

Green Electronics

A Feel-good or Sell Through Story?

By Frank Lenk

Regardless of personal or political views, there's no escaping the fact that the environment is on everyone's mind. The electronics industry is mobilizing, not just to clean up its own mess, but more recently looking at actually becoming a positive force, globally.

'Green' issues constitute a huge and diverse field. So we cast our nets wide and spoke with a variety of participants: companies involved in electronics manufacture, recycling, support; and even one that's trying to make a living in renewable energy directly.

The picture that emerges is largely a positive one. Though huge challenges remain, huge efforts are already underway. Even without resorting to 'green-wash,' there's plenty of good news to pass on to consumers.

Corporate Responsibility

Each of the electronics manufacturers we interviewed told a similar story. There are massive initiatives underway.

Sharp's environmental story has three parts, says Bill Friend, Assistant Vice President, Consumer Products Division, Sharp Electronics of Canada Ltd.

First, there's the company's innovative Japanese manufacturing facility. Then there are the activities by local operations, such as Sharp Canada, relating to things like recycling programs. Then, finally, there's the product itself.

According to Friend, back in 2004 Sharp set itself "the lofty goal" of reaching zero emissions by 2010. It got there a year ahead of schedule. "We are now a zero global-warming impact company," says Friend.

The next step is to become "an eco-positive corporation." This means pushing technologies like LED lighting and solar power to create a net positive impact.

Sharp's two Japanese plants have been designed with environmental impact strongly in mind. Friend notes that 100% of wastewater is recycled; 100% of heat waste; 100% of glass. The plants put out nothing to landfill.

The Kameyama (east of Osaka) plant gets one-third of its energy needs from solar. The vast Sakai (near Osaka) complex is one of the world's largest LED lighting installations, totaling about 100,000 bulbs. It also integrates facilities for a number of Sharp's partner companies, eliminating travel costs for precursor components.

Friend notes that Sharp is also one of the world's largest manufacturers of solar panels. Once at full capacity, it will be making about 1 giga-watt per year, enough to power about 400,000 homes. "We're very, very committed to this," says Friend.

So far, due to a worldwide shortage of the silicon substrate, Sharp has not been

George Craine, Business Development Manager, GEEP Inc.: "We've got a domestic solution that's cutting edge. There's nothing like it in North America."

shipping its solar panels directly to Canada, though some are making their way here via the U.S.

On the other hand, Sharp is currently looking at launching its LED lighting line in Canada. The next six months should see some early market tests.

Friend points out that only about 2% of Canadian lighting has been converted to the highly efficient LED technology. The problem is that while LED bulbs last a very long time, the initial cost is rather steep. Hopefully, this will change over time.

HP tells of a similar commitment to sustainable technology. "We have a strategy to be the most responsible IT company," says Frances Edmonds, Director of Environmental Programs, Hewlett-Packard (Canada) Co.

She notes that HP is looking both upstream and downstream. Obviously, it can offer products that will help its installed base become greener. But at the same time, it has an ability to influence its suppliers, and has begun to measure how green they are.

"The fastest way to reduce our footprint is to work with companies that have already done it," says Edmonds.

HP brands its green efforts under the Eco Solutions label. At the retail level, HP uses Eco Highlights labeling to draw attention to products that meet particularly stringent standards on energy savings and materials re-use.

Eco Highlights labels can include various significant details, from basics such as Energy Star rating, to the amount of recycled material, or even the use of eco-friendly shipping.

"We're not focusing on only one part of the cycle," Edmonds emphasizes. There are many ways to reduce environmental impact, including simple things like the use of auto-duplex printing, or HP's free Smart Web Printing software, both of which can significantly reduce paper and toner usage.

Also, today's faster, wireless printers allow users to consolidate on a smaller number of devices. Edmonds notes that even though she works in the imaging and printing group at HP, she doesn't have a printer at her desk.

HP works with the WWF, on a number of levels. For example, it helped build The Good Life site, which helped Canadians track their own carbon footprint, and see the impact of various actions they could take.

HP also works with educational institutions. For example, it has taken on co-op students from the University of Waterloo's Environment and Business program. And it helped to create the Hewlett-Packard Canada Chair in Corporate Social Responsibility at York University (in Toronto).

Internally, HP has the internal Green Advocates program, established two years ago by Edmonds herself, and now adopted by HP worldwide.

The objective is to go beyond mere hype, and really get employees up to speed on sustainability concerns. Consisting of at least 12 hours of training annually, the Green Advocates program is targeted primarily at HP's sales team. But any employee can take the course, and get credit in his annual performance review.

e-Waste Stewardship

One of the industry's most pressing concerns has been dealing with electronic waste, or e-waste. This has been addressed with the establishment of 'stewardship' programs in each province, Ontario's having come online almost a year ago.

