



## **Printronix T5000r Supports Sustainability Initiatives with ENERGY STAR Compliance**

By Andy Edwards, director thermal/RFID printer development, Printronix

Sustainability is a fashionable buzz word in many large corporations today but what does it mean?

Among other things, sustainability means minimizing energy consumption and carbon footprint from traditional power sources, such as coal and gas, while maximizing energy from renewable sources, such as solar, wind and hydroelectric. It also means using reducing power consumption by using more energy-efficient products.

Other sustainability initiatives include reducing the environmental impact of used product by designing them to be reusable or recyclable. This includes hard assets that are returned to the manufacturer for reconditioning and sold as remanufactured products, as well as programs where spent consumables, such as printer ink and toner cartridges are refilled to allow multiple re-use cycles of the packaging.

### **ENERGY STAR**

In 1992, the U.S. Environmental Protection Agency (EPA) and U.S. Department of Energy (DOE) introduced the ENERGY STAR program. This program is a voluntary and self-certifying program that enables manufacturers of energy consuming products to use the ENERGY STAR mark when the products they produce conform to stringent operating and idle power consumption guidelines. Since its inception, several countries worldwide have recognized and adopted the ENERGY STAR program and now actively participate in the development of the guidelines for a wide variety of energy consuming products.

The primary motive for the creation of this program was to provide a means to positively recognize products with reduced energy consumption and provide this guidance to consumers, so that they may make informed buying decisions. The benefits of these choices are to reduce the overall demand for electricity, which, in turn, will reduce the environmental impact of generating more and more power. The side benefit for business and consumers is the reduction of monthly utility bills and the resultant savings in energy costs.

Over the years the requirements to receive an ENERGY STAR rating have steadily been enhanced, encouraging not only product design improvements, but also new product innovations, such as the use of low power consumption LED lighting in traffic signals and the compact fluorescent light bulb.

### **ENERGY STAR and Imaging Equipment**

The EPA recognized early on that the office copier, fax machine and office printer are a major source for energy consumption and therefore established a separate compliance category for imaging equipment. Through consultations with a worldwide consortium of companies representing the imaging equipment industry, the EPA has developed the most recent standards. The standards are meant to challenge the industry and award the use of the ENERGY STAR mark to only the top 25 percent of products in a given category.

### **What Does This Mean for Printronix Thermal Printers?**

In many applications, the printer is printing for an average of less than 10 minutes (often much less) every hour.

For example, assume a four-inch thermal printer is setup to print one 4x6-inch label every second. For a medium volume 5,000 label-per-day application, the printer print time would be approximately one hour and 25 minutes. Whether printed in a few large batches or several small batches, the printing time over a 24 hour period averages just 3.5 minutes per hour. This means the printer is sitting idle approximately 22.5 hours per day, an average of 56.5 minutes every hour, or 94 percent of the time.

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For completeness, we also should consider both low- and high-volume printing applications. For example, for low-volume applications of 1,000 labels per day, the average print time would be only half a minute per hour or 16.67 minutes per day. In this case, the printer would be idle an average of approximately 59 minutes per hour, or 99 percent of the time. And for high volume applications of 12,000 labels per day the printer would be printing for an average of 8.33 minutes every hour, or three hours and 20 minutes per day, which translates to the printer being idle 86 percent of the time.

From the sustainability point of view, there are two implications. First, the power consumed during printing is not as significant as that used during idle mode. And second, minimizing power consumption in idle mode could significantly reduce the carbon footprint of the printer while reducing the running costs of the printer.

The Printronix SL5000r and T5000r ENERGY STAR\* family of thermal barcode printers was designed to meet the latest ENERGY STAR Imaging Equipment requirements, and has been approved by the EPA to wear the ENERGY STAR mark. No other major thermal printer company offers the benefit of ENERGY STAR compliance to their customers.

Although every customer's application is different, the example below in **Table 1** shows the potential savings when using ENERGY STAR compliant printers.

This application assumes the printing of 12,000 4x6-inch labels per day on a four-inch 203dpi thermal printer. The table compares the power used by the Printronix T5204r ENERGY STAR against an equivalent high-end competitive thermal printer.

