



Green Testing Detailed Report of
Konica Minolta *bizhub vCare 2.8*
Device Management and Communications System
and Various bizhub Products



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i. Executive Summary

Miercom was engaged to evaluate the current version of Konica Minolta's "***bizhub vCare***" device management system and six bizhub products under Miercom's Certified Green Program, which assesses network products' power consumption, energy efficiency and environmental impact.

The evaluation analyzed the overall environmental aspects of *bizhub vCare*, introduced in the U.S. and Canada in 2008 by Konica Minolta Business Solutions USA, Inc., and the bizhub 20P, 25e, 4700P, C360, C754e and PRESS C1100 products.

bizhub and bizhub PRO products manufactured since 2005 can be managed remotely by this system. Currently, over 200,000 products in the U.S. and Canada are being managed remotely by bizhub vCare. Worldwide, approximately 800,000 products are now managed by the system, which is known as *CS Remote Care* in Japan, Australia and Europe with the exception of France. It is known as *Digital Doctor* in Hong Kong, *Archange* in France and *Sentinel* in New Zealand.

bizhub vCare consists of embedded technology within the Konica Minolta product and an off-site vCare server. New in *bizhub vCare version 2.8* is the vCare Data Collection Agent, also deployed worldwide as CS Remote Care Data Collection application, which runs on a computer on the end-user's enterprise network and can manage up to 1,000 Konica Minolta bizhub or bizhub PRO products. This node regularly collects information about the devices' operational status and sends it to a Konica Minolta site or authorized reseller that provides the management service. The information enables the service provider to initiate appropriate action to keep the products in optimal operating condition.

The energy efficiency of the 20P, 25e, 4700P, C360, C754e and PRESS C1100 products was measured in hands-on testing. In addition, the ability of *bizhub vCare 2.8* to provide green benefits to customers with bizhub or bizhub PRO products, as well as to the management service provider, was assessed.

Among the key findings of this evaluation:

- bizhub devices consume 40 to 51 percent less energy in Sleep Mode than in Ready Mode
- End users can realize tangible green benefits from *bizhub vCare 2.8*
- Research has confirmed that Konica Minolta has recently received numerous environmental awards and certifications in recognition of its ecological efforts

Miercom was impressed with the energy efficiency and ecologically intelligent design of the bizhub products tested, as well as the positive environmental impact of *bizhub vCare version 2.8*. We are pleased to present the Certified Green accreditation to *bizhub vCare 2.8* and the 20P, 25e, 4700P, C360, C754e and PRESS C1100 bizhub products.

--- Robert Smithers, CEO, Miercom



1 Products Tested

The endpoint devices tested are representative of the bizhub product line. The 20P and 25e are "All-in-One" desktop units, featuring printing, scanning and fax. The 4700P is a high-output (50 pages per minute), high-resolution, monochrome laser printer.



The C360 and C754e are standalone multifunction printers (MFPs), which feature color printing. The PRESS C1100 is a digital press for production printing.



To reiterate, the *bizhub vCare 2.8* monitoring system supports bizhub and bizhub PRO products manufactured since 2005. Most of these devices feature a Sleep Mode setting, where power consumption is significantly reduced.

The 20P, an "all-in-one" desktop device, for example, has a Sleep Mode in which energy consumption is significantly reduced since the fuser component is off.

In order to enter Sleep Mode, the 20P must be idle for an amount of time set via the control panel. The default setting is five minutes.

