

Polystyrene: From Pollutant to Profit

New machine helps Los Angeles become first U. S. city to recycle polystyrene foam.

Polystyrene, or Styrofoam, as it is commonly referred, has long been the bad guy of the recycling world. Though ideal for protecting and transporting fragile goods without added weight, its non-biodegradable polymers make it a major environmental pollutant that lingers in landfills, clogs waterways and storm drains, and litters land and sea. Efforts to recycle the lightweight foam have historically been cost-inefficient or, in the case of melting, downright dangerous. Now, with polystyrene bans in place in over 100 U. S. cities, Los Angeles stands to be the first to make polystyrene recycling a profitable and eco-friendly venture.

The initiative is the result of a convergence of interests, a sound business plan, strong political will, and the use of innovative equipment that is revolutionizing the polystyrene recycling industry.

Two years ago, Olympic Wire and Equipment's (www.olympicequip-

ment.com) CEO, Jim Walker, began searching for a solution to mounting surpluses of post-use industrial polystyrene.

"We were getting more and more inquiries from customers with polystyrene issues," said the CEO of the equipment and service provider to the waste and recycling industry. Calls were coming from furniture and electronics distributors that package with polystyrene as well as from large companies facing disposal fees of more than \$10,000 per month. "If you look at what's going on in their bins, it's almost 80 percent Styrofoam, which is 90 percent air," said Walker.

Walker's dissatisfaction with high-maintenance, hydraulically-operated recycling machines and carcinogen-releasing melters available in the U. S. led him to the European market where polystyrene has been successfully recycled for years. The Screw Compactor, manufactured by a Danish company,

seemed to be the right fit for his customers.

"The Danes are the world's largest exporter of fish and everything gets shipped in Styrofoam," said Walker. "We came across this machine and found that people were happy with it. We started importing it about nine or ten months ago and it's just been going gangbusters."

Earlier polystyrene recycling initiatives were hindered by the high cost of transporting the light, bulky material. Olympic's innovative and economic recycling solution eliminates the shipping problem by densifying the foam to a ratio of 50 to 1. The unique, odor-minimizing, volume reduction process, which can be hand or conveyor-fed, breaks the material up and drops it into an auger. The machine then compacts and extrudes the material into 19-lb/cu ft blocks, which can be marketed or shipped. The end product can produce a full overseas container load of 40,000 lb.

The Green Solution

Plagued by an abundance of everlasting polystyrene litter, the Los Angeles County Board of Supervisors considered, in early 2007, joining their colleagues in Oakland, Santa Monica, and other municipalities by banning the use of the foam in restaurants and other industries. Meanwhile, the city's bureau of sanitation was contemplating an alternative solution.

"Styrofoam is being recycled in Japan, China, and elsewhere," said Alex Helou, the bureau's division manager. We thought the city should look into that."

"The problem with bans is enforcing them," said David Firestone, recycling director of Timbron International, a Bay



Polystyrene is manually fed into the feed hopper of the Runi screw compactor.



The screw compactor densifies the polystyrene with hydraulic, electronically-controlled jaws that maintain an almost constant compression pressure.

Area company that transforms recycled polystyrene into green building materials. Even with local restrictions in place, said Firestone, polystyrene still comes in through shipments originating from outside the banned area. A better solution is to find environmentally friendly ways to use the discarded material.

While California provides economic incentives to recycle certain materials, the lack of state-sponsored incentives for polystyrene has put the burden on private companies and other agencies to develop business models to make the venture worthwhile.

In the case of Los Angeles, Bestway Recycling, a Los Angeles material recovery facility that contracts with the city, will accept and process polystyrene collected through the city's residential curbside collection program. Bestway will use Olympic's Screw Compacter supplied through Olympic Wire and Equipment to recycle the material. Timbron will then obtain the processed foam to make interior moldings sold commercially at home improvement stores like Lowes and Home Depot.

The plan is part of a larger effort to meet Los Angeles Mayor Antonio Villaraigosa's goal of recycling, by 2015, 70 percent of the estimated ten million tons of trash generated in the city each year, according to Helou. It has been empowered by the changing landscape in the market for recycled products, particularly in the building industry.

"A few years ago, there was no market for polystyrene," said Helou. "We had to pay \$30 a ton to get rid of it. Now, the city will get paid about \$25 a ton.

For the residents of Los Angeles, the difference will be meaningful."

Timbron is now developing several more products made from the material. "We're always looking for other ways to use recycled polystyrene," said Firestone. "It's a good alternative that's safe for the environment, and it reduces the amount of trees being cut down because it's a wood substitute."

Helou hopes that Los Angeles' surrounding municipalities will piggy back on the city's initiative. "The cities around L.A. can use the same recovery facility and sell the product on the market," he said. "All cities can benefit from what L.A. has gone through."

Success of the program hinges on Bestway's ability to collect a sufficient amount of polystyrene from the city's 750,000 residential pick-ups to turn a

cost while providing the city with a valuable service. David Cho, the company's CFO, hopes to be in the green by the second year.

With the price of petroleum, a key ingredient in polystyrene, showing no signs of falling, Cho predicts that recycling will become more attractive. "In the long run, it will be cheaper to recycle than to make new material," said Cho.

The city is currently working with Los Angeles County to expand the program, said Helou. "We're really excited about it," he said. "If it works overseas, why not here?"

Olympic's Screw Compacter can densify all types of polystyrene, including EPS and EPP as well as PET bottles, PE film, aluminum cans, and other materials. Olympic Wire and Equipment, the exclusive distributor of the Runi screw compactor in the western United States and Canada, offers the machine in three model sizes: the small unit can densify 55 lb/hr, the medium can densify 250 lb/hr, and the large can



Compacted blocks are produced from the polystyrene at different rates by the three models of screw compactor available: 55 lb/hr, 250 lb/hr, and 500 lb/hr.

profit. To that end, the city launched a public education initiative on July 1, which included informational billboards and signage on busses and garbage trucks. New blue bin stickers were also issued that inform residents that they can place polystyrene in the bins along with other recyclable materials.

Bestway's initial goal is to cover its

densify 500 lb/hr. Stations can be added for a maximum capacity of 3,000 pounds per hour. The machine's footprint size makes it an ideal solution for recycling plants, material recovery facilities, and large distribution warehouses. For more information, contact James Walker at 949-646-9731 or jw@olympicequipment.com. 