

## Panasonic Shikoku Electronics Corporation of America

Panasonic Shikoku Electronics Corporation of America (PSECA), a subsidiary of Japan based Panasonic Shikoku Electronics Corporation, manufactures a variety of consumer electronics products such as LCD multimedia displays (MMD) and combination TV/VCR/DVD television units under the brand name Panasonic at its Vancouver, Washington manufacturing facility. PSECA, which is ISO 14001 certified, understands the need to be environmentally responsible, not only in their use of outgoing packaging material, but also for their incoming and internally generated packaging waste. This policy follows in line with PSECA's environmental policy:

*"Panasonic Shikoku Electronics Corporation of America, Inc. (PSECA), a manufacturer of consumer electronics products, acknowledges that we have a responsibility to be good citizens of the United States. We, therefore, pledge ourselves to the prudent, sustainable use of the earth's resources, the prevention of pollution and the protection of our natural environment. In doing so, we are committed to comply with all applicable environmental legislation and regulations, and other requirements relating to its environmental aspects to which we subscribe, while continually improving the performance of our environmental management system.*

*Environmental performance objectives and targets will be established and evaluated by the Management Review Committee at least annually to accurately reflect our commitments, and we will allocate the resources necessary to fulfill these objectives.*

*This policy will be made available and communicated to all persons working for, or on behalf of the company. This policy will also be available to the public."*

In their continuing efforts to meet these environmental goals PSECA has instituted several waste prevention and reuse programs with the purpose of minimizing overall environmental burdens associated with packaging. PSECA is also involved in a comprehensive recycling program with a recycling rate of over 92% which reduces the amount of solid waste sent to landfills, reduces raw materials use, and makes good business sense for both the revenue generated and the avoided disposal costs.

This case study details three of PSECA's many successful packaging and waste-related initiatives. These three initiatives contribute more than \$900,000 annually to PSECA's bottom line.

### **Closed-Loop Reuse of Vendor Packaging**

The first example of a waste prevention and reuse program can be found in the manufacturing and assembly of cathode ray tube (CRT) televisions. Each vacuum picture tube is pre-assembled at an overseas contracted manufacturer and then bulk shipped to PSECA's Vancouver facility on reusable plastic trays. Two identical trays (one for the base and one for the cover) form a pallet that will hold 8 picture tubes.

The tray that holds the picture tubes in place also acts as a shipping pallet. This reduces overall packaging material by eliminating the need for any kind of an external shipping pallet. Since the two trays are identical, after each package is unloaded the top tray is flipped over and nested with the base. This creates a compact stack of trays ready to be loaded into a cargo container and returned for reuse at the overseas manufacturing facility.

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The reusable plastic pallets were used to ship 58,229 CRT picture tubes shipped at 8 per pallet, which translates into a total of 7,279 incoming pallets per year. Because there are plastic trays on both the top and bottom, an estimated 14,558 trays are shipped per year (7,279 pallets x 2 trays per pallet). Each plastic tray weighs 4 pounds, costs \$6, and is reused at least twice in a one year period. Assuming (worst case) that each tray is only used twice in a one year period, then a total of 7,279 plastic trays are in circulation. By reusing instead of purchasing new trays, in each 6 month period after the initial investment PSECA is saving \$43,674 (7,279 trays x \$6 per tray).<sup>1</sup> A total of 800 trays can be returned in one trailer at a cost of \$1,200 per container or \$1.50 per tray. This brings the total savings to \$32,756 in each 6 month period (\$43,674 – (7,279 trays x \$1.50 per tray)). The added environmental benefit is a savings of 29,116 pounds (7,279 trays x 4 pounds per tray) of plastic material every 6 months.



Figure 1: Reusable CRT Plastic Tray

PSECA does not see a direct savings by utilizing the reusable pallets as they are owned by the overseas contract manufacturer. However if the reusable pallets were not used PSECA would see higher per unit costs as they would be paying for the increase in packaging.

#### **In-House Corrugated Box Reuse**

A second example of packaging reuse is seen in PSECA's plastic molding operations. PSECA manufactures the majority of their injection molded plastic components (casings, etc.) at their Vancouver location. A weekly average of 5,800 CRT units and 5,000 MMD units result in a large inventory of injection molded components. To keep the inventory manageable the plastic components are staged in corrugated cartons and moved to various manufacturing centers throughout the facility. The corrugated cartons are reused in-house.



