

Comparative Reliability, Waste Generation and User Intervention Performance Evaluation

AUGUST 2018

Epson WorkForce Pro WF-C869R Business Inkjet Device versus Konica Minolta bizhub C227

Test Objective

Keypoint Intelligence - Buyers Lab was commissioned by Seiko Epson Corporation (SEC) to conduct a comparative evaluation of reliability, consumables and packaging waste, and user intervention rates over the course of 300,000 impressions on its Epson WorkForce Pro WF-C869R, a 24-ppm A3 inkjet device, versus the Konica Minolta bizhub C227, which uses laser technology. All testing was conducted at Buyers Lab's European test facility in Wokingham, UK.

Executive Summary

Over the course of Buyers Lab's 300,000-impression evaluation, both devices demonstrated very strong reliability, experiencing only one misfeed each and no failures. However, in terms of waste generation and user intervention rates, the Epson WF-C869R demonstrated a clear-cut advantage over the competitive laser model tested. The Epson inkjet model generated 80% less consumables and packaging waste than the Konica Minolta bizhub C227. It also required far fewer part replacements, which translates to less downtime and less operator intervention on the device. A total of 15 items (user-replaceable consumables) were replaced on the Epson inkjet during its 300,000-impression test, compared with 57 user-replaceable items for the Konica Minolta unit.

Based on the results of this test, the Epson device has the clear advantage over the Konica Minolta laser model. By its very design and technology, the Epson inkjet offers a number of benefits to users, such as fewer components that need replacing (only the ink and waste tank versus toner, drum, developer, fusers, etc., required for the laser device). This not only reduces waste, but also maximizes uptime, making it an excellent choice for businesses seeking to lower their environmental impact.

Reliability

During Buyers Lab's 300,000-impression test, the Epson WorkForce Pro WF-C869R and bizhub C227 performed equally well, with neither device experiencing any component failures nor requiring any service calls. However, each device experienced one misfeed during the course of the test. The Epson WF-C869R's misfeed occurred in tray 2, and although the misfeed was easy to remove from the rear of the device, this might not be the case in offices that are short on space. The bizhub C227's misfeed happened in the duplex unit and the jammed sheet was easy to access and remove. Image quality remained consistent throughout each model's respective performance with no quality issues experienced at all.

Model	Total Misfeeds	Misfeed Rate	Service Calls	Other issues	TOTAL
Epson WorkForce Pro WF-C869R	1 (meter: 297,402)	Not Applicable	0	0	1
Konica Minolta bizhub C227	1 (meter: 92,197)	Not Applicable	0	0	1



Waste Generation

Packaging and supplies waste has multiple impacts on both businesses and the environment. For example, managing supplies waste effectively can help lower shipping and recycling/disposal expenses, and minimize businesses' impact on the environment.

There was far less waste created by the Epson WorkForce Pro WF-C869R than by the bizhub C227 in this test. It used far fewer CMYK cartridges and other supply items than the Konica Minolta model to print 300,000 pages, which in turn meant fewer interruptions to change supplies. This is not entirely unexpected because the Epson model's RIPS ink cartridge packs have a higher rated yield (86,000 impressions (black) and 84,000 impressions (CMY)) than the bizhub C227's toner cartridges, which have a capacity of 24,000 (black) and 21,000 (CMY) impressions. The inkjet device also produced significantly lower amounts of consumables and packaging waste over the course of the test when compared to that of the Konica Minolta laser model—in fact, as much as 80% less by weight. In total, the Epson WF-C869R generated 8,166.7 grams of waste over the course of printing 300,000 pages, versus the 41,181.7 grams generated by the laser device.

Total Consumable Items Used Over 300,000 Impressions (Ink/Toner, Drums, and Waste Containers, etc.)

