

WHAT HAPPENS TO ... RECYCLED INK JET CARTRIDGES

Worldwide, 1.1 billion inkjet cartridges are tossed out every year. But Hewlett-Packard (HP) and other companies are working to close the loop, creating new cartridges from dried-up old ones.

In 2007, HP received 39 million cartridges for recycling. Every day more arrive in prepaid mailers from individuals and in bulk from companies.

In this glass cage, machinery removes inkjet cartridge tops, takes out ink bags and shreds the white plastic cartridge bodies.

During the deconstruction process, a robot removes internal ink pouches. They are sent for metal recovery while the plastic is retained. Recycling is often divided into open-loop and closed-loop processes. Open loop involves reclaiming materials for sale to other industries. At HP's plant in Nashville, Tennessee, about 25 percent of returned cartridges are recycled for use in new products.

In the final step of the open loop process, cartridges are ground down to a mulch of high-density polyethylene (HDPE). The plastic is then sold for use in shipping containers, auto parts and carpet fibers among other products.

HP cartridges include metals, foam and plastic. After removing leftover ink, the cartridges are shredded and these materials culled from the remains.

This heavy piece of machinery separates shredded plastic from metal in a "gravity sink/float," a water bath in which plastic floats to the top while foam and valuable metals sink beneath.

Materials arriving from the gravity sink/float pour through chutes into separate bins for plastic, magnetic metals, nonmagnetic metals and copper mixed with foam. An operator monitors the flow of materials.

The salvaged copper comes mixed with huge amounts of foam. The copper is then extracted in a smelter.

As of the end of 2007, HP had produced 200 million cartridges that included 60 percent post-consumer recycled plastic by weight.

New cartridges roll off the line with their return mailers attached so the process can be repeated.