Though the programs vary in detail, their general principle is consistent: charging a recycling fee on the purchase of electronic products, and using this to fund proper collection and disposal of the products when they reach the end of their useful life.

Although some provinces are still finalizing their programs, the manufacturers we spoke with all seemed happy with how things were progressing. While Canada may still be behind some countries in dealing with e-waste, it's ahead of others.

For example, Chantale Mantha, the Environmental Coordinator, Toshiba of Canada Ltd., notes that whereas Canada now has quite a good auditing process for the handling of e-waste, in the U.S. it varies considerably from state to state, and it therefore becomes very difficult to ensure that materials are dealt with correctly.

This has been a key improvement. The only way to ensure that electronics are properly disposed of is stringent approval of recyclers, and regular auditing to

ensure compliance. "All of the provincial agencies now have to use certified environmental recyclers," notes Friend.

"All recycling is not created equal," cautions Edmonds. Things are improving, but there have been plenty of poor practices that will only be eradicated by setting stringent standards and following up with proper auditing.

Edmonds sits on both the Alberta and Ontario e-waste stewardship boards. She's thereby able to promote harmonization between provincial programs, something she notes that HP has "very firmly in our sights."

HP was also instrumental in the founding of Electronic Products Stewardship Canada (EPSC), which administers the Recycling Vendor Qualification Process (RVQP) and the standards upon which it's based. RVQP includes both initial qualification and regular auditing of recyclers. (More info at epsc.ca.)

EPSC describes itself as a not-for-profit, industry-led organization. Founding members include: Apple, Brother, Canon, Dell, Epson, HP, Lexmark, Sharp, Sony and Toshiba. The current board includes Lloyd Bryant, V.P. and G.M. of HP's Personal Systems Group, as well as Mantha from Toshiba.

In the longer term, EPSC should be able to help with harmonization of all the provincial stewardship programs.

Manufacturers have various recycling initiatives of their own. Some predate the provincial stewardship programs; others have a narrower focus.

For example, Toshiba's Environmental Recovery and Recycling Effort (TERRE) is a program that will recycle any manufacturer's notebook computer, projector, LCD monitor or pocket PC, free of charge.

The user contacts a special e-mail (tclenvironment@toshiba.ca), to arrange a



HP brands its green efforts under the Eco Solutions label. At the retail level, HP uses Eco Highlights labeling to draw attention to products that meet particularly stringent standards on energy savings and materials re-use.



HP OFFICEJET PRO

IMPACT.

UP TO

50%

LESS COST

THAN LASER.

Colour makes every one of your presentations more impactful. With the HP Officejet Pro All-in-One and Original HP Inks, you can get compelling colour prints for up to 50% less cost per page, while using up to 50% less energy than laser.* hp.ca/impact

hit PRINT
AFFORDABLY



© 2009 Hewlett-Packard Development Company, L.P. *Cost-per-page (CPP) and energy-savings claims are based, as of June 2008, on the majority of colour laser AIOs less than \$600 and the majority of colour laser printers less than \$300, when using HP Officejet Pro products with high-capacity cartridges. Energy use is also based on the manufacturers' stated power consumption when printing. Test methods may vary. See hp.ca/research for details. Simulated images.



Robert Gumiela, Samsung Canada's Director of Marketing, poses by a tear-away display that reveals the internal operation of the firm's LED backlighting. Gumiela maintains that LEDs should last about 100,000 hours (roughly two-thirds longer than CCFL backlighting).



Sharp used this exhibit to illustrate how much more efficient the new LED-backlit LCD TV is versus last year's CCFL equivalent model (the one on the right is marked "2010 LED," while "2009 LCD" is on the left as you look at the photo). At 96 watts, the LED requires little over half as much power as its predecessor while delivering a richer picture evincing especially vibrant greens (if with somewhat darker highlights).

pickup. Products are properly disassembled by a registered ISO 14001 company, and constituents properly disposed of.

Mantha agrees that TERRE will gradually be made redundant by the various provincial stewardship programs, but notes that coverage at this point is not complete. Consumers in provinces with inadequate programs, or in remote areas, can still take advantage of TERRE.

Again, Toshiba ensures that material is properly handled. "We will only work with recyclers who are accredited," she says. "We continue to look at the whole lifecycle of the product and ensure that products are easily disassembled, easily recycled."

Toxic materials such as brominated flame retardants (BFR) and polyvinyl chloride (PVC) insulation are being eliminated from new designs. Toshiba is also increasing re-use of water and recycling of materials in its manufacturing process, says Mantha. "We're working toward zero waste and zero emissions."