Figure 2: Nested Trays in Cargo Container

An average of 2,000 empty cartons are required by the in-house molding facility in an average week.

Some parts take several weeks to move through inventory. Because this is a rotating system (some cartons are in use while others are broken down for storage) PSECA has approximately 10,000 of these heavy-duty cartons in their inventory at any given time.

Each carton has been found to have an average reusable life of 5 years and a replacement cost of \$6. Here the gross savings from reuse is \$624,000 per year (2,000 cartons per week x 52 weeks per year x \$6 per carton) and the cost to purchase 10,000 new cartons is \$60,000 (10,000 cartons x \$6 per carton). Since each carton can be reused for an average of 5 years the net savings after subtracting out the initial cost becomes \$3,060,000 (\$624,000 x 5 years - \$60,000), or \$612,000 per year. Any added labor costs to break down and save these

<sup>1</sup> This analysis assumes that if PSECA were not reusing the plastic trays they would be throwing them away and purchasing new trays. If PSECA was not interested in reuse, then they or their vendor may have chosen a less expensive (and less durable) means of transporting the CRT picture tubes. With this in mind the per-use cost savings may actually be somewhat less than the full \$6 to purchase a new tray.

cartons for reuse are negligible because the cartons would need to be broken down even if they were to be recycled. No additional warehouse space is required to store the used cartons. If the used cartons were not utilized new cartons would need to be in their place. At an average carton weight of 2 pounds, material savings are estimated at 208,000 pounds of corrugated fiber per year (2,000 cartons per week x 52 weeks x 2 pounds per carton). It becomes readily apparent that it makes environmental as well as financial sense for PSECA to save and reuse these cartons for their internal molding operations.

### **Recycling**

A final example showing the benefits from being environmentally responsible is seen in PSECA's comprehensive recycling program. Each year PSECA generates a large amount of waste from its manufacturing operations and strives to recycle as much as possible. For 2004 total recyclable and non recyclable waste generated was just over 3,000 tons.



Figure 3: Used Cartons Stored for Reuse



Figure 4: Cartons Being Setup for Reuse



Figure 5: Corrugated Baler



Figure 6: Scrap Plastics from Molding



Figure 7: Scrap Films

PSECA has set up a program with local recyclers who drop containers for each material on site and then pick up the containers once they are full. If it were not for the recycling program most of this waste material would likely end up in landfills and would cost PSECA a significant amount in removal and disposal fees. The following is a break down of the generated waste and amounts that were recycled in 2004.

Total Waste Generated	3002.9 Tons
Recycled Materials:	(Tons)
Corrugated	998
Paper	14
Film	22
Plastics	608
Wood	352
Ferrous Metal	28
Non-Ferrous Metal	10
Other	787
Total Waste to Landfills	184
Total Recycled	2819
Income From Recycling	\$332,427

**Table 1: PSECA 2004 Recycling Breakdown**

Of the total waste generated only a small portion (184 Tons or 6.12% of the total) was not recycled but was landfilled instead. With the recycling program, PSECA has turned this potential waste material into a rather large income generator while at the same time benefiting the environment by providing other manufacturers with feedstocks that displace virgin resources.

#### **Other Examples of Packaging Waste Reduction**

- In addition to reuse of corrugated boxes for injection molded parts, PSECA also utilizes custom heavy-duty plastic pallets for internal use. This allows the pallets to be re-used many more times than conventional wooden pallets.
- Some injection molding is subcontracted to a manufacturer in Pennsylvania. That contractor ships parts to PSECA using a durable corrugated box. Once emptied, the boxes are flattened and shipped back to the contractor for its reuse, or are reused by PSECA to ship finished products to certain overseas markets.
- Certain electronics components and assemblies are shipped to PSECA from an overseas vendor using large bulk boxes, as shown in Figure 8. This replaces the prior practice, which was for each assembly to be packaged in its own corrugated box. This change significantly reduces packaging use and shipping costs.



**Figure 8: Bulk Shipments of Assemblies**