# VIRTULYTIX

## Wasted Toner - The Problem You Think You've Solved But Haven't

*A White Paper Examining the Impact of Wasted Toner in Managed Print Environments and How to Solve It*

## Executive Summary

- Wasted toner is costing you over $50 per device per year for your managed fleets. If you are managing a fleet of 5,000 devices, that equals $250,000 in margin you are losing annually due to wasted toner and shipping costs.

- Virtulytix undertook testing to measure the toner remaining in a cartridge when it was shipped back to a major distributor. Although the devices were in a "well-managed" environment and used a toner optimization program there was on average 30 percent of toner left in "spent" cartridges.

- Some supplies distributors and fleet management companies say the problem is fixed due to a simple line equation embedded in a fleet management tool. Our data shows this isn't the case.

- Linear regression toner optimization models don't consider seasonality or user behavior and leaves more cash (profits) on the table. The patent pending technology used in SuppliesIQ is comprised of time series modeling, automatically using the best-fitted ARIMA or exponential smoothing modeling technique for each device cartridge. This is a technology Virtulytix has been developing and testing for over two years.

- Based on our advanced technology, our predictions are twice as accurate as current approaches without the 'false positives' (shipping a cartridge when you don't need to) associated with these approaches.

- Is it possible for new technology to dwarf the results of fleet management tools? Can a dealer really improve margins with this solution? The answer to both questions is a resounding "yes!" Read on and find out.

## Introduction

This white paper examines a major problem in the hardcopy industry. This problem is not new, but up to now no one has successfully solved it.

In managed print environments, cost management, productivity, and profitability are key measurements of a successful managed print services (MPS) program. Toner cartridges are regularly replaced prematurely leading to increased cost and reduced profitability for service providers in managed print engagements.

There are some distribution supply houses and fleet management companies that say the problem is fixed, however, it has not been fixed at all. Toner cartridges have a built-in sensor. The assumption is each cartridge has accurate toner sensing as the toner is being consumed. When the cartridge is first installed in a printing device, the sensor is covered with toner. As pages are printed these sensors are exposed. When the cartridge reaches the manufacturer's threshold typically 35-40 percent left in the cartridge, a toner algorithm kicks in and predicts when the toner cartridge should be empty, and notifies the user via a low-toner indicator. At best, it is a linear algorithm, not the more accurate method that Virtulytix

uses with its SuppliesIQ solution. As a result, most toner cartridges are returned with toner left in the cartridge.

Based on Virtulytix's analysis, in a "well-managed" environment that is using existing toner optimization schemes, an average of 15 percent of toner is wasted. This occurs for a variety of reasons including early replacement based on low toner alerts and early cartridge shipment based on linear algorithms that do not consider business seasonality or user behavior. If a cartridge is depleted and a replacement is not readily available, the printing device is considered down which impacts productivity.

Utilizing new advances in analytics, accurate automated forecasts of empty cartridges can be created which take into account how an individual device is used including types of printing like print intensity and coverage, monochrome vs. color, print volume, and seasonal variations leading to increased efficiency and profit margin for service providers.

## What Does This Mean For You?

Wasted toner is costing dealers over $50 per device* each year. One of the largest threats to profitability for MPS providers is early replacement of ink and toner cartridges. When these are replaced before they are truly empty, usable supplies are discarded and their monetary value is never realized. This results in over $50 in extra shipping and toner costs per device per year, nearly $1 billion globally.

While Virtulytix had the financial models to show the impact of this problem, it was important to have physical proof of how big the problem is. Virtulytix worked with a well-known fleet management firm to validate the size of the problem by gathering empirical evidence. Rather than using a 'worst case' scenario with poorly managed devices and no supplies optimization, we selected environments with good fleet management and optimized supplies management in place.

Five of the most popular devices that were monitored by this fleet management firm were selected. To start the

process and establish a baseline, 150 toner cartridges that were used in these five devices (30 per device line) were weighed in the full and empty state. After this part of process was completed, Virtulytix had to exclude 10 cartridges as outliers due to 100 percent capacity.

Analysis of the remaining 140 cartridges was completed to determine the percentage of wasted residual toner. The validation showed an average of 30 percent of toner was left in the cartridges!

