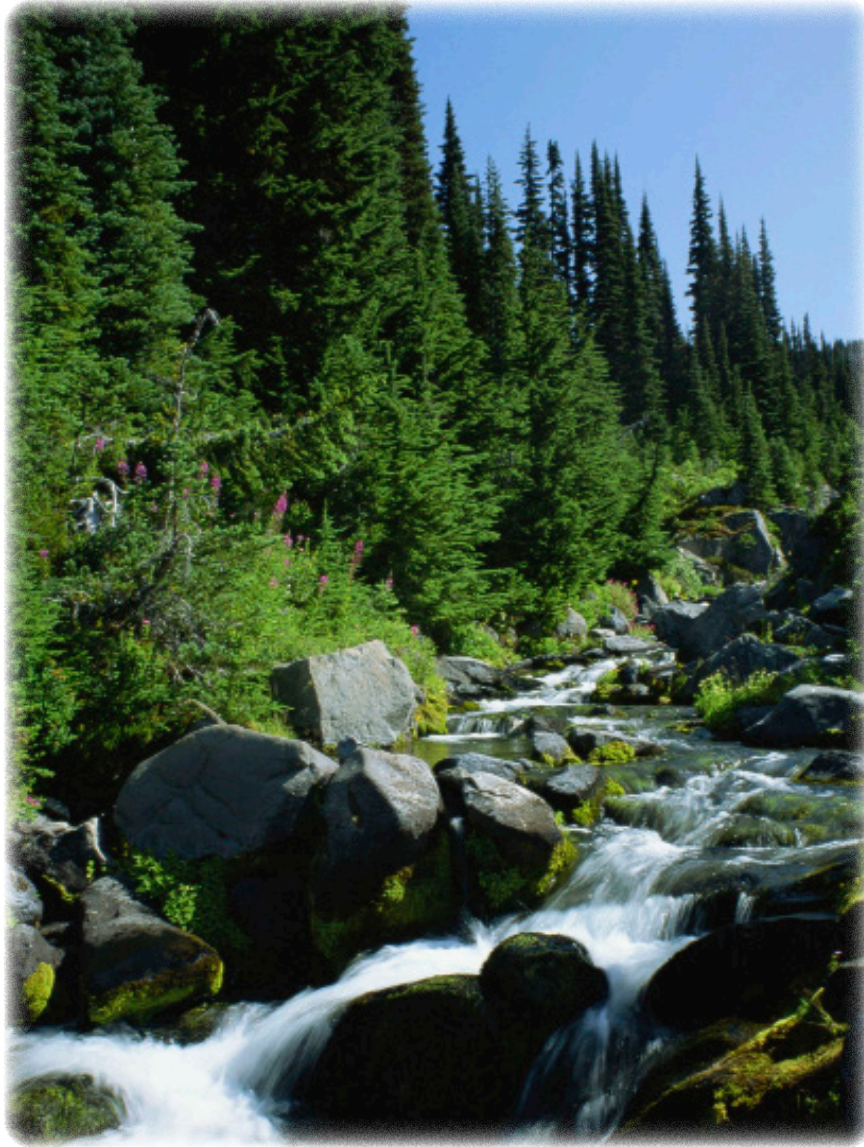


GREEN IS GOOD

Inkjet Printers and Duplicators Provide Environmentally Friendly Alternatives to Toner-Based Printers and Copiers



Live...Print...Save
GREEN



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Green is Good

Concern about the environment has become a focal point for consumers and business alike. Issues ranging from global warming to renewable energy resources, water quality, recycling, and green building are no longer topics of discussion only among scientists or environmental protection agencies — they have become part of mainstream conversation all over the world.

Initiatives like the U.S. Green Building Council's LEED® (Leadership in Energy and Environmental Design) Green Building Rating System™, and ENERGY STAR also serve to promote energy conservation and green practices. The Academy Award-winning movie, "An Inconvenient Truth," placed the issue of global warming before the public eye, spurring even greater interest in protecting the environment.

Saving energy is not only good for business, it's good for the planet. Energy consumption, including production of electricity, has a strong correlation to many environmental issues. Global warming is just one of those concerns.

Companies looking to go green are examining every facet of their operations. The good news is that they can choose advanced printing technologies that offer conserve energy, reduce waste, and utilize environmentally friendly inks — and do their part to help protect the environment.

A majority of the scientific community agrees that the global climate is warming, due in large part to emissions of carbon dioxide and other greenhouse gases from human activities including industrial processes, fossil fuel combustion, and changes in land use. During the 21st century, this warming could result in additional sea-level rise that will gradually inundate coastal areas, change precipitation patterns, increase risk of droughts and floods, threaten biodiversity, and lead to a number of potential public health issues.

