

By TELLY HALKIAS

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ARLINGTON, Vt. - Plastics manufacturer Mack Molding is no stranger to awards. This spring, the Arlington company earned a singular honor at the 2010 Global Plastics Environmental Conference in Florida. Sponsored by the Plastics Environmental Division of the Society of Plastics Engineers, the awards recognized achievements in the areas of sustainability and recycling.

In the category of "Enabling Technologies in Processes and Procedures," Mack Molding and its customer, BigBelly Solar of Needham, took the prize with the BigBelly Solar Compactor, a patented solar-powered compacting trash receptacle for large-scale, low-cost municipal waste collection programs.

Jeff Somple, Mack's president of Northern Operations, noted that the compactor was a prime example of how an emphasis in environmental manufacturing can be a win-win situation for the corporations involved, as well as for world ecology.

"As the global cry for alternative energy sources heightens, we are especially proud of the work we did with BigBelly Solar to transform this solar-powered

product from concept to reality," Somple said. "It significantly reduces fossil fuel consumption and greenhouse gas emissions. It is gaining widespread interest, as waste management is an everyday issue that spans the globe. And it has done all this while creating green manufacturing jobs in Vermont."

Going at the green light

In the past decade, Mack Molding has made a concerted strategic effort to pursue opportunities with

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green technologies. Its leaders recognized the dual potential: business success and environmental stewardship. Somple has guided the company toward this market diversification. Previously, Mack focused on computer and business equipment manufacturing; much of that work, however, went overseas in the late

Chris Glaski, Mack metals engineer,

tests the wireless monitoring system

is full, allowing managers to optimize

(Courtesy Mack Molding)

that signals when the solar compactor

collection efficiency on a real-time basis.

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1990s.

One of Mack's newer markets is energy manufacturing. In addition to BigBelly Solar, Mack works with customers that market, among other innovations, uninterruptible power supply systems, hydrogen fuel cells and liquid submersion cooling technology for high performance computers.

Mack has implemented many energy saving systems in its manufacturing facilities, including a lighting technology project in its three Vermont plants that resulted in a Progressive Manufacturing Award in 2009. For example, Mack replaced or retrofitted 2,111 light fixtures with high intensity fluorescent systems. The resulting electricity savings are an estimated 1,747,000 kWh per year, which is equivalent to taking 167 cars off the road.

Belly full of trash

The BigBelly Compactor was one of this year's GPEC breakthroughs. Instead of requiring a grid connection, it gets 100 percent of its energy from the sun and uses less than five watt-hours per day. The solar panel converts daylight into electricity and stores it in an internal battery, allowing the machine to run at night and during periods of inclement weather.

Similar in size to an ordinary trash receptacle, compaction increases its capacity by five times, to 160 gallons. This reduces collection trips and cuts fuel use and greenhouse gas emissions by 80 percent. BigBelly can displace four out of five trash pickups, significantly reducing transportation and labor costs.

When the unit is ready for collection, a wireless monitoring system uses text message technology to signal a Web-based database that the unit is full. This allows managers to optimize collection efficiency. Optional recycling units can be attached to the compactors to separate trash from recycling.

BigBelly Solar partnered with Mack as a development partner, molder and contract manufacturer. Mack's director of communications, Julie Horst, noted that BigBelly was an industry up-and-comer, and a perfect match with Mack's capabilites.

"We had worked with one of their staff before, who was working with them as a consultant to find a contract manufacturer," Horst said. "Their products, the compactor and recycling units, are gaining in popularity and are now located all over the world."

Horst added that beyond the product's efficiencies, it's also gaining attention for being customizable. Built to order, the unit can be custom painted, silk-screened with logos, and vinyl wrapped with custom artwork, stickers and advertising panels.

Add-ons include a cigarette snuff plate, bear latch handle, hot weather handle, and two different fronts for the recycling units to accommodate either paper or cans. The newest upgrade is the installation of wireless technology.

Proving its green worth

The BigBelly is already showing signs of saving money and improving the environment. Last spring, the city of Philadelphia replaced 700 regular trash receptacles with 500 solar-powered trash compactors and 210 single-stream recycling units. Now, rather than making 17 trips each week to empty 700 receptacles at an annual cost of \$2.3 million, the city collects only five times per week at an annual operating cost of approximately \$720,000 - a 70 percent savings.

Performing 17 collections each week required 33 workers on three shifts; five collections per week under the new program require only nine workers on a single shift. The other workers have been reassigned to other, more productive tasks.

Somple emphasized that all parties involved learned that business and green initiatives promise viable future partnerships.

"Vermont has always been at the forefront of environmental stewardship, from our bans on billboards to our aggressive

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