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Solar-Powered... Waste Collection?

Georgetown University employs a solar-powered waste collection system.

BY BILL DEL VECCHIO

GEORGETOWN UNIVERSITY in Washington, DC, is a global leader in sustainability in higher education. As the Solid Waste and Recycling manager for Georgetown, I have several important goals: to bring sustainability leadership to the management of waste and recycling, to do so in a highly efficient and cost-effective way, and to keep our historic campus looking constantly

clean and green. Throughout the year, our urban campus is busy with the day-to-day activities of 17,000 to 19,000 students, faculty, and staff, as well as multiple student, alumni, and other events. A clear outcome of this high level of activity is a heavy and continuous stream of solid waste, which created the challenge of finding an efficient way to handle this load while also pushing our commitment to increased recycling.

In researching alternatives we discovered that Arizona State University, MIT, Harvard University, Carnegie-Mellon University, Loyola University, and Texas A&M were utilizing an innovative solar-powered waste collection system. This new take on public waste receptacles touted using solar energy to power a compactor resulting in 200 gallons of trash in a securely enclosed 32-gal. bin. We were also intrigued by the claims of significantly reduced cross-contamination and increased recycling rates from the companion recycling units, and the management capabilities delivered by an accompanying wireless network monitoring software solution.

While these capabilities sounded good, we were initially skeptical. Would the solar compactor system really work as well as publicized? Would this modern equipment blend in with the historic architecture of Georgetown University? We decided to do a trial test to see if it would. However to do so, I needed support from our finance people. Their initial response was, “a solar-powered what?” But like us, once they reviewed the capabilities and the strong testimonials from other universities, the more this solution looked like a unique way to address our key sustainability, efficiency, and campus beautification goals.

Great Results

The system worked so well that we went on to evaluate and determine the most problematic areas of campus for the deployment of additional solar-powered

waste and recycling kiosks. Our busiest and heaviest use area is Healy Lawn, which serves as a congregation point as well as a venue for events. The volume of waste was so high at this location that our staff needed to empty the old trashcans up to three to

We reduced the Healy Lawn trash collection from three to four times per day to once every three to five days. In the first year, we reduced the mileage driven on the collection vehicle by 25 percent, which saved fuel and maintenance costs as well as thousands of pounds of CO₂ from the air.

four times a day. This enormous time-sink to our man-hour budget presented us with an opportunity to save time and money.

We replaced 60 outdoor trash receptacles with 20 solar-powered waste and recycling kiosks, each of which has three separate sections: paper, bottles and cans, and non-

recyclable trash. The results were stunning. We reduced the Healy Lawn trash collection from three to four times per day to once every three to five days. In the first year, we reduced the mileage driven on the collection vehicle by 25 percent, which saved fuel and

maintenance costs as well as thousands of pounds of CO₂ from the air. Better still, we eliminated 2,912 man-hours of time spent collecting trash, resulting in an 11 percent labor savings, or a relative gain of 1.33 employees. We reallocated the man-hours saved to expand the recycling program.



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SOLAR-POWERED...WASTE COLLECTION?

Simplify Recycling

We discovered the key to a successful recycling program is to make it easier for people to recycle. With the addition of the solar-powered waste and recycling kiosks, we made it effortless for people in the community to recycle properly. Plus, this point source separating of paper from bottles and cans creates cleaner collection streams. The cleaner the streams, the higher return on the revenue generated from selling the recycling materials. Recycling revenue is allocated to the Solid Waste and Recycling department's budget.

Tracking Activity and Results

The solar-powered waste and recycling kiosks are equipped with a wireless network monitoring solution for tracking fullness and collection activity. The wire-

less software solution allows us to readily determine which units need to be emptied and the most cost effective way to integrate collection into our other zone-based activities. The capabilities of this solution allow us to think about work planning and reorganization for increased efficiency in ways that were never as fully visible to us before.