To avoid the adverse effects of climate change, experts say that there must be a dramatic reduction in emissions of carbon dioxide and 3 other greenhouse gases. Production of electricity in electric plants requires fossil fuel combustion which contributes substantially to carbon dioxide emissions. Every day, toner-based printers and photocopiers in thousands of offices worldwide contribute to environmental degradation by using large amounts of energy and emitting carbon dioxide into the atmosphere.

Businesses and individuals have become aware of the need to replace their existing office equipment with energy-efficient models. This paper explains the benefits of two of the more environmentally friendly printing technologies.





Energy Savings

Long known for their reliability and cost-efficient operation, digital duplicators are gaining recognition for their low energy consumption and unique heatless technology platform. Digital duplicators employ a plate-based ink-on-paper technology that eliminates the extreme heat and high power consumption required by photocopiers and toner-based printers, offering an environmentally friendly alternative that is also significantly less expensive to operate. They require as little as 3.5 amps of electrical current and use about the same energy as four 100-watt light bulbs when producing copies. RISO digital duplicators have earned the ENERGY STAR for their low energy use; in a side-by-side comparison of a RISO digital duplicator and an ENERGY STAR rated photocopier, the digital duplicator resulted in an astonishing 95% cost savings over the photocopier.

Duplicators are an excellent choice for producing monochrome or spot color output. They are ideal for volumes between 20 and 5,000 pages. In addition to saving energy, the new generation of duplicators prints with unparalleled speed. For example, RISO's RZ1090 digital duplicator prints one-color documents at up to 180 pages per minute, and the company's MZ1090 two-color/one-pass machine prints at 150 pages per minute. This technology has advanced considerably since RISO first invented the Risograph digital duplicator in 1986.

For producing full color documents, inkjet printer technology provides full color output with no heat. While inkjet printers use more electricity than duplicators, they still use far less than toner-based technologies. Typically, inkjet printing has been reserved for small print quantities, but there are a limited number of high speed inkjet printers on the market, such as the RISO X1 Series, that are engineered for high volumes. The X1 9150, for example, easily handles monthly volumes of 500,000 pages.

Related Energy Savings

A November 29, 2006 article in the *Wall Street Journal* states that: "Air conditioning now represents 60-70% of the energy costs at data centers." This is because data center printers create heat, for which air conditioning is necessary to compensate (see below).

The lack of heat in duplicator and inkjet printing eliminates the need for compensatory cooling, further reducing energy consumption and cost. This reduction in energy consumption in turn further reduces the carbon footprint—the amount of carbon dioxide emitted through combustion of fossil fuels that leads to ozone depletion.

Reduced Power Consumption

The Production Support Manager for the Philadelphia Stock Exchange, installed RISO's ComColor Printers in the Exchange's new data center. In contrast to the 220-volt energy requirement of the old continuous-form feeders, the new inkjet printers can plug into standard 110-volt wall outlets. Because the ComColor technology platform does not use a heat and laser process, the units consume a fraction of the energy required to run heat-intensive devices. Additionally, no extra cooling is required for the facility. As a result, they estimate that the new printers have reduced power consumption by at least half.