Model	User-Replaceable Parts						Total Items Required
	Cyan Ink/Toner	Magenta Ink/Toner	Yellow Ink/Toner	Black Ink/Toner	Waste Container	CMYK Imaging Unit Kit	
Epson WorkForce Pro WF-C869R	3	4	3	3	2	NA	15
Konica Minolta bizhub C227	13	12	11	9	10	2	57

Consumable Exchanges over 300,000 Impressions															
	Consumable Items	25K	50K	75K	100K	125K	150K	175K	200K	225K	250K	275K	300K		
 Epson WorkForce Pro WF-C869R	Cyan Ink Cartridge	*				*				*					
	Magenta Ink Cartridge	*			*			*				*			
	Yellow Ink Cartridge	*					*					*			
	Black Ink Cartridge	*				*				*					
	Imaging Unit Kit (CYMK Drums)	No requirement													
	Waste Container						*						*		
	NO. OF INTERVENTIONS	4	0	0	1	2	2	1	0	2	0	3	0	15	
 Konica Minolta bizhub C227	Cyan Toner cartridge	*	*	*	*	*	*	*	*	*	*	*	**		
	Magenta Toner cartridge		*	*	*	**	*	*	*	*	*	*	*		
	Yellow Toner cartridge		*	*	*	*	*	*	*	*	*	*	*		
	Black Toner cartridge		*	*	*		*	*	*	*		*	*		
	Imaging Unit Kit (CYMK Drums)					*					*				
	Waste Container		*	*	*	*	*	*		*	*	*	*		
	NO. OF INTERVENTIONS	1	5	5	5	6	5	5	4	5	5	5	6	57	

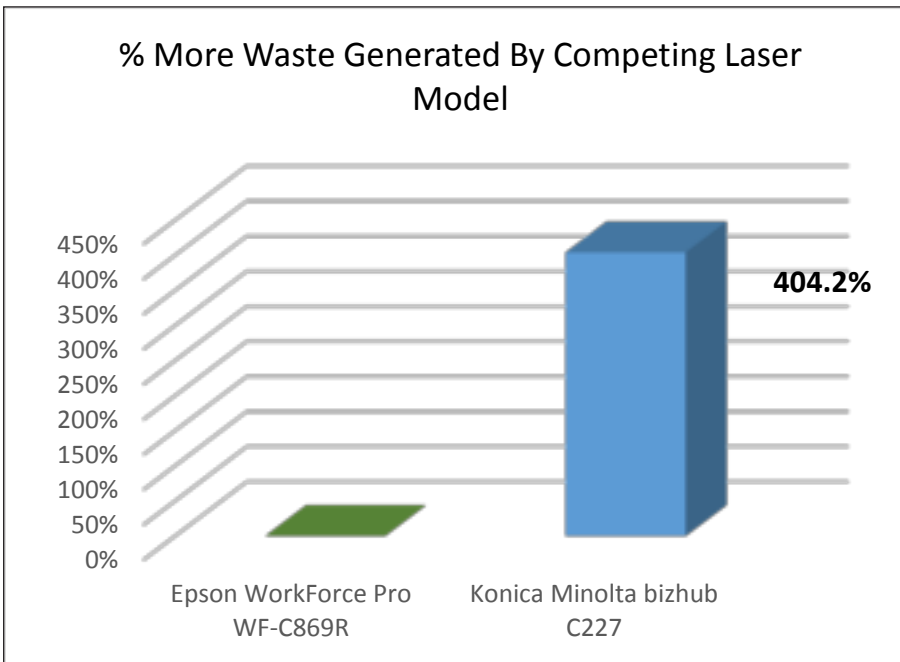
Cumulative Consumables and Packaging Waste Generated Over 300,000 Impressions (in Grams)

Model	Consumables and packaging waste (25,000 pages)	Consumables and packaging waste (50,000 pages)	Consumables and packaging waste (75,000 pages)	Consumables and packaging waste (100,000 pages)	Consumables and packaging waste (125,000 pages)	Consumables and packaging waste (150,000 pages)	Consumables and packaging waste (175,000 pages)	Consumables and packaging waste (200,000 pages)	Consumables and packaging waste (225,000 pages)	Consumables and packaging waste (250,000 pages)	Consumables and packaging waste (275,000 pages)	Consumables and packaging waste (300,000 pages)
Epson WorkForce Pro WF-C869R	1,691.7	1,691.7	1,691.7	2,191.2	3,388.2	4,667.4	5,166.1	5,166.1	6,368.1	6,368.1	8,166.7	8,166.7
Konica Minolta bizhub C227	300.5	2,702.1	5,084.9	7,547.2	17,342.7	19,833.4	22,338.5	23,521.3	25,770.3	36,274.9	38,599.4	41,181.7

This table details the cumulative weight of waste consumables and packaging over the course of 300,000 impressions. Waste includes all exhausted ink and toner cartridges, waste containers, and drum units, plus packaging for all.

