

## **Processless, the environment and profitability**

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Many Canadians care deeply about environmental issues, and their concern is only likely to grow. Many printers, too, prioritize environmental stewardship, and are looking for ways to be good citizens while working in an industry that consumes many natural resources and often uses hazardous chemicals. Environmental stewardship goes beyond compliance with existing regulations for working conditions and safe disposal of waste. As a result, many Canadian printers are initiating more environmentally sound production processes.

Printers, like other manufacturers, are increasingly rethinking their operations; reducing waste; reusing as much as possible and recycling. At the most basic level of environmental awareness, printers can purchase paper with post-consumer recycled content. Some printers are increasing the energy efficiency of their operations, including using renewable energy wherever possible. And all printers can recycle—not just paper but also inkjet and laser printer cartridges. There are also significant ways to reduce the toxicity and volume of chemistry in the offset printing process, including alcohol-free fountain solutions, vegetable cleaning agents and inks, and a new generation of virtually process-free plates.

Many printers have reduced their environmental footprint by adopting computer-to-plate, particularly with reduced-process plates and chemistry-free plates. Chemistry-free plates can also be an economic boon, as many printers underestimate the total cost of chemistry, processing, and maintenance. Chemistry and processing typically adds from 10% to 30% to the cost of the plate. These chemistry-related costs include, among other things, the cost of the chemistry and processor, waste disposal, and environmental compliance. Chemistry-free plates, which include the Presstek Anthem, Fuji Pro-T, Kodak ThermalDirect, and Agfa :Azura, essentially eliminate chemistry costs, as well as the variables associated with plate processing.

When Kwik Kopy of Prince Edward Island, a fast-growing commercial printer in Canada's smallest province, decided to go to metal computer-to-plate, they only looked at chemistry-free systems. Troy Mackenzie, co-owner with his brother Shawn, says, "If we were switching to metal, why bother going with chemistry?...We wanted to get away from chemistry and the need to clean tanks and rollers." Mackenzie says they save more than six hours a month in processor cleaning. They also no longer have to store and dispose of chemistry, which eliminates two major concerns from their operation. Now they no longer have to pay someone to haul their chemistry away, and are also free from the potential liability if their disposal truck was in an accident.

Ron Wood, general manager of Winnipeg's Christian Press echoes the Mackenzies' sentiments. "Agfa's :Azura has helped increase our production at an astounding rate of about 40 percent, and that has changed the way we do business, in a very positive way," he said. "In addition, being chemistry-free, it has much less of an impact on the environment, and that's something that is very important to us."

Burtnik Printing is a 50-year-old, second-generation family-owned business in St. Catharines, Ontario, with 9 employees and \$1.2 million in annual revenues. As was the case with Kwik Kopy of PEI, the purchase of a new press—in Burtnik's case, a 26" two-colour Komori—was the impetus

for the purchase of CTP. Like most printers these days, Burtnik has seen an increased demand for short-run, four-colour work with fast turnaround times. Clearly, his film-based platemaking system was not up to the challenge from either a cost or a time perspective, so Burtnik ultimately chose the Presstek Dimension Excel 425.

The Dimension is a truly chemistry-free system, requiring only a water wash. In addition to the expected productivity improvements, increased capacity, and cost savings, the chemistry-free system improved Burtnik Printing's environmental footprint, eliminated prepress chemistries, and significantly reduced the waste stream emanating from their plant.

An important part of the decision-making process was the Dimension's chemistry-free operation. The Burtniks have always been conscious of their impact on the environment, routinely reclaiming silver, recycling paper, and more. "Now," he says, "we have virtually eliminated the need for any chemistry. Although we put out seven buckets of paper weekly for recycling, we only put three bags of garbage on the street weekly. That is a significant reduction in waste stream for us."

Burtnik does not see himself as a strong advocate for the outdoors and the environment. "But," he says, "living with Lake Ontario in our backyard has made us conscious of the human impact on the environment. This is the largest system of freshwater lakes in the world, and we consider ourselves lucky to live in such a beautiful area. The chemistry-free operation of the Dimension was an added bonus that helped seal the deal for me."

Burtnik used a recent fishing trip with his oldest son, Brandon, currently enrolled in a business management course in college, to explain how he took it upon himself to upgrade his printing business to a true chemistry-free operation in order to help preserve the Great Lakes for future generations to enjoy. Burtnik says, "We live 15 minutes from Niagara Falls and a five-minute walk from Lake Ontario. Over the years, I have developed relationships with some of the charter fishing operations here locally, and took advantage of the opportunity to take Brandon fishing last summer, shortly after I acquired the Dimension. The fact that Brandon reeled in a large salmon on that trip helped reinforce the environmental message and the role our family business is playing in ensuring that his kids will be able to enjoy the same experiences."

Signet Graphics, a seven-employee Woodbridge, Ontario firm, has been environmentally aware for many years. Owner Jez Metcalfe comments that they use vegetable-based inks and have not used an alcohol-based fountain solution for six years. Metcalfe says their Mitsubishi 6-colour half-size press works well with the buffered fountain solution. "Everyone knows why you shouldn't have alcohol. It's a carcinogen, hardens the rollers, and costs money."