An interesting program initiated by Samsung has been to recycle CRTs from hotels and commercial spaces. "We just did 10,000 screens in Vancouver," reports Robert Gumiela, Director of Marketing, Samsung Electronics Canada Inc. Samsung removes the CRT sets and takes care of recycling them.

In the longer term, e-waste will also be reduced by improvements in the technology. For example, LED backlights should last about 100,000 hours, roughly two-thirds longer than the previous CCFL type. So they'll be a lot slower to end up being scrapped.

The impact on energy consumption will be even more significant. Gumiela notes that one of Samsung's new 55" LED-backlit TVs should use 100 watts less power than a previous-generation 32"

CCFL type. "Three to five years from now, it's doubtful that you'll see any CCFL," he predicts.

Friend agrees, noting that the LED-backlit Sharp LE810 would use about 108 watts, whereas the older 60E77 with CCFL would use more like 250 watts. "It's a drastic, drastic reduction," he says.

And it's not being kept secret. "We've had some training this week with retailers. We want to make sure our associates are aware of the power story."

Even Sharp's new Quattron four-colour LCD sets have an ecological advantage. The new red-green-blue-yellow panels transmit about 20% more light, so the backlight can be correspondingly dimmer. "We can boast that it has the lowest power-consumption of any LED-backlit TV today," says Friend.

Mantha notes that there will also be significant energy savings from the move, just starting, toward solid state drive (SSD) technology as an alternative to spinning magnetic hard disks.

LED technology is also helping to reduce the amount of packaging, by making the products themselves smaller and lighter. For example, Friend points out that Sharp's recent LE810 is only about one-third the size of previous models, when packed.

He adds that this kind of benefit compounds. There's an obvious reduction in waste, but also an increase in the number of units that can be packed in a truckload. That saves on fuel costs and reduces CO2 emissions.

On the other hand, some packaging is difficult to eliminate. Toshiba has been trying to reduce the amount of expanded polystyrene foam (most people know this as "Styrofoam," which is a brand name) packaging, but Mantha notes that this is

one of the lightest packaging materials available, and hence able to reduce fuel costs and CO2 footprint. These trade-offs must be carefully considered.

Nonetheless, Toshiba looks at any way to reduce the amount of potential waste. For example, paper documentation has been slimmed down to the bare essentials, with full reference material available on the company Web site.

Greening With GEEP

Electronic gear is built to deliver a certain standard of performance and reliability. That only makes it more difficult to dispose of, when it inevitably does wear out. New products are being designed for easier recycling, but handling today's mix of e-junk is not an easy task.

Inevitably, businesses are springing up to tackle the problem. One Canadian company that's on the cutting edge of the recycling technology is GEEP (Global Electric Electronic Processing) Inc., based in Barrie, ON.

"We're pushing the envelope when it comes to processing," says George Craine, Business Development Manager, GEEP Inc. "We've got a domestic solution that's cutting edge. There's nothing like it in North America."

"Others have similar front ends," he adds, "but no one has the same back end. A lot of companies can take the process so far, then (they) have to burn what's left over."

Currently, GEEP has its advanced processing online at a half-dozen locations across Canada. Through a network of partners, GEEP has about 16 depots

nationwide where consumers can return product for processing. GEEP has three more centres in the U.S., and has partners globally.

"We're busy proliferating our centres," Craine adds. Those local centres are crucial. "You don't want to be moving product too far. The rule of thumb is that if it's more than 500 miles, it's not worth it."

Having convenient drop-off locations is important as well. A lot of this is done in conjunction with retail partners. For example, GEEP has run a program with Sony, involving about 80 of its retail outlets.

GEEP also works with the provincial stewardship programs. For example, it runs an e-waste processing plant for the city of Edmonton.

Retailers are becoming a larger part of the process. "We've seen them come on a little slower," says Craine. "They're really not set up for it." But GEEP has been working with various retailers on things like take-back programs for specific products.

GEEP is even working with manufacturers, consulting on the design of new products. Input from GEEP can help create products that will be cleaner and more economical to recycle.

But the backlog of older products has to be handled somehow. "CRTs are the biggest challenge," maintains Craine. There's the glass in the tube, and also the mercury content.

"Metals are relatively easy," says Craine. He notes that e-waste is about 70-80% metallic, and about 50% steel, by weight. Metallic waste goes to a refiner offshore. Precious metals are a small percentage of the total, but far more valuable than the rest.