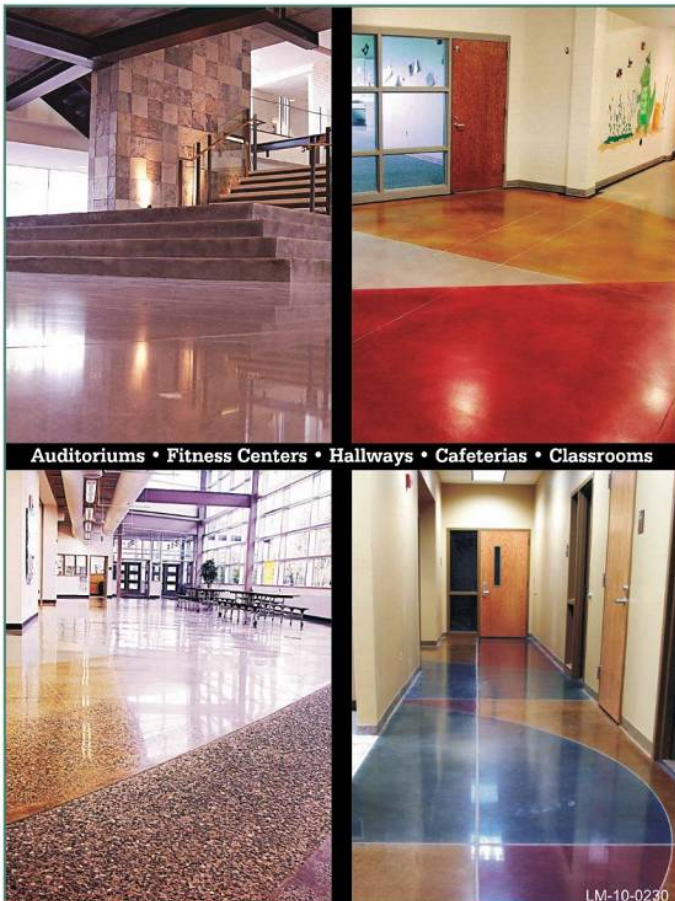
Unexpected Benefits

The solar-powered compaction system had some side benefits we didn't anticipate. When you combine the savings in operational costs with the recycling revenue, we have actually increased our department's funding by 10 percent while at the same time increasing our service levels.

Another benefit is that the solar compactor units help us promote renewable

energy, recycling, and sustainability while keeping the campus beautiful. Students and faculty love the solution, and the deployment of assets that are visibly solar-powered provides a constant reinforcement to the Georgetown community of our commitment to renewable energy and sustainable practices. With fewer collection cycles, we even decreased the amount of noise pollution. Finally — and this is a big point for me in managing waste activities in a colonial-era section of Washington, DC, right on the banks of the Potomac River — the enclosed design of the units has virtually eliminated the presence of vermin.

The solar-powered waste and recycling kiosks are relatively maintenance-free. After two of the most significant snowstorms in the past 100 years and constant daily



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CIRCLE 26 ON FREE INFORMATION PAGE

use, the most significant maintenance item was fixing a door handle.

Managing Budgets

Prior to requesting the funds to purchase the solar-powered waste collection system, you should evaluate the traffic patterns, volume of waste, and areas where litter is a continual issue on your campus. This vital information will help you determine the best deployment to increase efficiency and recycling while reducing overflows in both highly trafficked dense areas as well as remote areas that are expensive and difficult to maintain.

I deal with real budget pressures, real objectives that cascade from the University president on down for Georgetown to be a visible leader in sustainability, and real daily pressure to keep our campus looking beauti-



WE CAN SORT THIS OUT. Georgetown University in Washington, DC, has found success with the installation of solar-powered trash receptacles and companion recycling containers. The motor-driven compactors inside each trash receptacle, powered by photoelectric panels, flatten the garbage into compact bricks, making room for more garbage, until the container is filled up. Once capacity is reached, a signal goes out over a wireless network that the receptacle needs to be emptied. The trash doesn't overflow, scavengers cannot access the contents, and the single-stream recycling containers that accompany the solar trash compactors promote more efficient recycling efforts.

ful. The solar compactor system has quickly become an important and powerful tool for me in achieving these objectives. **Real**

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