Comparative Performance Evaluation

JANUARY 2013

KYOCERA FS-4300DN

VS. HP, Lexmark, Samsung 500,000 impression study

The test devices set up in BLI's Wokingham test laboratory.

TEST OBJECTIVE

Buyers Laboratory LLC (BLI) was commissioned by KYOCERA Document Solutions Europe B.V. to conduct confidential comparative performance testing on the KYOCERA FS-4300DN, HP LaserJet Enterprise 600 M603dn, Lexmark T654dn and Samsung ML-6510ND, and evaluate the results. The products were evaluated over a 500,000-impression test period (the life of a KYOCERA FS-4300DN drum and maintenance kit), reviewing the following aspects over the test: runnability/reliability, consumable waste generation and cost of ownership.

Executive Summary

Over the course of the 500,000-impression test, comprising 50% simplex and 50% duplex printing, the four units all performed to a very high standard, with low misfeed rates. Indeed, the HP device experienced only one misfeed, with two for the KYOCERA device, four for the Samsung device and seven for the Lexmark model.

During the 500,000-impression test period, the Lexmark unit required the installation of one maintenance kit, while the HP and Samsung devices both required two. The KYOCERA device's maintenance kit requires replacement at 500,000 impressions, just after completion of the 500,000-impression test. Testing demonstrated that the kit's drum, fuser and developer all reached their rated 500,000-impression life, but a service call was required to replace the charge roller at 495,000 impressions, marring the unit's otherwise near-faultless performance. The Lexmark unit experienced one premature toner cartridge failure, while the Samsung device suffered from two imaging drum failures.

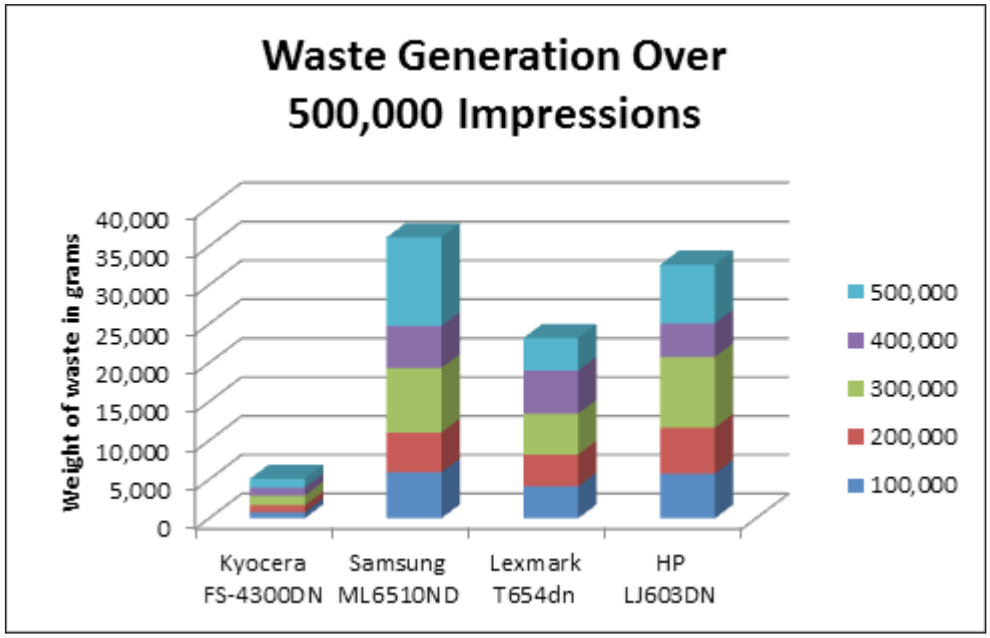
From a cost of ownership and waste creation perspective, the KYOCERA FS-4300DN was the clear winner, delivering significantly lower running costs per page and much lower levels of waste than its Samsung, Lexmark and HP competitors. In fact, the KYOCERA model's cost of ownership over 500,000 impressions is less than half that of the next most cost-efficient competitive unit. Furthermore, with its long-life drum and fuser, the KYOCERA unit delivered even more impressive results from a waste generation perspective, creating up to 77.3% less waste than the model in second place for waste generation and 85.4% less waste than the competitor with the highest amount of waste. In addition, the KYOCERA unit's longer-life components, while they require a service call for replacement, resulted in the need for less user intervention than for the other devices, which all required a period of downtime for their maintenance kits to be installed—and in the case of the Samsung device, imaging drum replacements.

In summary, the KYOCERA FS-4300DN delivered on its promise of providing reliable, cost-conscious and environmentally friendly printing.

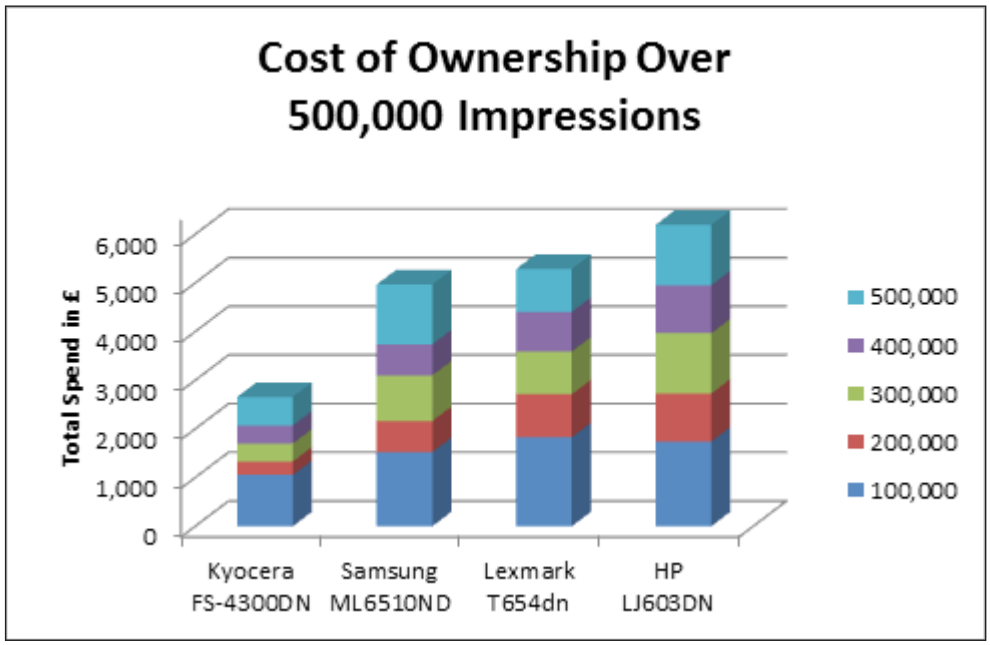
Overall Summary of Device Performance over 500,000 Impressions