Besides this empirical evidence, Virtulytix spoke to printer manufacturers, distribution supply houses, and cartridge destruction facilities and found a very similar story. In most empty toner cartridges, there is at least 15 percent of toner (and many times almost double this amount) remaining when the cartridge is returned to an OEM or to a destruction facility.
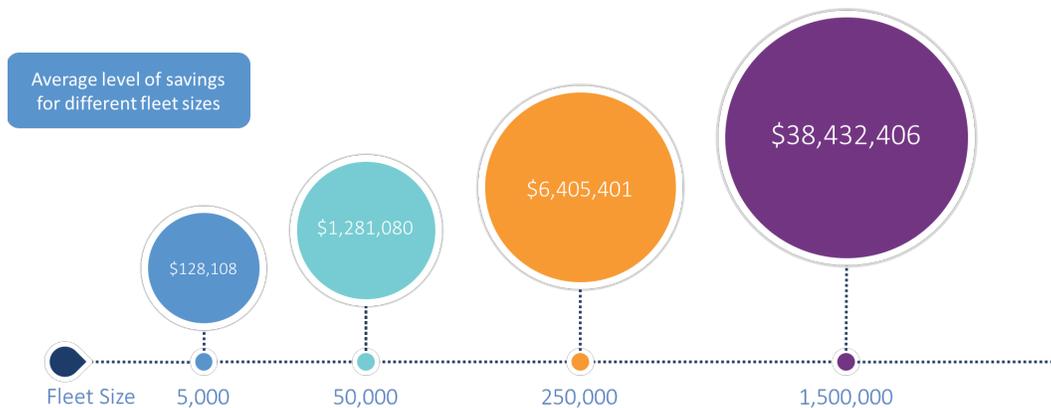
## The Solution

SuppliesIQ is a patent-pending solution using Virtulytix's technology based on key usage metrics to accurately predict when a cartridge will run empty. An accurate replacement date allows for more ink and toner to be used so the amount of waste is reduced up to 80 percent. Service providers can optimize the life of its consumables and increase the margin on supplies. Pictured below are typical fleet size savings with the SuppliesIQ solution.

SuppliesIQ enables dealers to reduce supplies waste and shipping which means significantly improved margins and profits.

As the industry's first SaaS (Software-as-a-Service) advanced analytics model for supplies optimization, a provider can gain the competitive edge to win more contracts and keep more clients than ever before. Besides the benefits of using SuppliesIQ, there are some really enhancing features such as:

- Improved automated supplies replenishment – streamline supplies delivery, reduced wasted toner, and maximize profits.
- Automatically adjust for business cycles – toner usage shifts during peak and slow seasons. SuppliesIQ takes seasonality into account and adjusts accordingly.
- Proven technology – built using IBM PMQ (Predictive Maintenance and Quality) development platform optimized through proprietary code.
- Actionable insights – SuppliesIQ is designed to integrate flexibly into a dealer's existing infrastructure. Predictions can be sent via email, viewed via interactive dashboard, or integrated directly into an ERP system.

SuppliesIQ is a breakthrough product. It exceeds the needs of a dealer by helping to reduce inventory and increase margins. Now is the time to move into the 21st century.

Average level of savings for different fleet sizes

| Fleet Size | 5,000 | 50,000 | 250,000 | 1,500,000 |
|---|---|---|---|---|
| | $128,108 | $1,281,080 | $6,405,401 | $38,432,406 |

## We Make It Easy

The process for implementing SuppliesIQ in a dealership is easy as 1, 2, 3. In order to make it easy for a dealer to see the savings for themselves, for a limited time we are offering a free monthly trial. Here's what it takes to sign up.

1. **Identify devices –** a dealer must choose which devices it would like to include in the trial. We recommend using devices with moderate to high utilization that are using at least three to five cartridges per year. This will help demonstrate savings in a shorter amount of time.

2. **Data ingestion –** You must provide an export file from your DCA that includes only the devices you want to track. You need to make sure this file includes unique identifiers for each device (this variable will be part of the export, e.g., device ID for PrintFleet) or your fleet management tool.

3. **Ship cartridges –** SuppliesIQ will provide interactive dashboards that identify when a cartridge will run empty. Alternatively, we can incorporate the ship date directly into your ERP. You will need to send replacement cartridges to arrive on or a day before the empty date.

It's that easy. If you would like to find out how much this will save for your fleet, try our free savings calculator at https://www.virtulytix.com/impact or call us at 602-571-6530 to begin your free trial.

*\* For simplification purposes, costs are based on monochrome printing only, color printing costs are significantly higher. This is based on the typical usage for printers, copiers, and multifunction devices in managed fleets and has been validated using empirical testing of the remaining toner in spent cartridges. $50,000 is based on a fleet of 1,000 monochrome devices.*