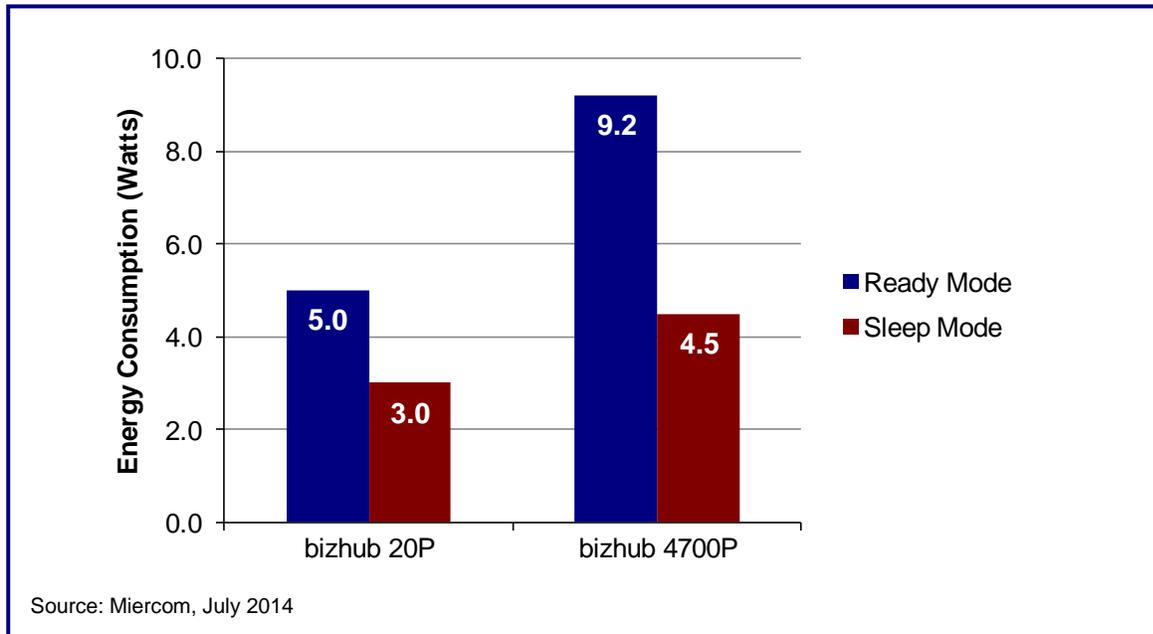
If the device receives a fax or computer data or makes a copy while in Sleep Mode, the countdown for the return to Sleep Mode begins once the activity is completed. If it is necessary to "awaken" the device from Sleep Mode for printing or copying, it takes the fuser a short time to warm up, on the order of 30 seconds.

Miercom engineers reduced the amount of idle time before the 20P went into Sleep Mode to two minutes. We measured a 40-percent reduction in power consumption in Sleep Mode as opposed to Ready Mode.

The 4700P is a higher-end product in the bizhub line. A 51.1-percent decrease in power consumption was observed in Sleep Mode compared to Ready Mode.

The power savings for the 20P and 4700P are shown in the figure below.

Figure 1: Konica Minolta bizhub Power-Consumption Comparison: 20P and 4700P, Ready Mode and Sleep Mode



Power Consumption Reduced. Testing measured power-consumption reductions of 40 to 51.1 percent by these devices on entering Sleep Mode after a pre-specified period of inactivity.

In Sleep Mode the 20P consumed just 3.0 watts, as opposed to 5.0 watts in Ready Mode.

The 4700P, a higher-end product in the bizhub line, exhibited a 51.1 percent decrease in power consumption, from 9.2 watts in Ready Mode to 4.5 watts in Sleep Mode.

In addition to Sleep Mode, devices including the 4700P also have a Hibernate Mode, in which devices consume even less power – as little as 0.5 watt, according to Konica Minolta. The length of time that a printer is inactive (idle) before it enters Hibernate Mode can also be set via the control panel – between 1 hour and 1 month.

Testing verified that the 20P and the 4700P emerge from Sleep Mode and return fully to Ready Mode within 30 seconds after being activated.

2 *bizhub vCare* Green Benefits

bizhub and *bizhub PRO* devices manufactured since 2011 communicate with *bizhub vCare* via one-way e-mail or one-way HTTP(S) based on the reporting schedule set within the device. The *vCare* Data Capture Agent utilizes network polling and transmits the data to the *vCare* System via HTTPS.

Older devices communicate with *bizhub vCare* by way of bidirectional e-mail in the form of short messages. The management service provider – Konica Minolta or an authorized reseller – assigns and manages email addresses and HTTP(S) credentials for all *bizhub* and *bizhub PRO* devices on the enterprise network of customers.

bizhub or *bizhub PRO* devices send service alerts, warnings and jam notifications in real-time as well as daily messages to the *vCare* system in order to ensure that sufficient data is available in order to pro-actively take action if needed.