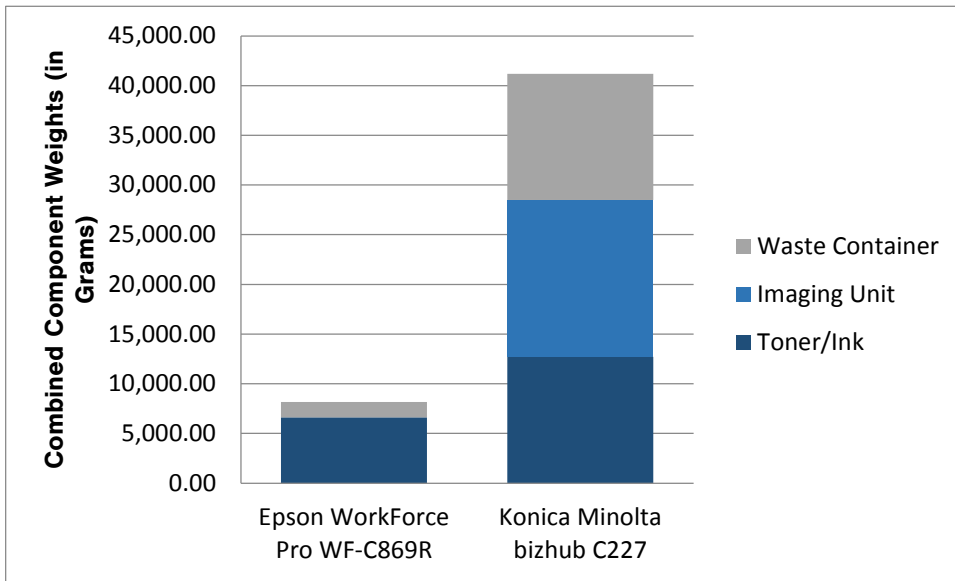


This graph shows the cumulative weight of waste consumables and packaging generated over the course of the 300,000-impression test run, with weights plotted at 25,000-impression intervals.



This graph compares the total waste generated by the competing laser model to that of the Epson inkjet.

Total Consumables and Packaging Waste by Component Type (in Grams)



This graph shows the cumulative weight of waste consumables and packaging generated over the course of the 300,000-impression test run, segmented by component type.

Total Consumables and Packaging Waste by Component Type (in Grams)

	Epson WorkForce Pro WF-C869R	Konica Minolta bizhub C227
Toner/Ink	6,619.1	12,702.7
Imaging Unit	NA	15,802.8
Waste Container	1,547.6	12,676.2
GRAND TOTAL (in grams)	8,166.7	41,181.7

Total Supplies and Consumables Waste Generation Images

Waste After 25,000 Impressions



25,000 impressions: Epson WorkForce Pro WF-C869R consumables (left) vs. Konica Minolta bizhub C227 consumables (right).

Waste After 50,000 Impressions



50,000 impressions: Epson WorkForce Pro WF-C869R consumables (left) vs. Konica Minolta bizhub C227 consumables (right).

Waste After 75,000 Impressions



75,000 impressions: Epson WorkForce Pro WF-C869R consumables (left) vs. Konica Minolta bizhub C227 consumables (right).

Waste After 100,000 Impressions



100,000 impressions: Epson WorkForce Pro WF-C869R consumables (left) vs. Konica Minolta bizhub C227 consumables (right).

Waste After 125,000 Impressions



125,000 impressions: Epson WorkForce Pro WF-C869R consumables (left) vs. Konica Minolta bizhub C227 consumables (right).

Waste After 150,000 Impressions



150,000 impressions: Epson WorkForce Pro WF-C869R consumables (left) vs. Konica Minolta bizhub C227 consumables (right).

Waste After 175,000 Impressions



175,000 impressions: Epson WorkForce Pro WF-C869R consumables (left) vs. Konica Minolta bizhub C227 consumables (right).

Waste After 200,000 Impressions



200,000 impressions: Epson WorkForce Pro WF-C869R consumables (left) vs. Konica Minolta bizhub C227 consumables (right).

Waste After 225,000 Impressions



225,000 impressions: Epson WorkForce Pro WF-C869R consumables (left) vs. Konica Minolta bizhub C227 consumables (right).