"The only thing we can't deal with is the commingled plastic," says Craine. One

Carbon Neutral Batteries From LEI Electronics

Barrie, ON-based LEI Electronics Inc. has been appointed the exclusive Canadian distributor of Venom Group International's Eco Alkaline line of batteries, which the company deems the "world's first" carbon neutral alkaline batteries for not containing any mercury, cadmium, or lead.

According to Rathdrum, Idaho-based Venom, all other battery brands incorporate at least one of the three aforementioned elements.

"Other brands may limit the usage of such heavy metals maintaining levels below the 0.9 per cent that allows them to be called 'free'," explains the company in a prepared announcement. "But these harmful chemicals are still present."

The Eco Alkaline batteries have been certified as carbon neutral by www.carbonfund.org, a U.S.-based non-profit provider of carbon offsets and climate systems. They were reportedly put through a detailed third-party life-cycle greenhouse gas emissions assessment in order to receive this certification.



The batteries come in four-packs of "AA" or "AAA" sizes, single 9V blister packs, or as a two-pack of "C" or "D" batteries. The packaging and the batteries feature imagery of the Earth that further emphasizes the product's commitment to eco-friendliness.

For more information, visit www.leiproducts.com.

Toronto Wind and Solar Power

While we're considering the need for the electronics business to reduce its environmental impact, what about products specifically designed to target that need?

As its name implies, Toronto Solar and Wind Power (TSWP) is a specialist in selling renewable energy systems. This includes Sharp photovoltaic panels for larger-scale installations, as well as innovative smaller-scale products, like the Greenpower Utility System (GUS) 'vertical axis wind turbines.'

The market is very competitive, says Ed Lucas, President, Toronto Solar and Wind Power. "Everybody wants to go green, (but) nobody wants to pay for it."

GUS turbines are compact, quiet, and efficient even in very low winds. The GUS Hybrid Light Pole System is a standalone unit that can be mounted on a pole, and includes both a vertical axis wind turbine and three, 45-watt solar panels, as well as batteries and everything else needed.

These would be perfect for providing lighting on streets or parking lots, or powering devices such as security cameras. Lucas reports that TSWP has been in discussions with large property management companies such as Cadillac Fairview.

He's also pitched at least one major retail chain on the idea of self-powered kiosks in the parking lot. So far, acceptance has been limited.

"The retailer does have a social responsibility," says Lucas. However, he's well aware that businesses aren't going to convert to green power in the absence of a reasonable financial framework. "There has to be some ROI in the program," Lucas admits.

"The problem is, we're living in a country that has the cheapest electricity in the world," Lucas laments. "We have phenomenal resources. We have the ability to give it away cheap." This actually amounts to a government subsidy on non-renewable energy.

He points out that in Japan or Germany, rates are three or four times higher, and adoption of renewable energy is a correspondingly higher priority.

Nonetheless, TSWP is an example of how renewable energy technologies are already starting to make their way into the Canadian market. They're becoming a useful option for businesses looking to cut energy costs, as well a worthwhile business opportunity.

option is a process that GEEP is commercializing, involving 'catalytic depolymerization,' which can convert these materials into diesel fuel.

Unfortunately, recycling still isn't a break-even proposition. That is, the value of recovered material isn't enough to pay for the process. However, Craine stresses that there are wider benefits that must be factored in. For example, recycling reduces the need for mining of new raw material, an activity that's particularly hard on the environment.

"The key is to get it all back," says Craine. "This was all dug out of the Earth at one time."

Although companies like GEEP are bringing on the capability of dealing with e-waste in a responsible, stringently audited way, there's still a significant amount of material being dumped into the Third World.

"The biggest problem is going to be in places where material is processed without the necessary standards of health and safety," Craine argues.

Part of the problem is lack of policing at the ports. This allows e-waste to slip out of the country without proper processing. The economics might seem untenable, but Craine points out that shipping containers may arrive in Canada full of imported goods, but go back empty. They can very cheaply be filled with waste.

"The good thing is that the awareness is getting greater," he comments. "It's all about the awareness."

First, we need to be sure that material is recycled. "Don't just throw it in the bin," admonishes Craine. Next, be sure it's getting recycled properly. "Ask the question: where is it going?"

If e-waste is going to a high-tech recycler like GEEP, we can rest easy that it won't come back to haunt us.

Other Possibilities

While manufacturers are most directly able to reduce the environmental impact of electronic products, there are other possibilities. One of the most inventive has been developed by Bankers Warranty Group, which provides extended warranty coverage to a variety of retailers and product lines.

Consumer electronics use electricity, and Frank Trigo, Executive Vice President, Bankers Warranty Group, notes that over 50% of that still comes from the burning of fossil fuels. Manufacturing electronic gear uses energy as well, as does disposing of it when it's worn out. All of this contributes to a significant environmental 'footprint.'