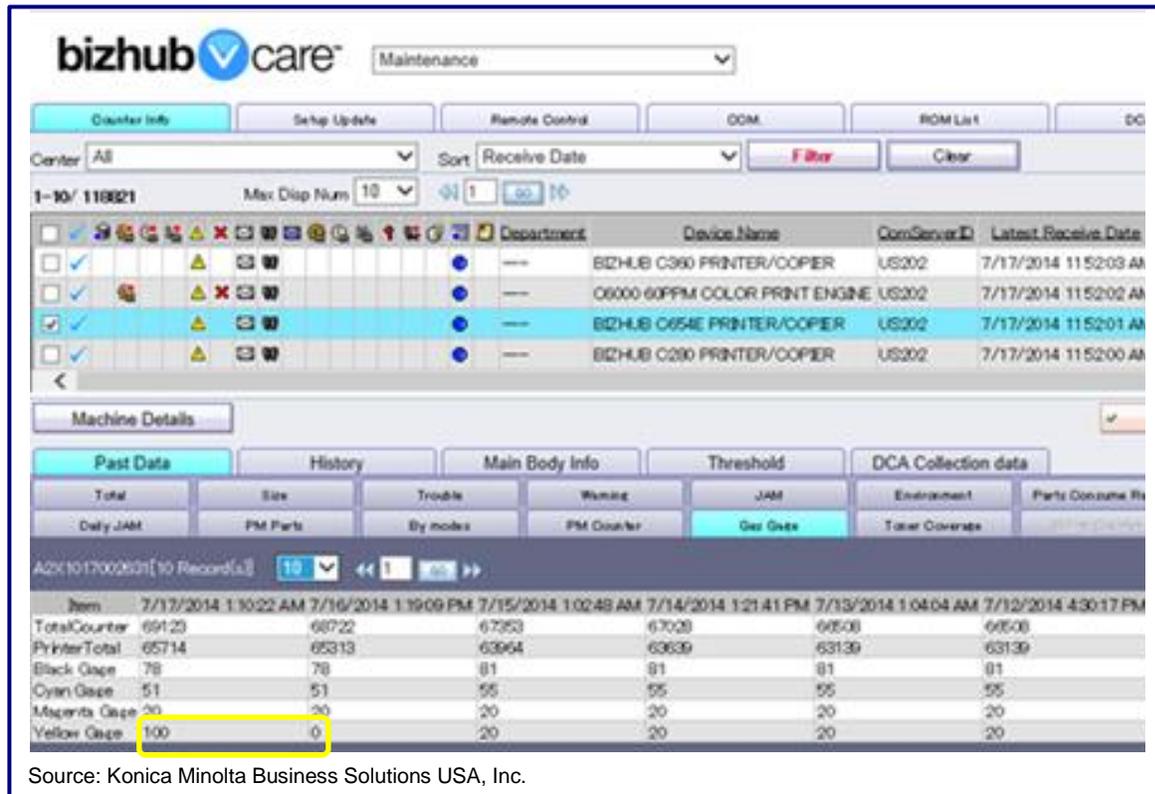
The data that the *bizhub* device automatically reports includes:

- Current meter reading, which has enabled the service organization to automate customer billing
- Level of consumables, such as toner and ink, which can automatically generate an immediate delivery, if required
- Error code alerts, which help pinpoint operational problem(s) and, if necessary, can prompt a service technician to be dispatched immediately with the proper repair or replacement part(s)
- Status of key components, which tells the user organization when a part critical to maintaining optimal print quality, like a fuser or laser, is nearing the end of its service life and may soon require a replacement.

A screenshot of the "consumables" portion of the *bizhub vCare* application is shown below. In this case, the level of yellow toner ink for a *bizhub C654E*, a standalone multifunction printer, had dropped to 0 percent as of early afternoon on Wednesday, July 16, 2014.

A new cartridge was delivered later that day and installed, based on this automated alert. Subsequently, when *bizhub vCare* polled the *C654E* the next morning, the yellow ink level was reported at 100 percent.

Figure 2: Konica Minolta *bizhub vCare* Remote Monitoring of Consumables: Level of Black, Cyan, Magenta and Yellow Toner Ink



Source: Konica Minolta Business Solutions USA, Inc.

Automatic Replenishment. The *bizhub vCare* management interface shows the device is out of yellow toner ink one day, prompting a replacement cartridge to be automatically delivered. After replacement, the ink level displayed as full the next day.

A cloud-based application, *bizhub vCare* is accessible via a customizable browser-based interface, a desktop utility, or a free mobile application. Information sent over the network is protected by SSL (Secure Sockets Layer) transmission security and encryption.

Management providers and end-user can access *bizhub vCare*. Each access requires that a separate account be established, including a user ID and password. The annual fee for service providers is based on the number of endpoint devices managed via *bizhub vCare*.

