



## Reverse Logistics: The Future of Reusable Packaging

With rapidly increasing interest in sustainable packaging materials, many companies are choosing to ship their temperature-sensitive products in reusable shipping containers rather than traditional cardboard boxes. The idea of a reusable shipper is exciting and proof that companies are "thinking green." But how does it work in practice? How can a company be sure the oncology medications they've just shipped cross-country don't contaminate the box's next payload? And how would that company know they're truly getting *their* boxes back – and not someone else's?

William Cain, director of Warehouse Asset Management (WAM), a cold-chain logistics provider based in Spring Branch, Tex., had these questions and more when he bought his first order of GREENBOXes from Minneapolis-based Entropy Solutions. Handling temperature-sensitive shipments of materials like medications and vaccines for life science companies himself, he saw the promise of GREENBOX, but knew there must be a strict system in place to ensure the boxes were being inspected and cleaned properly before returning to their original owners.

Cain partnered with Entropy to spearhead their innovative reverse logistics model and establish their very first reclamation center.

### The idea behind "reverse logistics"

Reverse logistics – simply meaning end users send a product back to the supplier once they're through with it – isn't a completely new idea. For example, many printer ink cartridge manufacturers ask consumers to send their empty cartridges back to be refilled or recycled. It is new, however, to the temperature-sensitive shipping industry, and driven primarily due to the problem of packaging waste.

Currently, more than one-third of the earth's landfills are filled with packaging waste. Cardboard boxes and expanded polystyrene (commonly known as Styrofoam) – traditionally used to ship temperature-sensitive payloads – are two of the biggest culprits. Europe and Asia are leading the way in packaging waste regulations, requiring entire countries to phase out disposable packaging material, but so far the United States lacks any similar directive.

Entropy Solutions' reverse logistics model ensures a company's purchased or leased GREENBOXes are used again and again (a single box can be used 30+ times), which virtually eliminates packaging waste and significantly drives down shipping and logistics costs.

"Everyone benefits from the reverse logistics model when using GREENBOX," Cain said. "When a box is used over and over, it represents a huge savings to customers."

### The reclamation center

WAM recently handled a shipment for a Houston-based life science company, who loved the idea of GREENBOX, but were concerned they didn't have the infrastructure to manage the reverse logistics and cleaning process necessary to operate reusable packaging. They were excited to learn about Entropy's established reclamation center that could handle the entire process for them.

"It's taking the burden off companies that are not resourced or structured to handle the reverse logistics function – the process is perfect for those who want to ship reusable but just can't handle it on their own," Cain said.

When a consumer or pharmacy receives their shipment via GREENBOX, they simply affix the enclosed return mailing label and set it on their doorstep. A carrier, such as UPS, FedEx or the United States Postal Service (USPS), collects and ships the box to the designated reclamation center where it's readied for its next use.

Upon arrival at a reclamation center, the GREENBOX is scanned and goes through a rigorous inspection and cleaning process in accordance with regulatory standards. A reclamation center employee carefully inspects each component of the GREENBOX to ensure they're all within strict Entropy quality standards. Should any component (the hard plastic outer shell; Thermal-Lok™ insulation panels; and E-Packs, filled with Entropy's patented, organic phase change material) require replacement, it's removed and replaced, and the system is put back into circulation. Because of GREENBOX's unique, multi-component design, the whole box never needs to be replaced. And because it's 100 percent recyclable, any removed component is shipped back to Entropy where it's ground down and reused.

Next, the GREENBOX is thoroughly cleaned, first removing all labels and mailing tape, and then applying an environment-friendly cleaning solution to ensure the box is left with no trace of residue. The box is then sent through a UV tunnel where sanitation occurs. Finally, it's shipped back to its original owner in palletized unit loads, ready for re-use.

"When a customer receives their boxes back, they are essentially brand new," said Cain. "And customers can rest assured knowing this box was theirs to begin with."

Each box contains a bar code and serial number unique to that specific box and customer. This information, along with Entropy's proprietary tracking software, provides customers the ability to track various pieces of data, such as shipping history, number of uses, cost per use, etc. Customers can also input as much identifiable information about a box as they wish, for example, what type of payload was shipped in that box.

### By the numbers

"For the reclamation process to work, it has to be cost effective," said Cain. "Customers must know that even with the process built in, they're getting a much better deal than they would with traditional cardboard, EPS, and gel packs."

In 2007, WAM handled a shipping project for a company selling the influenza vaccine. The project required 115 boxes and totaled 1,004 shipments when all was said and done (approximately nine shipments per box). WAM's initial investment was around \$11,000, but Cain estimates they saved approximately \$4,000 over what they would have spent on traditional "one-and-done" cardboard shippers. They also eliminated more than 3,000 cubic feet of landfill waste.

WAM also saved big on shipping costs. Because of GREENBOX's unique construction and phase change technology, it can be shipped via ground transport versus overnight express, and still ensure the product arrives within the desired temperature range. WAM spent approximately \$25 per box shipping ground, compared to the \$75 Cain estimates he would have spent shipping traditional boxes. That's another \$50,000-plus in savings, in shipping costs alone.

### The future of reusable packaging

The cost savings are just the beginning of the reverse logistics model's growing popularity among life sciences industry leaders. As companies look to "green" their practices overall, searching for a more sustainable way to pack and ship their most precious products just makes sense.

"Everyone is pushing for a greener world," Cain said. "Companies are beginning to see they can ship their temperature-sensitive items more cost-effectively, with less impact on the environment."