paper-recycling infrastructure were made to expand paper collection to new areas of the plant, namely the tire room office staff. These efforts are expected to double the current paper recycling stream, diverting 12 tons per year from landfills and saving an additional $700/year.

Cured Butyl Recycling: Butyl rubber trimmings are generated as a result of the curing process for the production of tire bladders. Additional research is needed to identify a market to recycle these trimmings. If a suitable alternative can be located for this rubber, 24 tons of cured butyl rubber compounds could be diverted from the landfill.

CONVENTIONAL AIR POLLUTANTS AND GREENHOUSE GASES DIVERTED IN METRIC TONS

TOTAL FOR ALL SECTORS							
CO_2	SO_2	CH_4	N_2O	CFC	NO_X	VOC	PM_{10}
233							

PROJECT	ANNUAL COST SAVINGS	ENVIRONMENTAL RESULTS	STATUS
DUMP-GRADE RUBBER RECYCLING	$13,680	240 TONS	IN PROGRESS
LDPE RECYCLING	$13,300	140 TONS	IN PROGRESS
TRIM RUBBER RECYCLING	N/A	54 TONS	IN PROGRESS
GREEN TIRE RECYCLING	$27,360	480 TONS	IN PROGRESS
TIRE ROOM PAPER RECYCLING	$700	12 TONS	IN PROGRESS
CURED BUTYL RECYCLING	N/A	24 TONS	RECOMMENDED