High Volume Application	Printronix T5204r ENERGY STAR	Competitive Printer
Labels/Day	12,000	12,000
Typical Power Consumption/Day When Printing (W-hrs)	28	42
Typical Power Consumption/Day When Idle All Day (W-hrs)	8	20
Cost Electricity/kWh (California)	\$0.12	
Printer Power Cost/Year	\$22.04	\$36.38
Twenty Printers in DC Power Cost/Year	\$441	\$728
Fifty DCs Power Cost/Year	\$22,042	\$36,384
ENERGY STAR Printer Cost Savings/Year for a Large Supply Chain Application	\$14,342	

**Table 1 – Running Costs of ENERGY STAR vs Non-ENERGY STAR Printer**

As can be seen in **Table 1**, there is an approximate 40 percent energy cost reduction with the Printronix T5204r ENERGY STAR printer. With a wider deployment of multiple units in and distributed throughout a region, an energy cost savings of more than \$14,000 could be realized for this example.

In addition to the lower operating costs, the reduced power consumption of the T5204r ENERGY STAR printer decreases its carbon footprint or Greenhouse Gas emissions (GHGe).

\* ENERGY STAR Program Requirements for Imaging Equipment: Version 1.1, dated July 2009

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Typical Power Consumption/Day When Printing (W-hrs)	28	42
Typical Power Consumption/Day When Idle All Day (W-hrs)	8	20
Printer GHGe (Carbon Footprint)/Year (lbs CO <sub>2</sub> )	248	409
Twenty Printers in DC GHGe (lbs CO <sub>2</sub> )	4,959	8,186
Fifty DCs GHGe (lbs CO <sub>2</sub> )	247,968	409,320
ENERGY STAR Printer GHGe Carbon Footprint Reduction (lbs CO <sub>2</sub> )/Year for Large Supply Chain Application	161,352	

Table 2 – GHGe/Carbon Footprint of ENERGY STAR vs Non-ENERGY STAR Printer

As can be seen in **Table 2**, for this same label printer application, the non-ENERGY STAR printer causes an additional 160,000lbs of carbon dioxide (CO<sub>2</sub>) to be emitted into the atmosphere every year compared to the T5000r ENERGY STAR printer. This is a significant reduction and only can benefit our environment.

Note that this model does not take into account the additional cost of running air conditioners to cool the higher heat that non-ENERGY STAR printers generate during idle time, nor does it consider the associated carbon footprint.

In addition, the actual cost savings and carbon footprint will vary depending on number of printers, the printer work load, local energy costs, and how the power is generated (coal, gas etc). However, the key point is that ENERGY STAR printers can clearly contribute in a positive way to corporate sustainability initiatives.

## Mobile Printing

Customers that use the Printronix battery-powered mobile PrintCart also benefit when using the T5000r ENERGY STAR printer. Lower idle power translates to longer PrintCart run time.

To illustrate this point, run time models were calculated for the Printronix T5204r 4-inch, 203dpi, set for 6ips print speed and printing 4x6-inch labels. The models compared the run time of the non-ENERGY STAR printer to the ENERGY STAR printer based on the standard PrintCart configuration, which includes two 100Ah batteries. The models were run for what would be considered low, medium and high volume print jobs for mobile printing applications.

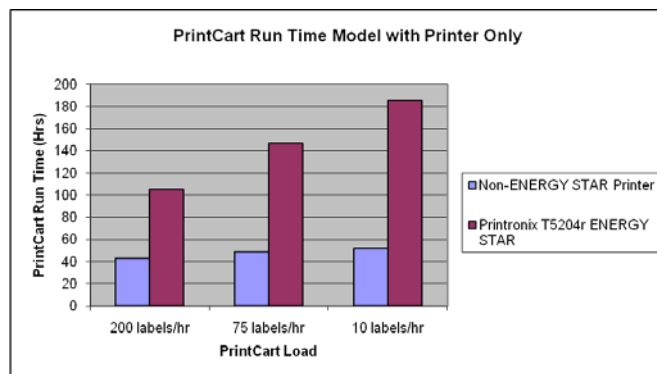


Figure 1 – PrintCart Run Time Model for Printer Only

As can be seen in **Figure 1**, when running a single printer on the PrintCart, the ENERGY STAR configured system more than doubled the run time for the high-volume applications and nearly quadrupled it for low-volume applications.