There are clear green benefits to using *bizhub vCare* to keep Konica Minolta devices in optimal operating condition. For example, the timely replacement of filters, combined with the proper positioning of the printer devices in well-ventilated areas of the workplace, minimizes workers' exposure to exhaust, which can include carbon dioxide, ozone and toner dust. The latest version of *bizhub vCare*, 2.8, can now track carbon dioxide emissions.

Regular maintenance minimizes the impact of ozone and toner dust. Ozone occurs from electrostatic processes in the drum of some copiers, printers and multifunction devices. Without proper maintenance, toner can back up from the waste compartment, causing toner dust to be released through vents.

An error code via *bizhub vCare* can report if a toner cartridge has ruptured. It is best in this case to have a service technician conduct the cleanup and repair, to avoid exposure to excessive toner dust. The automated alert enables proactive and prompt service remediation.

bizhub vCare can also provide customers a green benefit through ongoing usage monitoring. For example, if *bizhub vCare* shows that printer X remains in Ready Mode all the time, the end-user might be advised how to configure Sleep Mode, such as in the evening or on weekends, to save energy. *bizhub vCare* can also note when a printer is printing just one-sided. It is often possible, when properly configured, to print jobs on both sides, saving paper.

And there are other examples. Users of the *bizhub 20P* may find it useful to know that periodically shutting off of the scanner lamp can save considerable energy. This can be done quickly and easily via the control panel.

The below chart shows the depth of usage information reported via *bizhub*.

Figure 3: Konica Minolta *bizhub vCare* End-User Summary of Product Usage

Item	Value
The total print number of pages	32994
Electric power consumption(accumulation of 12 months) : (kWh)	333.27
CO2 exhaust amount(accumulation of 12 months) : (kg)	138.83
Energized time(accumulation of 12 months) : (h)	4010
Standby time(accumulation of 12 months) : (h)	1210.7
Accumulation time of low power mode(accumulation of 12 months) : (h)	2752
Running time(accumulation of 12 months) : (h)	47.4
Color Print Page Ratio	9
Duplex Print Ratio	2
Print Page Reduction Ratio	0

Source: Konica Minolta Business Solutions USA, Inc.

Usage Monitoring. Also visible from the *bizhub vCare* management interface are a variety of important usage metrics, including carbon dioxide exhaust, running versus standby time, and color versus black-and-white print ratio.

3 Other Environmental Considerations

The *bizhub vCare* service provider can realize other green benefits. For example, when *bizhub vCare* sends an error alert code indicating that a service technician needs to be dispatched, he or she will have knowledge of the problem in advance. As a result, the technician can show up at the user site proactively with the right tools and/or part to fix the problem.

The error code functionality of *bizhub vCare* allows the service provider to maximize the number of one-trip service calls, and increase first call resolution effectiveness. An obvious green benefit is fuel savings whenever follow-up trips can be eliminated.

The figure below shows the number of service calls automatically dispatched by *bizhub vCare* in the U.S. and Canada for the 12-month period from May 2013 through April 2014. There were 57,500 total calls, an average of 14,375 every quarter.

Figure 4: Konica Minolta *bizhub vCare* Automatic Dispatch of Service Calls



Automatic Dispatching. The chart shows service calls automatically dispatched via *bizhub vCare* for the U.S. and Canada in the 12-month period running from May 2013 to April 2014. Thanks to error alert code functionality in *bizhub vCare*, technicians can show up the first time with the right tools and parts.

4 Konica Minolta Corporate Initiatives

Konica Minolta has committed to preserving the environment. In 2005, the company launched its Medium-Term Environmental Plan, seeking to achieve numerous green objectives by 2015.

Objectives include reducing carbon dioxide emissions by: 60 percent in product usage, 10 percent in product manufacturing, 30 percent in product distribution, and 50 percent in product sales and service.

Other major initiatives in the company's Medium-Term Environment Plan include supporting a recycling-oriented society, reducing the risk of chemical substances and restoring and preserving biodiversity.

The Medium-Term Environment Plan is part of the Long-Term Konica Minolta Eco Vision 2050 blue print. The key objectives of the long-term plan include:

- Reducing carbon dioxide levels by 80 percent from fiscal 2005 levels, through product life cycles, by 2050,
- Reusing and maximizing the earth's limited resources,
- Promoting restoration and preservation of biodiversity.

Also, the "Clean Planet" toner cartridge and consumable recycling program is a cost-free, green option for Konica Minolta Business Solutions customers worldwide.

