

Fresno recycler finds better way to handle toxins

By Tim Sheehan / The Fresno Bee

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As flat-panel TVs and computer screens take over American homes and offices, they're rapidly displacing millions of old glass picture tubes and monitors destined for the scrap heap.

Because they are coated inside with toxic chemicals, the heavy old tubes cannot be thrown away in landfills. But the chemicals make the tubes tricky -- and expensive -- for recyclers to handle.

A pioneering system now in place at a Fresno recycling company not only increases the environmental safety of cleaning the glass for smelting, but also the profit margin for the material.

"For too long, glass has been a challenging part of the electronic recycling puzzle," said John Shegerian, chairman and CEO of Electronic Recyclers Inc. Shegerian recently invested about \$1.2 million to install pollution-free "dry washing" equipment to remove chemical coatings from the smashed glass tubes.

The system and its 40-person processing line, housed in a 40,000-square-foot building at the south end of Fresno, is the first of its kind in the U.S., Shegerian said.



John Walker/The Fresno Bee

David Estrada cuts metal bands from TV monitors being recycled at Electronic Recyclers International in Fresno.

said Anthony Borges, recycling operations manager for ERI. Metal innards from the tubes also are sorted out for sale, and the powdered residue from the chemical coatings are captured by elaborate air-filter systems and stored in drums for disposal.

The system was developed and built by a company in Europe, where it already is being used in 18 countries.

Cathode-ray tubes -- the glass tubes in TVs and computer monitors -- contain aluminum/phosphorus coatings inside the screen panels, and lead in the rear portion of the tubes. Before the glass can be melted down for reuse, those chemicals must be stripped away.

"The key is doing this without any emissions," Shegerian said.

The new facility can process about 120,000 pounds of glass tubes each day, separating the thicker, high-value glass from the screen panels from the thinner, cheaper rear parts of the tubes,

Before installing the system, Shegerian said ERI -- like other electronic-recycling companies -- outsourced glass cleaning to companies that use a wet-wash system to remove the coatings. Shegerian said that typically costs companies between 10 and 25 cents per pound -- a cost that eats into a company's profits.

With its dry-washing system, which tumbles batches of glass chunks and allows friction to remove the coatings, ERI can clean its glass in-house for about 7 cents a pound.

The lower cost boosts ERI's net profit to \$70 a ton on the panel glass and a break-even level on mixed glass from the rear part of the tubes, Shegerian said. At that rate, he added, the new equipment should pay for itself within a year.

ERI plans to install the new dry-washing system next year at recycling plants it operates in Massachusetts and Indiana.

Beyond the automated tumblers and filtration system that are the heart of the process, the plant puts people to work at several key points in the line. At the start, workers cut away steel bands that hold the tubes together while others crack open the tubes and remove the steel parts inside. As the parts ride on conveyer belts toward the tumbler, other workers pluck out other stray metal pieces.

After the tumbling, workers with keen eyes and quick hands segregate the higher-valued panel glass into what Shegerian calls "sacks of gold" -- large shipping bags that hold about 3,000 pounds each.

Those bags end up getting loaded into shipping containers bound for Asia, to be sold to smelters in Malaysia, India or South Korea. The recycled glass is used to manufacture new cathode-ray tubes for the Asian market, Shegerian said, as well as for tiles and fiberglass around the world.

Shegerian estimates it will take about eight to 10 years for American consumers to replace all of their old tube-based equipment, ensuring recyclers a supply of glass tubes for the better part of the next decade.

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