

## RISO Duplicators and HC5500 vs MFPs and Printers



RISO EZ590



RISO CZ180



RISO HC5500

### Test Objective

To evaluate the energy consumption of RISO's line of digital duplicators and its HC5500 inkjet printer with that of competitive MFP models and printers.

The RISO CZ180, EZ220, EZ390 and EZ590 duplicators' energy consumption levels were tested while running at various copy-speed modes. The energy consumption levels were then compared with the simplex copy and simplex print energy consumption levels produced by the competitive average of MFP and printer models A, B, C, D, E and F, as well as against the energy consumption of MFP Model G, which was also tested against the 120-ppm HC5500 inkjet printer. While Models A through F range in speed from 40 ppm to 55 ppm, Model G offers a rated speed of 85 ppm.

## Summary

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In BLI's lab evaluation, the RISO CZ180, EZ220, EZ390 and EZ590 duplicators, which each offer variable speeds of 60 ppm to 130 ppm, proved to be more energy efficient when compared with multifunctional devices and printers. In addition to using significantly less energy at 60 ppm than the lower-speed MFP and printer models, when compared to the higher-speed 85-ppm MFP model, the RISO units use less energy at 80 ppm and 100 ppm. Plus, all four duplicator models and the 120-ppm HC5500 inkjet printer offer energy costs that are considerably less than the comparable models tested.

When running at 60 ppm, the RISO duplicators used 87 to 90 percent less energy than MFPs and printers in the 40- to 55-ppm speed range. Even when running at its higher speeds of 80 ppm and 100 ppm, the RISO duplicators used less energy than the MFPs and printers—84 to 89 percent less energy when running at 80 ppm and 82 to 86 percent less energy when running at 100 ppm. Moreover, when compared to a high-end 85-ppm MFP, the RISO duplicators used as much as 94.5 percent less energy at 80 ppm and 93.2 percent less energy at 100 ppm. The 120-ppm RISO HC5500 inkjet printer used 81.6 percent less energy than the high-end 85-ppm MFP without using the optional IS700C ComColor Express Print Controller and 78.7 percent less energy with the print controller.

Additionally, assuming an electricity rate of \$0.11 per kilowatt-hour, all five tested RISO models would cost users hundreds of dollars less in annual energy costs, based on various high-usage scenarios for machine use 7 days a week, 365 days a year. Indeed, based on these scenarios, each RISO duplicator would save users as much as \$100 a year over their MFP and printer counterparts and as much as \$560 per year when compared to the 85-ppm MFP's energy cost during the high-usage energy consumption scenario, which would equate to a savings of \$2,800 over a five-year lease. Further, when matched up against the 85-ppm MFP, the energy costs of the RISO HC5500 are \$445 less when equipped with the optional print controller and \$500 less without using the optional print controller, which would equate to a savings of \$2,500 over a five-year lease.

Based on the RISO units' overall energy consumption performance when compared with that of the comparable devices, it is clear that RISO units will substantially reduce the overall amount of energy consumed, which works to both save users money and help the environment.

*NOTE: Digital duplicators use ink, so unlike copiers, printers and MFPs, they don't require heat and fusing units to melt toner. Because they do not collate sets the way copiers do, they are best suited to cost-effectively producing high volumes of copies and prints from single-page documents.*

## ENERGY CONSUMPTION READINGS

### RISO Duplicators

Model	RISO CZ180	RISO EZ220	RISO EZ390	RISO EZ590
Type	Duplicator (Wh)	Duplicator (Wh)	Duplicator (Wh)	Duplicator (Wh)
Speed Test 1 (60 ppm) @ 1 hour	84	84	96	108
Speed Test 2 (80 ppm) @ 1 hour	96*	96	120	132
Speed Test 3 (100 ppm) @ 1 hour	NA	120	144	156
Idle Mode @ 1 hour	18	18	18	18
Sleep Mode @ 1 hour	NA	4	4	4

NA = Not Applicable

\* The RISO CZ180's second speed level is 90 ppm.