5 Konica Minolta Green Certifications

Konica Minolta has earned many green achievements over the years.

Since 1995, every Konica Minolta business information product has qualified for the **ENERGY STAR**. ENERGY STAR is an international voluntary program to identify and promote energy-efficient products and practices.

Konica Minolta has received the **Blue Angel Mark** for many products since 1992. The world's first ecological label, introduced in 1978 by Germany, the Blue Angel Mark is awarded to products and services deemed beneficial for the environment and meeting high standards of occupational health and safety and fitness for use.

All Konica Minolta bizhub products comply with the **Restriction of Hazardous Substances** directive of the European Union. Similarly, all Konica Minolta products comply with the **Waste from Electrical and Electronic Equipment** agreement of the European Union. WEEE requires the collection and treatment of electronic and electrical equipment by the manufacturer at the end of their product's lifespan.

Every Konica Minolta business and manufacturing site in Japan is **ISO 14001** certified. ISO 14001 is an international standard for the environmental management of companies.

Konica Minolta received the **EcoLogo** for 12 of its multifunction printers in 2009. Introduced by the Canadian government, EcoLogo is a widely recognized North American environmental certification program.

Konica Minolta's policy is to obtain **Eco Mark** certification for all of its business information products. Eco Mark was established in 1989 by the Japan Environmental Association as a standard environmental labeling system in Japan.

Numerous products Konica Minolta markets in the United States have earned **EPEAT** certification (www.epeat.com). This is a global rating system for greener electronics.

In the Multifunction Printer category, Konica Minolta has earned Gold Certification for 28 of its bizhub products, Silver Certification for ten and Bronze Certification for two products. In the Printer Category, the company received Silver Certification for five products.

6 Sustainable Manufacturing Process

In 2010, Konica Minolta launched its Green Factory Certification system for comprehensively evaluating the environmental activities of all its production sites around the world. Two objective levels were established – Level 1 and Level 2.

Level 1

Achieved by all 22 Konica Minolta business units by 2011, using 2005 as the base year. Objectives included:

- 12 percent reduction of carbon dioxide emissions per unit of production
- 30 percent reduction of waste discharged externally per unit of sales
- 0.5 percent or less final disposal rate of total waste
- 30 percent reduction of petroleum-based resource waste per unit of sales.

Level 2

To be achieved by fiscal year 2015, again using 2005 as the base year. Achievement goals include:

- 202 percent reduction of carbon dioxide emissions per unit of production
- 50 percent reduction of waste discharged externally per unit of sales
- 0.5% or less final disposal rate of total waste
- 50% reduction of petroleum-based resource waste per unit of sales.

At present, July 2014, six Konica Minolta business units have achieved the Level 2 objectives of the Green Factory Certification System.

7 Green Initiatives

The objective of an ongoing green initiative at Konica Minolta Business Solutions USA is to make its data center in Ramsey, NJ more environmentally friendly. The data center houses *bizhub vCare* for the United States and Canada.

bizhub vCare uses hosts with processors from Advanced Micro Devices, which use less power and dissipate less heat than comparable processors from Intel. Platforms are rack-mounted in vented cabinets within a hot aisle/cold aisle configuration.

Virtualization based on VMware ESX is widely used, which helps reduce energy costs in the data center through server consolidation. By allowing 10 to 20 virtual servers to run on a single host, energy costs are reduced by 80 percent. VMware virtualization has had a positive impact on the environment. Energy-efficiency measures have been applied in the data center for the past nine years. A key accomplishment has been reduction of the overall rack space footprint and power/cooling requirements by 17 percent over the last three years.

In addition, a 967,000-kWh solar energy system consisting of 3,498 panels, each with DC power output of 240 watts, was installed at the Ramsey, N.J. campus in 2013. The system generates enough power to satisfy 15 to 18 percent of the annual electricity requirements of the campus.

8 About Miercom

Miercom has hundreds of product-comparison analyses published over the years in leading network trade periodicals including *Network World*, *Business Communications Review*, *Tech Web - NoJitter*, *Communications News*, *xchange*, *Internet Telephony* and other leading publications. Miercom's reputation as the leading, independent product test center is unquestioned.

Miercom's private test services include competitive product analyses, as well as individual product evaluations. Miercom features comprehensive certification and test programs including: [Certified Interoperable](#), [Certified Reliable](#), [Certified Secure](#) and [Certified Green](#).

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