Zero-to-Landfill: Preserving Planet and Profit

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Many manufacturers view sustainable practices and cost savings as an either/or proposition. Either a company can do what is best for people and the environment, their thinking goes, or it can address its bottom line. Ecology, they believe, costs extra.

Today, that thinking appears shortsighted. As giants like Xerox and Toyota and other industry leaders are demonstrating, sustainable practices yield substantial cost savings in addition to their other, better-known advantages (preservation of natural resources and favorable public perception). These practices are well within the reach of manufacturers of all types, sizes and industries. Their adoption, however, takes a look beyond the quarterly balance sheet toward the long-term view of the “triple bottom line.”

Zero-to-landfill as a cost-out strategy

The movement toward manufacturing sustainability has developed its own vocabulary, which speaks simply and eloquently of the movement’s goals. For instance, sustainability advocates often speak of zero to landfill, which is the principle that every product, every component, every material should be reused, remanufactured or recycled after it reaches the end of its useful life.

Manufacturers can implement zero to landfill, and realize the associated savings in the same way they approach cost-out: by closely examining the process to find room for improvement. At Plug Power, for instance, we regularly received shipments of components that were wrapped in foam, then protected with bubble wrap on a wooden pallet. Unwrapping the parts required hours of labor and dozens of trips to the dumpster. We resolved the issue by working closely with the supplier to create a reusable crate and wrap, generating considerable savings in labor and waste disposal costs.

Many more opportunities lie in the product itself, and here another sustainability concept comes in. Far beyond recycling, *remanufacturing* begins with the disassembly of used product. Each component is cleaned and carefully evaluated. Defective, broken or worn parts are restored for future reuse where possible, and replaced with other parts (new or, preferably, restored themselves) where necessary. The product is reassembled and tested to ensure the same working condition as a new product.

At first glance, such a process would seem to generate more cost than cost-out. A closer look, however, reveals a different picture. Remanufactured units require fewer new materials than new units and generate far less waste than units that are summarily disposed. Just as important is the energy savings: According to a Massachusetts Institute of Technology study on the remanufacturing of automobile components, about 85% of the energy expended to make the original product was preserved in its remanufactured counterpart.

Sustainability in the real world

It is hard to argue with zero-to-landfill as a concept. But how does it play out in the marketplace? The fact is that companies known for their best practices are adopting the idea, with notable results. Perhaps best known is Xerox's zero-to-landfill photocopier. The Document Center 265 Family is 97% recyclable, exceeding all standards for environmental and energy efficiency (including Energy Star and the exacting German Blue Angel standards). In this way, the copiers benefit not only the environment, but Xerox itself: remanufacturing of the units is expected to generate $1 billion in savings.

On the automotive front, two of Toyota's U.S. engine plants have achieved zero landfill status as part of the company's environmental action plan. Both use a variety of strategies to eliminate waste, including waste-to-energy production, reduction of materials usage, and the recycling of oil, paper, plastic, glass and manufacturing waste. In the process, the company has reaped cost benefits as well. To cite just one example, excess spray in the painting process creates slurry that must be carefully disposed. By cutting the spray to reduce waste, Toyota also reduced the costs of waste disposal.

Benefits are not limited to global companies. At Plug Power, we reserve the right to repurchase our fuel cells at the end of their useful life. Partly as a result of our zero to landfill initiative, each unit 2,200 lbs. of steel, rubber and plastic is currently more than 85% reusable. As a result of zero-to-landfill, we netted over $150,000 in cost savings last year alone.

While these companies have enjoyed the cost benefits of zero-to-landfill, their motivation runs deeper. They and many others like them Siemens with its 95% recyclable dishwasher, Nissan with its lead-free electrocoat technology have realigned their corporate culture to the "triple" bottom line: people, planet and profit. By emphasizing all of these, they commit themselves not only to long-term growth for their shareholders, but also the long-term viability of the planet itself.

Eyes on the horizon

If these principles are so successful, what keeps other companies from adopting them as well? The answer lies at least partly in two management practices that currently hold sway in the marketplace. First is the priority placed on quarterly results. Managers are under extreme pressure to deliver value, not so much in the long term, but now. As a result, many best practices that hold tremendous long-term benefit are discarded as detrimental to the next earnings report.

So it is with sustainable practices: Most are more expensive in the short run than their traditional counterparts. The cost savings often do not appear unless one looks at the entire product life cycle, including end-of-life costs. It is at this final stage that such practices as remanufacturing are clearly more cost-efficient.

Related to this is the frequent disconnect among departmental priorities. A plant cleaning process, for instance, might be superficially more time- and cost-efficient if it incorporates a highly caustic cleanser. However, the department responsible for the process may not take into account the increased cost of disposal for this cleanser, a cost borne by another department.

How to overcome these challenges? Plant managers can start where effective change usually begins: with the executive team. The best way to win their commitment to sustainable practices is to show them a clear benchmark: a

competitor in their industry, a company admired by the CEO, or another respected concern that has adopted sustainable practices and shown solid financial results. Make no mistake about the scope of this task. Moving even a single plant toward sustainable practices, let alone an entire corporate culture, takes a sustained effort and considerable time. Yet here the human element comes into play. Most people like to do good and want to make a positive impact on the environment. That basic instinct, together with the long-term benefits, may well be enough to win over management in many a corporate culture.

Fuel cell manufacturer Plug Power, Latham, NY, is successfully pursuing a zero-to-landfill approach to manufacturing: No part of its product or its operation finds its way to the trash.

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