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Many mobile cart applications include additional equipment such as a handheld scanner or mobile computer, which also draw power from the battery. The model was updated to include a 25W constant load to represent power draw from a computer terminal.

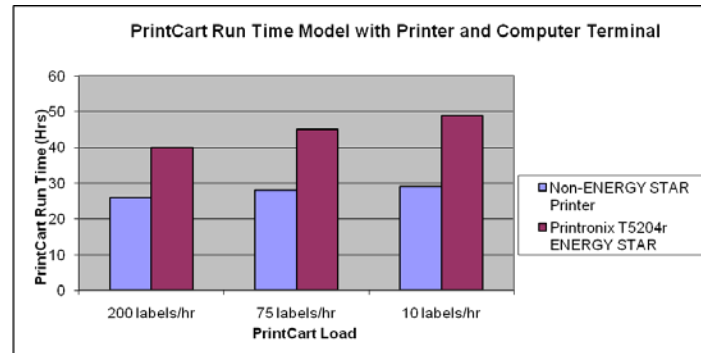


Figure 2 – PrintCart Run Time Model for Printer and Computer Terminal

As can be seen in **Figure 2**, the PrintCart run time increased more than 50 percent with the ENERGY STAR printer and the additional mobile device versus the same configuration with a non-ENERGY STAR printer.

The direct result of longer run times is to lengthen the interval between charging and this, in turn, brings several benefits:

1. **Operator intervention in the charging process is lower** – Minimizing the operator’s activities in managing equipment reduces the probability of the equipment not being ready for use when needed which might impact production efficiency.
2. **Provides flexibility in the charging process** – An inherent characteristic of all chargeable batteries is to lose their charging capacity over their useful life. Having a lower power load and, thus, longer run time will provide some compensation for this deterioration in charge capacity, and be less disruptive on the workplace charging processes.
3. **Longer run time may mean fewer mobile print stations are needed** – While the operator might normally need to switch PrintCarts mid-shift to replace a discharged print station, the longer run time may allow the unit to be charged during workplace downtime, thus potentially eliminating additional backup units.
4. **ENERGY STAR reduces energy costs** – For the PrintCart configuration, fewer charges are required for a given period of time which directly translates to energy savings.

#### Environmental Programs

Printronix strives to minimize its impact on the environment, and has ongoing programs to reduce waste and enable recyclability in all aspects of its operations. The company is a winner of the California Waste Reduction Awards Program, which is sponsored by the California Integrated Waste Management Board, a member of the California EPA. The award recognizes Printronix’s endeavors for recycling operations material and the remanufactured printer program. Both programs prevent tons of material from being deposited in local landfills.

In addition, all Printronix products comply with the European Community RoHS (Restriction of Hazardous Substances) and WEEE (Waste Electrical and Electronic Equipment) directives, which eliminate the use of certain materials, require packaging to be recyclable and provide a program for the collection of used products.

## **5-5-5 Printronix T5000r Supports Sustainability Initiatives with ENERGY STAR Compliance**

### **Summary**

The advantages of ENERGY STAR compliance are very clear, and the Printronix T5000r ENERGY STAR family of printers provides end-users a unique opportunity to take advantage of these benefits. The product goes hand-in-hand with satisfying corporate sustainability initiatives.

### **About Printronix**

Printronix is a leader in global industrial and business printing solutions, offering the most-trusted selection of ultra-reliable printers, printing solutions, supplies, parts and service for the industrial marketplace and distribution supply chain. The company offers the two most-trusted brand names in industrial printing, Printronix and TallyGenicom, to provide complete solutions for enterprises across the globe. Our comprehensive product line includes the highest-quality laser, line matrix, RFID, serial and thermal bar code printers and services. In addition to high-quality, mission-critical, reliable printers and supplies, Printronix offers printer management solutions and service. Printronix was founded in 1974 and is headquartered in Irvine, Calif. For company information, see [www.primtronix.com](http://www.primtronix.com).

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