

**New York State
Environmental Investment Program
Research Project Summary
Optical Technologies Corp.**

Company Background

Founded in 1984, Optical Technologies Corp. (OTC) specialized in applying coatings to consumer optical products, such as anti-fog and scratch-resistant eye glass coatings. More recently, the Long Island City business evolved to become a leader in the recovery and reclamation of components of used toner cartridges.

With EIP support, OTC collaborated with the National Center for Remanufacturing and Resource Recovery (NC3R) at the Rochester Institute of Technology (RIT) to successfully develop and commercialize an Analyzer device that enables the reuse of organic photoconductive (OPC) drums used in laser printer toner cartridges.

Project Description

Despite its success with RIT, OTC still did not have a quick, cost-effective means for determining the reuse potential of toner cartridge components for every new printer model entering the market. Assessing whether cartridge parts could or should be recovered and reused involves many labor intensive steps.

For this project, OTC partnered again with NC3R to address the following key concerns: 1) How much time and money could be saved with an improved drum reuse criteria development process? 2) How does the wear rate observed on worn fixtures correlate to the printer wear rate? 3) What drum holding method could be used in the Analyzer to reduce the overall cost of the process?

Project Results

This project enabled OTC to reduce its drum criteria development process from the current two

to six weeks, to three to four days, and reduced the cost per drum model type from \$10-\$20,000, to \$1,000 - \$2,000.

Several wear methods were also investigated using various abrasives, which gave researchers the ability to wear a drum quickly and assess drum performance as a function of coating thickness. The wear rates developed will allow for the determination of a minimum coating thickness threshold without the use of expensive, end-of-life print testing. The drums can be artificially worn at known rates and the failure point determined by observing the resultant print quality. The entire off-line accelerated wear process can be completed in four hours.

Lastly, the project evaluated the design requirements necessary to develop a universal holding method, so that a multitude of drums can be tested with minimal hardware and cost. The drums were classified into common feature family groups, and prototype hardware was fabricated for a selection of 24 mm and 30 mm drums. The groupings were arranged to minimize changeovers from model to model, and maximize the number of drum types per piece of hardware.

Future Implications

The improvements developed will enable the rapid addition of new drum models to the Analyzer. This will enhance the value of the equipment to the remanufacturing marketplace.

Contractor: Optical Technologies Corporation
County: Queens
ESD Region: New York City
ESD Contact: 518/292-5340

**NYS EIP
Investment:** \$148,558
Contractor Match: \$37,249
Total: \$185,807
Completion Date: December, 2007