



STICKING AROUND

Canadian baker cooks up cost-savings and environmental progress by switching its adhesive applying pattern



As companies across Canada continue searching for ways to reduce their operating costs, many are turning their attention to innovative packaging solutions that not only meet business objectives, but also produce environmental benefits.

The Toronto-based **Commercial Bakeries**, a producer of high-quality biscuits, cookies and crackers, offers a compelling case-in-point of this trend.

Recently, the company **Nordson Corporation's Eclipse series (EPC-30)** pattern control systems on three production lines at its Toronto manufacturing plant as part of a plan to lower operating costs by dramatically reducing the amount of adhesive needed to seal packages for multiple lines of cookies and biscuits.

According to packaging manager Colin Pope, the new adhesive pattern control systems have more than met his

the product packaging as possible to ensure tight closure is hopelessly outdated.

The implementation of a Nordson *Eclipse* series (*EPC-30*) pattern control system on each cartoner has enabled Commercial Bakeries to take advantage of a 'stitching' pattern, whereby a long, continuous bead of adhesive is replaced with shorter, intermittent beads that produce the same tight seal during the compression phase—with the individual stitches expanded to cover significantly more surface area.

For example, in Commercial Bakeries' production of maple cookies, the new adhesive pattern control systems enabled the company to replace a 125-mm bead on each side of the carton with two thin 20-mm beads—reducing adhesive consumption by 70 per cent.

By using an adhesive calculator developed by Nordson, Commercial Bakeries has been able determine a precise financial benefit of converting to a stitching process on each



The easy-to-use and install Eclipse series EPC-30 adhesive pattern control system manufactured by the Nordson Corporation can help lower operating costs by reducing the amount of adhesive required to seal packages.

ing all the time—as evidenced by ongoing research into using starch-based materials for adhesives to replace the traditional petroleum-based resins. The use of these polylactides (PLAs) will save money by replacing oil with less expensive and more widely available materials, such as corn and sugar cane.

The industry is also starting to use different paperboard to make a more sustainable packaging product.

Instead of using wax or clay coated paperboard, for example, there are new paperboard grades coming to market topped off with coatings derived from recycled PET (polyethylene terephthalate) bottles—providing outstanding barrier protection.

These new packaging materials can also increase the performance of adhesives because bonding can be achieved at lower temperatures and with less adhesive material. Additionally, changing from virgin paperboard to recycled paperboard dramatically reduces the amount of water

company's business objectives. "The new machines have reduced our glue consumption by 70 per cent," he reports. "The savings in glue alone paid for the technology in only a few months."

The Commercial Bakeries experience shows how progress in packaging sustainability can have a positive impact—intended or not—in executing strategic business initiatives.

To date, much of the sustainability focus in packaging has been limited to introducing new package designs, materials and processes.

But in many respects, such initiatives represent the relatively easy gains—the low-hanging fruit, if you like—of the sustainability movement.

It's when manufacturing companies take the next step of looking more closely at the adhesives that hold packaging together that they begin to discover new ways of contributing to the bottom line and the environment.

When more advanced adhesive equipment, materials and processes are incorporated into a production line, companies can achieve benefits in one or more of the three core areas of sustainability: reduced material usage and waste; reduced energy consumption; and greater use of sustainable materials.

To put it simply, the idea of putting as much adhesive on

of the three production lines where the Nordson controllers are installed. (See Table)

There are other techniques for achieving similar reductions in material usage and waste.

The use of foaming technology, which involves mixing a gas into the hot-melt adhesive, can produce a number of tangible benefits.

LOW DENSITY

By lowering the adhesive density, the process requires less adhesive to create a tight seal, and the resulting foamed adhesive can fill gaps in warped board surfaces—potentially reducing the incidence of "pop-opens."

In addition, the foaming technology can be put inline to work with the existing adhesive dispensing equipment—helping to leverage existing equipment investment.

The use of more advanced adhesive equipment can also help reduce energy consumption.

According to Pope, Commercial Bakeries has realized appreciable reduction in energy consumption by reducing the amount of adhesive that must be melted to support production.

The packaging industry in general can greatly benefit from a new generation of hot-melt equipment that can significantly lower energy consumption across a wide range of applications.

For example, installing a new adhesive melter can increase adhesive melting efficiency, while providing other enhancements such as better safety and performance.

Many hot-melt application systems also use compressed air to shift the pneumatic pump, which pressurizes the adhesive so it can be transported more efficiently through heated hoses to dispensing applicators.

Moreover, using equipment that is new or in top operating condition will minimize air loss from brittle and worn seals that can require machines to work harder and, subsequently, consume more energy.

New opportunities to use more sustainable materials in adhesives and paperboard are emerg-

needed in the production process. As with all important business processes, a strategic approach to sustainability requires measurement to determine the bottom-line economic, as well as environmental, impact.

A number of metrics can be used to calculate the total cost of ownership for a company's sustainability efforts.

Using some or all of the following can help packagers understand what they are getting in return from their sustainability initiatives:

- **System cost:** total retail price of the hot-melt dispensing systems, including melter, hoses, applicators, nozzles and pattern control systems;
- **Adhesive usage and cost:** amount of adhesive on product, products glued per hour, price of adhesive per pound with possible increases, and amount of adhesive purged during maintenance;
- **Air and electricity usage cost:** amount of watts consumed by the system, amount of cubic feet of air consumed, price of kilowatt of electricity and scfm (standard cubic feet per minute) of air;
- **Estimated cost of downtime** per minute;
- **Estimated production** levels;
- **Estimated increased maintenance** per year.

The packaging industry has been making strides in better understanding the true value of approaching business processes with a watchful eye on their environmental impact.

And as the need for greater business efficiency continues to converge with the desire to do whatever possible for environmental sustainability, more companies like the Commercial Bakeries take advantage of leading-edge, adhesive dispensing and applying solutions that offer two benefits for the price of one. ♦

Rick Pallante, global market manager for packaging and general product assembly for Nordson Corporation, a leading manufacturer of hot-melt and cold-glue adhesive applying systems headquartered in Westlake, Ohio.

Nordson Adhesive Stitching Savings Calculator							
Adhesive Reduction	Cost per Week	Savings per Week	Savings per Year				
	\$410.95						
10%	\$369.85	\$41.09	\$2,136.94				
20%	\$328.76	\$82.19	\$4,273.88				
30%	\$287.66	\$123.28	\$6,410.81				
40%	\$246.57	\$164.38	\$8,547.75				
50%	\$205.47	\$205.47	\$10,684.69				
60%	\$164.38	\$246.57	\$12,821.63				
70%	\$123.28	\$287.66	\$14,958.57				

The top row shows the variables that determine the cost of adhesive to support one production line at Commercial Bakeries. The lower portion shows the dollar savings per year achieved by different percent reductions in adhesive use.

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