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Date: August 2009
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SHREDDING EQUIPMENT FOCUS

by michael keough

A Streamlined Approach

When electronics recycler E-Structors moved into a new facility, it took a closer look at its processing techniques, particularly its shredding process.



At E-Structors we specialize in the secure destruction and recycling of obsolete electronics for companies, government agencies and municipalities throughout the mid-Atlantic area. Since we first opened in 2003, the demand for our services has significantly increased and so has the volume of electronics coming through our doors to be dismantled, shredded and prepared for recycling.

By 2008, we had outgrown our original facility, and our lack of space was preventing us from keeping materials moving through our building as quickly and efficiently as we would have liked. Last fall, when we moved our operations to our new headquarters in Elkridge, Md., our biggest concern was making the best use of our newly obtained 95,000 square feet. We devoted ourselves to creating streamlined dismantling, sorting and shredding processes that would allow us to process the highest volume of electronics as quickly as possible, while maximizing our return on the scrap materials we were producing.



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STREAMLINING

The first step we took toward becoming more efficient was to consult with lean manufacturing experts to help layout and design our new dismantling and shredding lines. Specializing in minimiz-

ing waste and maximizing productivity, a team from the Maryland Technology Enterprise Institute (Mtech) thoroughly analyzed the way we had been conducting our operations and worked closely with us to develop a faster, more efficient

process in our new facility.

The most significant innovation resulting from this consultation was a series of conveyor belts we now use to carry materials through our dismantling and sorting lines and then on to our shredder. Previously, we had workers pushing electronics around in wheeled bins that were constantly emptied onto sorting tables and then re-loaded. Since installing the conveyor belts, we have seen our production increase by 35 percent because of our ability to keep materials constantly moving throughout our facility during a work shift.

COMING UNHINGED

The volumes we are currently processing at E-Structors dictate the use of one shredder for all of our electronic materials, so unlike companies that use a primary shredder and a secondary shredder, we do not do any pre-shredding. However, we do put all of our incoming electronics through what we call "tri-

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age," or "dismantling," during which every piece of scrap material is touched, sorted and taken apart by hand.

We find this practice necessary and beneficial for two reasons. The first of these reasons is safety concerns. Cer-

tain items, such as batteries, ink and toner cartridges, cannot be shredded without risking leaks or explosions, so we are careful to remove these items by hand to ensure that they are properly processed and recycled without being

sent through our shredder. The second reason we practice manual dismantling is for the financial return. We find that we maximize our profits and minimize waste by touching each electronic device by hand to make sure it is processed in the specific way that is most valuable to our downstream recyclers.

For example, as an obsolete DVD player is carried through our dismantling line, an employee will pull off the plastic casing from the outside of the player to be properly baled and shipped to our plastics recycler. The cord will be clipped from the unit and sold for recycling or possibly reuse. Each of these materials would be less valuable to our partners, and thus less valuable to us, if we were to just toss everything into our shredder without going through it first.

The downside of this process is that it requires manpower—we have up to 20 people working on our dismantling lines at any one time—and, it adds time to the shredding process. However, at this time, the return we receive in the value of the scrap materials justifies the process for us.

If our volumes continue to significantly increase in the future, we will have to re-examine whether our manual dismantling procedure is still the most cost-effective way to operate.

BREAKING IT DOWN

Obviously, the shredding is the most critical aspect of our process, both because it helps us best prepare the materials for recycling and because we specialize in the secure destruction of equipment that may contain sensitive information.

Once the materials have been dismantled, separated and are ready to be shredded, we've determined that a shred size of 1.75 inches is optimal for our process. We made that determination by looking at our volumes and our throughput—any smaller, and we couldn't effectively separate the materials; any larger, and we wouldn't get the liberation we need.

We find it beneficial to batch like materials together. By doing this, we maximize precious metal recovery by reducing processing fees at the consum-

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ing mills. Items such as plastics are considered contaminants by metals consumers and there is a charge associated with processing them. Therefore, we make more money without the added use of human labor.

Because we compete with companies who do not have the fixed costs in technology that we have, we can process more difficult materials (consumer electronics) more quickly and be competitive on the processing fees because of the

higher returns we can get from batching like items together. As we look at our prospects and what their materials streams are comprised of, we can price them accordingly.

The shredder we use to process our electronics is a slow-speed, low-torque, four-shaft shredder with a 1.75-inch screen. When working with the metal materials associated with electronics, we find slow speed to be the key. As opposed to our electronics shredder, our paper shredder operates at a much higher rate of speed, uses a single shaft and adjustable screens.

Obviously, keeping our shredder well maintained and up and running is critical to our operations; when our shredder goes down, so does our productivity. To keep our shredder running smoothly, we make efforts to ensure we have a consistent power source dedicated to it. We also never skip any of the required maintenance and we work with a reputable manufacturer that can supply us with replacement parts quickly. In addition, we employ personnel who are knowledgeable enough in mechanics to make many of our repairs on site without having to call an outside technician.

ADDING UP THE EFFECTS

Nearly one year after moving into our new facility, E-Structors is processing between 18 million and 20 million pounds of electronics each year, and our business continues to grow. Since implementing our new and improved shredding and dismantling processes, our productivity has increased, and our volumes, client list and staff have all grown as well.

We pride ourselves in being a reliable resource for those looking to responsibly recycle their obsolete electronics, and streamlining our operations has allowed us to better meet our clients' needs. ■

Mike Keough is co-founder and president of E-Structors Inc. (www.e-structors.com), which specializes in the secure destruction and recycling of computers, electronics and documents. He is a member of the National Association for Information Destruction, the Chesapeake Chapter of the International Facility Management Association and a founding member of the Howard County Green Business Council.

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