### RISO HC5500

Model	RISO HC5500	RISO HC5500
Type	Inkjet w/o Controller (Wh)	Inkjet w/ IS700C ComColor Express Print Controller (Wh)
Monochrome Simplex Print @ 1 hour	312	360
Color Simplex Print @ 1 hour	324	396
Monochrome Duplex Print @ 1 hour	324	384
Color Duplex Print @ 1 hour	336	408
Idle Mode @ 1 hour	108	186
Sleep Mode @ 1 hour	6	84

### MFP And Printer Models A Through F

Model	A 40 ppm (Wh)	B 45 ppm (Wh)	C 50 ppm (Wh)	D 50 ppm (Wh)	E 55 ppm (Wh)	F 55 ppm (Wh)	Average (Wh)
Monochrome Simplex Copy @ 1 hour	792	942	NA	876	NA	852	866
Monochrome Simplex Print @ 1 hour	816	1,038	792	888	828	924	881
Idle Mode @ 1 hour	168	318	84	168	78	138	159
Sleep Mode @ 1 hour	108	72	12	84	12	48	56

NA = Not Applicable

### MFP Model G (85 PPM)

Monochrome Simplex Copy @ 1 hour	1752 Wh
Monochrome Simplex Print @ 1 hour	1692 Wh
Idle Mode @ 1 hour	384 Wh
Sleep Mode @ 1 hour	336 Wh

NOTE: Simplex copy refers to single-sided copying from an original placed on the platen glass of the device. Simplex print refers to single-sided printing jobs sent from the computer.

## SPEED TEST 1

RISO Duplicators tested while copying at an average of 60 ppm for one hour versus the average of MFP and Printer Models A through F tested in both simplex copy mode and simplex print mode at their manufacturer-rated speed for one hour

Percent Less Energy Used By The RISO Device At 60 ppm Than The Competitive Average Of Energy Used By MFP And Printer Models A Through F During Simplex Print And Copy Modes

	Simplex Copy	Simplex Print
RISO CZ180	90.3%	90.5%
RISO EZ220	90.3%	90.5%
RISO EZ390	88.9%	89.1%
RISO EZ590	87.5%	87.7%

## SPEED TEST 2

RISO Duplicators tested while copying at an average of 80 ppm for one hour versus the average of MFP and Printer Models A through F tested in both simplex copy mode and simplex print mode at their manufacturer-rated speed for one hour

Percent Less Energy Used By Riso Devices At 80 ppm Than The Competitive Average Of Energy Used By MFP And Printer Models A Through F During Simplex Print And Copy Modes

	Simplex Copy	Simplex Print
RISO CZ180	88.9%	89.1%
RISO EZ220	88.9%	89.1%
RISO EZ390	86.1%	86.4%
RISO EZ590	84.7%	85.0%

RISO Duplicators tested while copying at an average of 80 ppm for one hour versus MFP Model G tested in both simplex copy mode and simplex print mode at its manufacturer-rated speed of 85 ppm for one hour

Percent Less Energy Used By The Riso Device At 80 ppm Than The Competitive Average Of Energy Used By MFP Model G During Simplex Print And Copy Modes

	Simplex Copy	Simplex Print
RISO CZ180	94.5%	94.3%
RISO EZ220	94.5%	94.3%
RISO EZ390	93.2%	92.9%
RISO EZ590	92.5%	92.2%

## SPEED TEST 3

RISO Duplicators tested while copying at an average of 100 ppm for one hour versus the average of MFP and Printer Models A through F tested in both simplex copy mode and simplex print mode at their manufacturer-rated speed for one hour

### Percent Less Energy Used By The Riso Device At 100 ppm Than The Competitive Average Of Energy Used By MFP And Printer Models A Through F During Simplex Print And Copy Modes

	Simplex Copy	Simplex Print
RISO CZ180	NA	NA
RISO EZ220	86.1%	86.4%
RISO EZ390	83.4%	83.7%
RISO EZ590	82.0%	82.3%

NA = Not Applicable

RISO Duplicators while copying at an average of 100 ppm for one hour versus MFP Model G tested in both simplex copy mode and simplex print mode at its manufacturer-rated speed of 85 ppm for one hour

### Percent Less Energy Used By The Riso Device At 100 ppm Than The Competitive Average Of Energy Used By MFP Model G During Simplex Print And Copy Modes

	Simplex Copy	Simplex Print
RISO CZ180	NA	NA
RISO EZ220	93.2%	92.9%
RISO EZ390	91.8%	91.5%
RISO EZ590	91.1%	90.8%

NA = Not Applicable

## RISO HC5500\* INKJET DEVICE TESTED WITH AND WITHOUT THE IS700C COMCOLOR EXPRESS PRINT CONTROLLER

\* Note: Because its rated speed of 120 ppm is significantly higher than that of MFP and printer models A through F, BLI only compared the energy consumption of the HC5500 to the 85-ppm MFP Model G.