Soy Inks

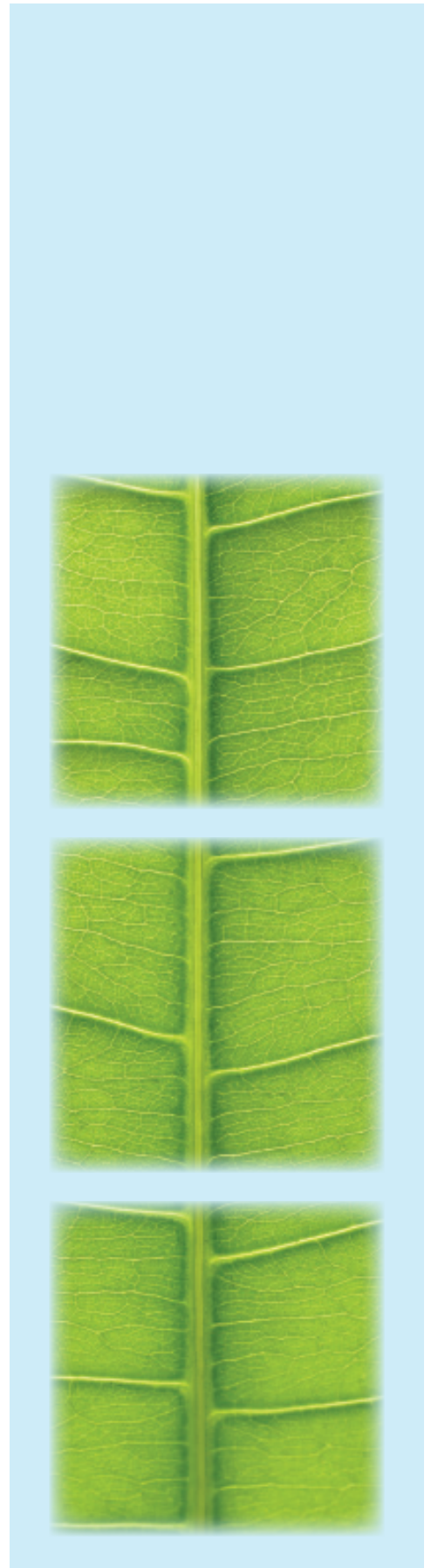
Duplicators can use soy-based ink, which has several environmental advantages over petroleum-based ink. Soy ink does not release a significant amount of volatile organic compounds (VOCs) into the air as it dries. VOCs are chemical compounds that form smog at lower atmospheric levels. Soy ink is also more easily removed from paper during the paper recycling process, resulting in less paper fiber damage and more usable recycled paper. Additionally, the resulting waste is not hazardous and can be disposed of with no harmful environmental effects.

RISO digital duplicator soy ink has received the SoySeal from the American Soybean Association. According to the association, soy ink can contribute to cleaner air, reduce dependence on foreign oil, and serve as a sustainable resource. RISO inks are non-flammable and UL classified.



Use of Recycled Paper

Unlike many other printing technologies, duplicators can print on many types of recycled paper. Printing on recycled paper has a multitude of environmental benefits when compared to virgin paper, it saves trees, energy, water, and landfill space. It produces less pollution, protects ecosystems, and needs less bleaching than virgin paper, thereby reducing the use of toxic chemicals.





Efficient Use of Supplies

RISO inks are designed to work with the RISO ink delivery system that uses a microprocessor to control the vacuum-drawn inking process, ensuring that all the ink in the tube is consumed, thereby eliminating ink waste. Additionally, the ink emulsion properties ensure that ink can be stored for long periods of time with no separation or change in viscosity, also eliminating ink waste. Reliable ink performance means that paper isn't wasted with poor quality copies.

RISO also developed the i Quality System™ — a technology that provides automatic two-way communication between the RISO digital duplicator and its supplies (inks and masters) via tiny integrated RF tags embedded in the ink bottle and master roll. The i Quality System continually monitors the ambient properties of the digital duplicator and its supplies to ensure the highest output quality in every print. Other functions of the RISO i Quality System include alerts to users before any shortages in ink and masters occur, and prevention of improper loading of supplies, further reducing opportunities for wasted supplies.



Reliability and Durability

The heatless process also means higher reliability and durability, resulting in fewer maintenance calls that would require a technician to drive to the customer site for a repair job. In addition, long machine life reduces the amount of waste going into landfills.





A Commitment to the Environment

Riso Kagaku Corporation, RISO, Inc.'s parent company, has focused on environmental issues for many years. In 1996, the company set up an Environmental Protection Department and in 1998 established the "RISO Environmental Charter" and "RISO Environmental Protection Principles." The company actively promotes environmental protection in its daily corporate operations worldwide. This commitment to the environment is a core value, and is evident in the development of environmentally friendly printing technologies.



Conclusion

Reducing energy use and carbon emissions is beneficial for companies and the environment, making it a win-win opportunity for business and the global community. With an installed base of toner-based printers and copiers numbering in the millions, replacing even a portion of these machines with more environmentally friendly technology will have a substantially positive impact on the environment. According to the ENERGY STAR Web site, if all US offices switched their imaging equipment to ENERGY STAR qualified products, the US would save more than 15 million kWh and more than \$1 billion dollars, or \$0.09 per square foot of office space. It would also prevent the emission of over 30 million pounds of greenhouse gases.





About RISO, Inc.

RISO, Inc. (<http://us.riso.com>) sells a variety of unique printing solutions throughout the Americas. Its line of printers and digital duplicators (once known as Risographs) includes one-, two- and full color systems that reliably produce millions of copies, are environmentally friendly, and are easy and inexpensive to use. RISO's ComColor® and X1 series of inkjet printers provide fast and affordable inkjet printing for everyday communications, at speeds up to 150 pages per minute, for as little as 3¢ per page running costs.



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