Signet recently installed a Fuji Dart 4300 and chose the Fuji Pro-T processless plate for all of the "cliché reasons. There would be much less work." Metcalfe is particularly happy to eliminate his plate processor. "It freed up a lot of square footage... It's messy, stains the floor. It costs \$250 to pick up a drum, and it's a real pain to get rid of refuse and chemistry. [With the Fuji Pro-T, we don't have] the chemistry to get rid of, [nor do we have to] pay for the chemicals, or pay for the hydro... We save a lot of money."

Metcalfe feels that being one of the first in the GTA with a processless plate provides a competitive advantage. "People care about the environment. We are pitching people not only with our quality

and pricing, but also chemistry free.... We have a [smaller] environmental footprint.”

Another environmentally–friendly option is waterless printing. The Waterless Printing Association notes that “waterless printing is an offset lithographic printing process that eliminates the water or dampening system used in conventional printing. It uses a special silicone rubber coated printing plate, special ink, and typically a means of temperature control on press....In waterless printing the process of printing is changed [from a] chemical one involving the use of Isopropyl Alcohol or their substitutes to a simplified mechanical process. Instead of the press operator balancing the delicate relationship between ink and water, all that waterless printing requires is a temperature range for transferring ink to the substrate.” Waterless printing thus reduces VOCs and eliminates traditional offset’s chemically–tainted waste water.

There are very few traditional waterless printers in Canada—the WPA lists only three, although there are doubtless more. Many do not realize, however, that direct–imaging presses, such as the KBA 74–Karat Digital Offset Press, the Presstek 52DI and 34DI, as well as the now–discontinued Heidelberg Quickmaster–DI, all use waterless printing and processless plates.

Chemistry–free plates and presses are not appropriate for every plant. That does not mean, however, that those printers cannot be environmental leaders. An integrated environmental policy has compelling business advantages: the opportunity to reduce costs, increase competitiveness, and avoid the potentially expensive risks of non–compliance. In addition, environmentally aware printers benefit from an increasingly positive brand value perception. Businesses that make only a minimum effort, at best, miss great opportunities to increase efficiency and grow their business.

Thistle Printing Limited, a rapidly growing firm in North York, has proven itself as an industry leader in environmental initiatives by making environmental best practices a central part of their operation. Thistle Printing takes a holistic approach to environmental management, integrating environmental responsibility and innovation into every part of their company. Because Thistle Printing has taken this conscientious approach, environmental stewardship is not a by–product of doing business but is integral to it. Less waste and pollution, a healthier working environment, commitment to environmentally compatible products, and certified stocks and products bring improved purchasing and production efficiencies.

Thistle endorses the SmartWood Certified Forestry (FSC) program and is certified under the Forest Stewardship Council. They use as much post–consumer recycled paper and paper processed without the use of chlorine as possible. Being able to use the FSC logo, as well as that of the Rainforest Alliance, gives Thistle a leg up in getting business, particularly from environmental organizations.

To ensure that they complied with all applicable environmental laws and regulations, Thistle Printing joined the Toronto Region Sustainability Program, through OCETA, in 2000. They conducted a comprehensive pollution prevention (P2) assessment. This review included process flow mapping, equipment uses, evaluation of the way chemicals are employed and stored, and waste handling and discharges. As a result, Thistle adopted new initiatives to improve their operation, environmental impact, and regulatory compliance. The pollution prevention assessment and action plan, updated every few years, has improved Thistle’s environmental and financial performance in the form of cost savings, reduced liability, and better marketing opportunities.

Sean Roseland–Barnes, Thistle’s Director of Operations, says they try to use all of their resources efficiently. For example, in prepress, they are investigating the Vantage Plus Developer Reduction System to reduce chemical use and sewer discharge. In the pressroom, Thistle uses low VOC auto–wash systems. They also use an alcohol–free fountain solution.

Even with an alcohol–free fountain solution, solution waste includes contaminants such as cobalt, copper, molybdenum, zinc and other subject pollutants from the ink and the solvents. Thistle eliminated the problems of collection, storage, and offsite disposal of these pollutants by installing an Ultra–Filtration Membrane unit to treat the spent fountain solution and bucket wash water on–site prior to discharge or re–use. This recommendation from the pollution prevention assessment saved off–site disposal and eliminated more than 20 kilograms each of cobalt and manganese from the sewer each year.

Thistle also has instituted an innovative waste reduction initiative to reduce their ink usage. Using traditional methods of opening and mixing ink manually results in significant waste, which Thistle estimated at 25% of partially used cans. In order to combat this waste, Thistle Printing has installed an ink dosing system, resulting in less than 3% waste. Roseland–Barnes says, “our business is up 30% in three years, but our [ink] usage is down 20%. We’re saving a lot on ink, with much less waste and higher utilization.”

“Better environmental compliance leads to a much more efficient manufacturing process, which leads to lower costs, better productivity, more business, and higher profits. “We try to make sure we’re making the right environmental choice,” says Roseland–Barnes. “Everything has a cost benefit analysis. In each [environmental] initiative there’s also a benefit to us. By doing smart things but not the obvious things, we’re both reducing our environmental impact[and] keeping the bottom line in mind. You have to make smart choices.”

With the advent of more cost–effective and environmentally–sound technologies in the printing industry, it is increasingly evident that those “smart choices” are synonymous with choices that prioritize environmental stewardship. As Roseland–Barnes said, “If you’re not around in 5 to 10 years to make the right choices, what good are you really doing?”

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