### RISO HC5500 Versus MFP Model G

- The RISO HC5500 inkjet device used 81.6 percent less energy than Model G without using the IS700C ComColor Express print controller and used 78.7 percent less energy than Model G when equipped with the IS700C ComColor Express print controller.

### Percent Less Energy Used Than MFP Model G

	w/o Print Controller	w/IS700C ComColor Express Print Controller
RISO HC5500	81.6%	78.7%

## IDLE / SLEEP MODES

### RISO Duplicators Versus MFP And Printer Models A Through G

- RISO duplicators used 88.7 percent less energy than the average of comparable-speed MFPs and printers (models A through F) when in idle mode.
- RISO duplicators used 92.9 percent less energy than the average of comparable-speed MFPs and printers (models A through F) when in sleep mode.
- RISO duplicators used 95.3 percent less energy than a high-speed MFP (Model G) when in idle mode.
- RISO duplicators used 99.8 percent less energy than a high-speed MFP (Model G) when in sleep mode.

### RISO HC5500 Versus MFP Model G

- Without using the IS700C ComColor Express print controller option, the RISO HC5500 used 71.9 percent less energy than a high-speed MFP (Model G) when in idle mode.
- When equipped with the IS700C ComColor Express print controller, the RISO HC5500 used 51.6 percent less energy than a high-speed MFP (Model G) when in idle mode.
- Without using the IS700C ComColor Express print controller option, the RISO HC5500 used 98.2 percent less energy than a high-speed MFP (Model G) when in sleep mode.
- When equipped with the IS700C ComColor Express print controller, the RISO HC5500 used 75.0 percent less energy than a high-speed MFP (Model G) when in sleep mode.

## PROJECTED ANNUAL ENERGY COSTS BASED ON RUNNING TIME

The following scenarios are based on an assumed electricity rate of \$0.11 per kWh.

### Low Usage\* / Annual Cost

RISO CZ180	RISO EZ220	RISO EZ390	RISO EZ590	RISO HC5500 w/o Controller	RISO HC5500 w/Controller	Competitive Average (A-F)	Model G
\$19.99	\$9.88	\$10.36	\$10.84	\$38.54	\$112.50	\$107.76	\$387.85

\*Based on an assumed electricity rate of \$0.11 per kWh and on monochrome simplex printing for 1 hour, idle for 5 hours and in sleep mode for 18 hours for 7 days per week, 365 days per year.

### Low Usage\* / Annual Savings

	% Less Annual Cost Than Competitive Average (A-F)	% Less Annual Cost Than Model G
RISO CZ180	81.5%	94.9%
RISO EZ220U	90.8%	97.5%
RISO EZ390U	90.4%	97.3%
RISO EZ590U	89.9%	97.2%
RISO HC5500 w/o Controller	64.2%	90.1%
RISO HC5500 w/Controller	-4.4%	71.0%

\*Based on an assumed electricity rate of \$0.11 per kWh and on monochrome simplex printing for 1 hour, idle for 5 hours and in sleep mode for 18 hours for 7 days per week, 365 days per year.

### High Usage\* / Annual Cost

RISO CZ180	RISO EZ220	RISO EZ390	RISO EZ590	RISO HC5500 w/o Controller	RISO HC5500 w/Controller	Competitive Average (A-F)	Model G
\$33.00	\$23.45	\$28.27	\$30.67	\$75.40	\$144.54	\$227.85	\$599.84

\*Based on an assumed electricity rate of \$0.11 per kWh and on monochrome simplex printing for 5 hours, idle for 2 hours and in sleep for 17 hours for 7 days per week, 365 days per year.