"We asked ourselves: how can we create products and services that have a positive impact on the environment?" says Trigo.

A whole industry has sprung up, which allows anyone to pay a fee that will be used to fund projects that neutralize the effects of CO₂. For example, Trigo notes that at a modest extra charge, airlines may allow fliers to purchase a 'carbon offset' for their trip.

After considerable research, BWG partnered with TerraPass Inc., in San Francisco, to provide an extended warranty package that has a similar carbon offset bundled in. "It neutralizes the effect of those products for the length of the program," explains Trigo.

This is done by transferring part of the warranty fee to TerraPass, which in turn uses the money to fund programs that improve the greenhouse-gas balance: things like wind power, farm power, and landfill gas capture. Every ton of emissions reduced by these projects can be offset against a ton of emissions created by the manufacture and use of the warranted product.

These new carbon-neutral warranties will have to compete with the other

options offered by BWG to retailers. However, the extra cost to the consumer should be virtually invisible.

"The cost varies by product category," notes Trigo. For a larger appliance like a refrigerator, or for something like a lawn tractor, the cost of the carbon offset might be more substantial. But for most consumer electronics products, the amount should be "nominal."

"What's nice about it is the fact that it's included in the warranty fee," says Trigo. "The customer doesn't have to make another decision."

Initially, the carbon-neutral plans will be in limited distribution, targeting the larger retailers. As of this spring, BWG was negotiating with several major retailers in the U.S.

Marketing and branding of BWG's car-

bon-neutral plans would be customized for each client. As with other BWG plans, the customer would be aware only of the retailer's message.

It's another neat way of incorporating green concerns into the life cycle of a consumer product. "We're trying to make this a holistic solution," says Trigo. "What we're banking on is that retailers want to offer socially-responsible products and services."

An Epic Story

The 'greening' of the consumer electronics industry is an epic story. Each topic leads to several others, and it's almost impossible to get a complete grasp of the whole problem. What's more, it's almost impossible to judge just how effective

various efforts really are, even when they look great on paper.

Inevitably, anyone scrutinizing these things is likely getting fairly skeptical by now. "There's so much 'greenwash' going on, it's hard to get your story out," admits Friend.

Still, there's no question that the world is changing. Every company now wants to be seen as truly green. Every aspect of the manufacturing and distribution cycle is coming under scrutiny. And that recognizes the fact that consumers are expecting increasingly high standards on these issues. "We started in 2004," says Friend, regarding Sharp's own environmental programs. "Back then, consumers didn't really care. Now, they expect it."

"But," he adds, "in my view, they're still not willing to spend extra money for it." **MN**



0% | Cadmium, Lead, Mercury, CO₂

eco ALKALINES™
ECO-RESPONSIBLE BATTERIES™

CERTIFIED Carbonfund.org
A Carbon Neutral Product

Eco Alkaline™ batteries are the world's first certified carbon neutral batteries

Experience the Eco Alkaline™ Difference



By purchasing Eco Alkaline™ Batteries, you're doing your part to reduce the CO₂ and climate change impact brought about by the production, distribution and disposal of alkaline batteries.



Manufactured with 0% Mercury, 0% Lead, 0% Cadmium
Eco Alkaline Batteries set the standard for responsible disposable alkaline batteries.



Today, more and more people are mindful about the products they use every day and their associated environmental impact, and global warming contributions.



In a world where manufacturers charge a premium for Eco Friendly Products, Eco Alkaline Batteries retail at competitive prices equal to most national brands



Eco Alkaline batteries are progressive, high-quality consumer batteries with performance rivaling national leading alkaline battery brands.



- Eco Alkaline batteries are certified Carbon Neutral by Carbonfund.org. Others claim "No ADDED Mercury, Lead or Cadmium." Eco Alkaline brand batteries have ZERO of these heavy metals. ALL OTHER batteries carry trace amounts of a minimum of ONE of the three elements above. Other brands may limit the usage of such heavy metals maintaining levels below the 0.9% that allows them to be called FREE, but these harmful chemicals are still present - that's up to 900 times more dangerous materials than Eco Batteries.
- Eco Alkaline brand batteries use recycled materials where possible and contain 98% plus recyclable contents.



lei
lei electronics inc.

LEI Electronics Inc. • 18 Mollard Court, Suite 4, Barrie, Ontario, Canada L4N 8Y1 • 1-800-449-3315
Visit: www.leiproducts.com Inquiries: sales@leiproducts.com



As Seen at the GREEN LIVING SHOW