Waste After 250,000 Impressions



250,000 impressions: Epson WorkForce Pro WF-C869R consumables (left) vs. Konica Minolta bizhub C227 consumables (right).

Waste After 275,000 Impressions



275,000 impressions: Epson WorkForce Pro WF-C869R consumables (left) vs. Konica Minolta bizhub C227 consumables (right).

Waste After 300,000 Impressions



300,000 impressions: Epson WorkForce Pro WF-C869R consumables (left) vs. Konica Minolta bizhub C227 consumables (right).

User Interventions

Beyond refilling paper drawers, users incur downtime to replace ink, toner, and other consumables. The lower the rated yield, the more frequent the interruption to daily workflow. The lower the user intervention rate, the more productive an office can be. Based on the longer rated life of its components, the Epson unit experienced less operator downtime to replace consumables than the Konica Minolta unit over the course of printing 300,000 pages.

Note that Buyers Lab's trained technicians are highly proficient at changing consumables and the average user is likely to require extra time to perform routine maintenance.

Time Required to Replace User-Replaceable Consumable Items Used Over 300,000 Impressions (Toner/Ink, Drums, Waste Containers, etc.)

Model	Total No. of Toner/Ink Cartridges Replaced	Total Time for Cartridge Replacement (in seconds)	Total No. of Waste Containers Changed	Total Time for Waste Container Change (in seconds)	Total No. of Imaging Unit Kits Replaced	Total Time for Imaging Unit Kit Replaced (in seconds)	Total No. of Components Replaced	Total User Consumable Replacement Time (in seconds)	% Time Saving for Epson
Epson WorkForce Pro WF-C869R	13	390	2	60	-	-	15	450	-
Konica Minolta bizhub C227	45	1,350	10	300	2	720	57	2,370	81.0

Time per Cartridge Change = 30 Seconds (applies to all test devices); Time per Waste Container change = 30 seconds (applies to all test devices); Time per Imaging Unit Kit Change = 360 seconds (applies to the laser test device). Note: this does not include operator time required to attend to the device, determine supplies out, order/obtain supplies, and return to the device, all of which add further time per intervention.

Test Methodology

Reliability testing was performed in print mode 50% simplex/50% duplex using the ISO 24712 test document. All paper cassettes available on the test devices were used in their respective tests, with Buyers Lab technicians refilling all cassettes when empty. To compare the amount of waste material generated, Buyers Lab collected all consumables waste including toner/ink cartridges, imaging units, waste containers/waste toner bottles, and any other periodically replaced maintenance items (fusers, transfer belts, etc.) that were required by each device to print 300,000 impressions. Consumable items were retained, weighed, and photographed, with all toner/ink cartridges run to exhaustion. Long-life consumables were replaced when image quality was deemed to have dropped below an acceptable standard, and at end of life or as part of a standard service maintenance routine.

Test Environment/Conditions

All testing was conducted in a controlled environment at Buyers Lab’s European test facility located at Unit 11, The Business Centre, Molly Millars Lane, Wokingham, RG41 2QZ per the following conditions:

- A.** Temperature was maintained at 22°C, +/-2.7°C with daily conditions monitored and logged 24/7 by a Seven-Day Temperature/Humidity Chart Recorder.
- B.** Relative humidity was maintained within 45% +/- 10% with daily conditions monitored and logged 24/7 by a Seven-Day Temperature/Humidity Chart Recorder.
- C.** Materials conditioning: Printers and all paper used in testing were acclimatized to the above conditions for a minimum of 24 hours prior to testing. Prior to acclimatization, packaging and shipping materials were opened in a manner that prevented light damage from occurring to the print cartridge during acclimatization.

Test Devices

- Epson WorkForce Pro WF-C869R
- Konica Minolta bizhub C227

About Buyers Lab

Keypoint Intelligence is a one-stop shop for the digital imaging industry. With our unparalleled tools and unmatched depth of knowledge, we cut through the noise of data to offer clients the unbiased insights and responsive tools they need in those mission-critical moments that define their products and empower their sales.

For over 50 years, Buyers Lab has been the global document imaging industry's resource for unbiased and reliable information, test data, and competitive selling tools. What started out as a consumer-based publication about office equipment has become an all-encompassing industry resource. Buyers Lab evolves in tandem with the ever-changing landscape of document imaging solutions, constantly updating our methods, expanding our offerings, and tracking cutting-edge developments.

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