### High Usage\* / Annual Savings

	% Less Annual Cost Than Competitive Average (A-F)	% Less Annual Cost Than Model G
RISO CZ180	85.5%	94.5%
RISO EZ220U	89.7%	96.1%
RISO EZ390U	87.6%	95.3%
RISO EZ590U	86.5%	94.9%
RISO HC5500 w/o Controller	66.9%	87.4%
RISO HC5500 w/Controller	36.6%	75.9%

\*Based on an assumed electricity rate of \$0.11 per kWh and on monochrome simplex printing for 5 hours, idle for 2 hours and in sleep for 17 hours for 7 days per week, 365 days per year.

## PROJECTED ANNUAL ENERGY COSTS BASED ON MONTHLY VOLUME

The following scenarios are based on an assumed electricity rate of \$0.11 per kWh.

### 50,000 Impressions Per Month\* / Annual Cost

RISO CZ180	RISO EZ220	RISO EZ390	RISO EZ590	RISO HC5500 w/o Controller	RISO HC5500 w/Controller	Competitive Average (A-F)	Model G
\$18.67	\$6.78	\$7.24	\$7.40	\$17.91	\$92.75	\$90.39	\$354.30

\*Based on an assumed electricity rate of \$0.11 per kWh and on monochrome simplex printing 50,000 pages per month, idle for 2 hours per day, and in Energy Save mode for the remainder of the time over 7 days per week, 365 days per year.

### 50,000 Impressions Per Month \* / Annual Savings

	% Less Annual Cost Than Competitive Average (A-F)	% Less Annual Cost Than Model G
RISO CZ180	79.4%	94.7%
RISO EZ220U	92.5%	98.1%
RISO EZ390U	92.0%	98.0%
RISO EZ590U	91.8%	97.9%
RISO HC5500 w/o Controller	80.2%	95.0%
RISO HC5500 w/Controller	-2.6%	73.8%

\* Based on an assumed electricity rate of \$0.11 per kWh and on monochrome simplex printing 50,000 pages per month, idle for 2 hours per day, and in Energy Save mode for the remainder of the time over 7 days per week, 365 days per year.

### 200,000 Impressions Per Month\* / Annual Cost

RISO CZ180	RISO EZ220	RISO EZ390	RISO EZ590	RISO HC5500 w/o Controller	RISO HC5500 w/Controller	Competitive Average (A-F)	Model G
\$22.57	\$12.17	\$14.02	\$14.64	\$29.69	\$103.25	\$174.52	\$434.33

\*Based on an assumed electricity rate of \$0.11 per kWh and on monochrome simplex printing 200,000 pages per month, idle for 2 hours per day, and in Energy Save mode for the remainder of the time over 7 days per week, 365 days per year.

### 200,000 Impressions Per Month\* / Annual Savings

	% Less Annual Cost Over Competitive Average (A-F)	% Less Annual Cost Over Model G
RISO CZ180	87.1%	94.8%
RISO EZ220U	93.0%	97.2%
RISO EZ390U	92.0%	96.8%
RISO EZ590U	91.6%	96.6%
RISO HC5500 w/o Controller	83.0%	93.2%
RISO HC5500 w/Controller	40.8%	76.2%

\*Based on an assumed electricity rate of \$0.11 per kWh and on monochrome simplex printing 200,000 pages per month, idle for 2 hours per day, and in Energy Save mode for the remainder of the time over 7 days per week, 365 days per year.



## TEST ENVIRONMENT

Testing was conducted under ambient conditions of 72F (+/-5F) and 45% RH (+/-10%), with temperature and RH monitored daily by an Extech RH S20 Digital RH/Temperature Recorder and Honeywell Model 61 Seven-Day Temperature/Humidity Chart Recorder, in Buyers Lab's 10,000-square-foot test facility in Hackensack, NJ.

## TEST PROCEDURES

- 1 Set up a constant 115.0-volt supply to the imaging devices
- 2 Measure the energy consumed in Watt-hour (Wh) by the imaging device in each mode (e.g., idle, copy mode, print mode, sleep mode) for 10 minutes.
- 3 Multiply the Wh number by 6 to obtain the Wh that would be consumed if the device ran for one hour.

## About Buyers Laboratory

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