Performance Track Leading Practices

How Xerox Reduces Waste and Saves on Material Costs through Recovery and Remanufacturing of Printer Parts

Costs and Benefits of Parts Reprocessing at Xerox Oklahoma City

Costs	Savings and Other Benefits
Management of the sourcing, transport, and storage of recovered parts.	Reduces raw material costs by using available aluminum parts; this project has generated $2 million/yr. savings for Xerox.*
Extra work for field techs to disassemble and recover parts.	Creates supply chain efficiencies and reduces upstream environmental impacts.
Maintenance of a clearinghouse to store used parts.	Reduces the energy and waste footprints of Xerox products.
Redesign of parts to be more durable and to facilitate disassembly.	Creates new capabilities in recycling and product innovation.
Coordination with corporate R&D and facility vendors to design products with reprocessing in mind.	*2009 estimate

National Environmental PerformanceTrack
U.S. Environmental Protection Agency

EPA
United States Environmental Protection Agency

PERFORMANCE TRACK FACILITY

Xerox—Oklahoma City Supplies Manufacturing Plant, Oklahoma City, Oklahoma

GOAL CATEGORY

Products

RELATED INDICATORS

Downstream: Expected lifetime waste (to air, water, land) from product use

OVERVIEW

The Xerox Oklahoma City Supplies Manufacturing Plant manufactures a variety of parts and raw material resins for Xerox's black and white and color printer lines. As a member of Performance Track, the Oklahoma City facility set goals to reduce the expected lifetime waste of its products. These product performance improvements align with Xerox's "waste-free" goal, which aims to minimize waste across a product's entire life cycle—during manufacturing, use by the customer, and at the end of the product's initial useful life.

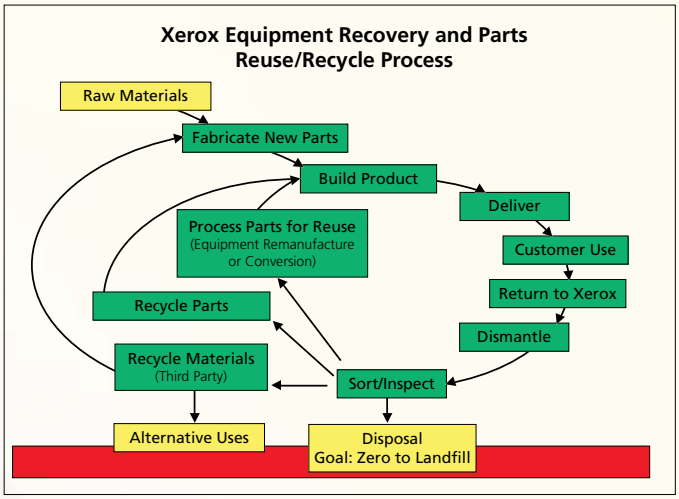
Xerox design teams work directly with the manufacturing engineers at the Supplies Manufacturing facility to maximize the end-of-life potential of parts by emphasizing easy disassembly, durability, reuse, and recycling. This design approach ensures that printer parts can be reprocessed and recovered, thereby minimizing the need for virgin material to produce new parts and reducing the amount of waste generated by Xerox products—a source of savings from reduced material, energy, waste, and freight costs.

One significant product design initiative at Xerox Oklahoma City involved the reprocessing of corotron parts in printers by service technicians. (A corotron is a device used in printers and copiers to create an electric field that attracts toner particles.) This improvement has saved more than $10 per part in service and material costs while helping Xerox to realize a 58 percent normalized reduction of material sent to the landfill related to the corotron part lifecycle.

REMANUFACTURING OF COROTRON PARTS AT XEROX

Corotrons are composed of a wire assembly set inside an aluminum housing. Xerox's new corotron design has a more robust housing with a longer useable life than the wire assemblies, which allows field technicians to replace the wire assembly without replacing the aluminum housing. In 2007, 73 percent of the corotron wire assemblies shipped by Xerox were part of this reprocessing effort, an increase over the 2006 rate of 34 percent.

Field technicians can also recover corotrons from customers' machines during routine maintenance, sending these parts to Xerox's clearinghouse for used and returned parts for reprocessing, remanufacturing, and redistribution in the supply chain.



Xerox's process diagram for equipment recovery and reuse/recycling of printer parts.

By reprocessing and reusing the aluminum housings, Xerox has saved on material and resource costs and reduced the amount of material sent to the landfill. Currently, aluminum housings from Xerox products in Europe and North America are reprocessed either through the clearinghouse, or by field technicians who recover the corotron and simply replace the wiring assembly and reuse the housing. Reprocessing the plastic housing that protects the new wire assemblies for shipment is the next step in improving the lifecycle of these materials.

IMPLEMENTATION OF PARTS REPROCESSING AT XEROX OKLAHOMA CITY

In order to accomplish its redesign of the corotron, Xerox developed a process flow diagram to coordinate manufacturing activities between the aluminum housing supplier, the coating vendor, and Xerox's manufacturing, distribution, and service technicians. Xerox's equipment return processing clearinghouse was included in the loop to ensure efficient sourcing of used parts according to available inventories. Communication between all parties and buy-in by implementers were critical elements in the success of this take-back program.

Xerox worked with its aluminum housing supplier to develop a method to clean used housings and repaint the aluminum per product specification. The company remanufactured test units and placed them in internal test machines to ensure that the reprocessed parts did not affect copy quality. Only parts that meet all functional, reliability, and appearance parameters for the life of the product are processed for reuse.

As components are returned from the field for re-use, the facility measures the associated product waste improvements. Information is collected from manufacturing production logs and recorded by product and month, and progress toward goals is reported through the facility's Environmental Management System.

BENEFITS OF REPROCESSING PARTS

The reprocessing of corotrons in the field reduced the amount of parts shipped in aluminum housings by 55 percent in 2007. Of those that were shipped in aluminum housings, 24 percent were recycled via the return/remanufacturing process. From a reporting perspective, this translates into a more than two-fold normalized increase in the amount of material recycled for corotrons manufactured at the Xerox Oklahoma City facility, with an associated 58 percent normalized reduction in material sent to landfill in one year.

Xerox's Oklahoma City Supplies Manufacturing Plant saves resources and money as more of its parts and products are designed with remanufacturing built into their life cycle. The corotron project has saved Xerox approximately $2 million per year in material costs, and the facility continues to evaluate the durability and lifespan of its other parts to uncover new remanufacturing opportunities. Parts are now more modular, having separable assemblies with individual replaceable components, avoiding the need to replace an entire piece of equipment.

Post-consumer recovery and remanufacturing has clearly been cost-effective for the Oklahoma City facility. For Xerox, reprocessing has become more than just a waste strategy, it is now part of its core business strategy, saving the company millions of dollars in energy and material costs every year.

RESOURCES FOR MORE INFORMATION

- ★ EPA WasteWise [http://www.epa.gov/epawaste/partnerships/wastewise/index.htm] partners with businesses and local governments to help reduce waste and improve resource efficiency.
- ★ EPA's Pollution Prevention site [http://www.epa.gov/oppt/p2home/index.htm] supports efforts by companies to avoid, eliminate, or reduce waste generated to air, land, and water.
- ★ To learn more about Xerox's commitment to the environment visit www.xerox.com/environment.