	KYOCERA FS-4300DN	Samsung ML-6510ND	Lexmark T654dn	HP LJ Enterprise 600 M603dn
Misfeeds / jams	2	4	7	1
Misfeed rate	1/250,000 impressions	1/125,000 impressions	1/71,429 impressions	Not applicable
Average yield of high-capacity full-yield toner cartridges	28,062 impressions	29,709 impressions	36,565 impressions	25,175 impressions
Weight of consumable waste (excluding packaging)	5,260.0g	36,139.9g	23,198.0g	32,623.8g
Cost of Ownership	£2,655.31	£4,965.77	£5,285.32	£6,191.54
	0.531p per page	0.993p per page	1.057p per page	1.238p per page
Cost of Ownership with non-exhausted consumable residual value deducted	£2,594.20	£4,714.18	£5,027.06	£5,842.00
	0.519p per page	0.943p per page	1.005p per page	1.168p per page

Summary of Waste Generation



Summary of Total Cost of Ownership



Test Environment

Testing was conducted under ambient conditions of 22°C (+/-2.7°C) and 45% RH (+/-10%); monitored daily by Dickson Seven-Day Temperature/Humidity Chart Recorder, in Buyers Lab's test facility at Unit 1 Station Industrial Estate, Oxford Road, Wokingham, Berkshire RG41 2YQ.

Test Equipment

Each device was connected to a Dell Windows 7 Professional desktop PC using CAT6 network cabling via a 10BaseT/100Base/1000BaseTX network switches. All printing was submitted using the latest vendor PCL driver left in default quality settings. All printing was carried out using 80gsm A4 Mondi – Nautilus Refresh 30% recycled content paper. All paper was acclimatized before use for a minimum of 48 hours inside BLI's climate controlled test environment.

Test Duration

Products were tested over a two-month period, with 250,000 impressions being printed per month to ensure no device exceeded its maximum rated monthly duty cycle.

Test Methodology:

BLI ran 500,000 impressions on each device over a two-month period. Each device was operated in default mode, with PCL as the page description language. Toner cartridge page yields, device reliability and waste generation were evaluated per the following:

Toner Yield: Yield was determined by using the ISO19752 test document and compared. All cartridges were weighed before and after testing to determine net toner weight. Each toner cartridge was run until "toner empty" or until quality dropped below a suitable level for external use (shaking the cartridge upon fade or image quality degradation until the fourth occurrence of fade, after which the cartridge was removed and weighed, and the page count was recorded. Any cartridge malfunctions, including "out-of-box" failures, operational failures, toner leakage, drum flaws and background on printed pages, as well as device malfunctions were recorded.

Reliability: Throughout testing, BLI test technicians recorded any device failures, misfeeds and image quality defects. Daily volumes were varied to simulate high- and low-volume workday environments. Output was checked to ensure that satisfactory output quality was maintained and any issues recorded. To ensure an even distribution of workload the paper trays were all loaded and allowed to run to exhaustion before the device was reloaded.

Waste Generation: All consumable waste (excluding packaging) generated over the 500,000-impression test was recorded. Toner cartridges were run to exhaustion as itemized in A) above. Waste toner bottles (as provided by KYOCERA and Samsung with every toner cartridge) were replaced at the same time as the toner cartridge. The Samsung imaging drum was replaced immediately after having completed its advertised rated life (80,000 impressions) unless a fault forced early exchange. The maintenance kits for the Samsung, HP and Lexmark were replaced immediately after having completed their advertised rated life (200,000 impressions, 225,000 impressions and 300,000 impressions respectively).

About Buyers Laboratory LLC.

Buyers Laboratory LLC (BLI) is the world's leading independent provider of analytical information and services to the digital imaging and document management industry. For over 50 years, buyers have relied on BLI to help them differentiate products' strengths and weaknesses and make the best purchasing decisions, while industry sales, marketing and product professionals have turned to BLI for insightful competitive intelligence and valued guidance on product development, competitive positioning and sales channel and marketing support. Using BLI's Web-based bliQ and Solutions Center services, 40,000 professionals worldwide create extensive side-by-side comparisons of hardware and software solutions for over 15,000 products globally, including comprehensive specifications and the performance results and ratings from BLI's unparalleled Lab, Solutions and Environmental Test Reports, the result of months of hands-on evaluation in its US and UK labs. The services, also available via mobile devices, include a comprehensive library of BLI's test reports, an image gallery, hard to find manufacturers' literature and valuable tools for configuring products, calculating total cost of ownership (TCO) and annual power usage. BLI also offers consulting and private, for-hire testing services that help manufacturers develop and market better products and consumables.

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