

New waste management system keeps engine-parts plant purring

BY BILL DETERING AND RAYMOND LACKNER

LESS THAN TWO YEARS AGO, THE Textron Turbine Engine Components plant in Danville, Pa., was forced to resolve the increasingly difficult problem of removing non-disposable containers and industrial-residual waste. Rigorous landfill, environmental and corporate regulations restricted previous methods of waste disposal and governed pre-landfill screening. Even with daily trash pickup, the company was hard-pressed to keep up with the more stringent requirements.

The plant, in operation since 1981, produces gas-turbine engine components, including fan and compressor blades, and vanes for engine manufacturers and the spare parts market. Manufacturers using the engines in military M-1 tanks, aircraft and standby electrical generators include Pratt & Whitney, Rolls Royce and AlliedSignal.

The problem. The Pennsylvania Environmental Quality Board in 1992 modified Title 25, the Residual Waste Regulations. The comprehensive amendments affected landfills, containers, refuse transportation and source reduction. Several landfills in the state closed in the aftermath of the revision. After applying to the Pennsylvania Department of Environmental Resources, Textron had to wait more than a year before the state approved its landfill request. Prequalification requirements included extensive monitoring and chemical analysis of the refuse composition.

The new regulations required Textron to:

- Separate all hazardous waste (because once wastes are mixed, the entire refuse becomes hazardous);
- Provide a chemical analysis and composite sample of residual and industrial trash (not including consumables from offices, restrooms and the plant cafeteria);
- Obtain prior approval from DER, based on detailed chemical analysis and review by landfill engineers; and
- Submit a detailed semiannual report to the landfill summarizing composition, chemical analysis and relative weights, and specify a subsequent plan to reduce overall volume.

Textron corporate management also instituted a strict, company-wide policy to prevent scavenging, recycling and possible resale of used containers onsite and at the landfills. Because few suppliers offer a return policy on

drums, particularly plastic, management requires plants to destroy drums of any size and composition before dumping.

The Danville plant generates two kinds of industrial-residual waste streams. One of these, vapor-blast sludge, is a talcum-grade slurry that provides a surface finish on parts. Filter-pressed before disposal, the slurry filled 25 1-cubic-yard containers for separate hauling. The second waste stream, mixed trash from factory bins, includes empty bags, cans, parts from equipment and maintenance, and floor sweepings. Textron also disposes consumable trash gathered from offices, restrooms and the cafeteria. This type of waste is not subject to comparable laboratory analysis and separation. The cafeteria waste includes a moderate quantity of discarded liquids.

Under its previous system, Textron disposed mixed and consumable trash in six 3-cubic-yard, open-top containers, which the hauler pulled three to five times a week. Skids, drums and other hard-to-crush items contributed to the typical load. Aside from adding staff, it was impractical to destroy bulky containers one at a time. Additionally, cafeteria waste and liquids leaked from the bottom of holding receptacles, attracting rodents and flies.

The solution. Textron sought a more versatile trash system that would comply with environmental regulations, reduce hauling and landfill costs, and result in a cleaner disposal area. The plant engineering manager contacted industry representatives to identify a stationary system that could satisfy the company's requirement to compact and destroy barrels and remaining trash in one seamless operation without spillage. **Most of those contacted suggested a tradeoff between a self-contained compactor and a stationary precrusher. No single system could provide both capabilities in combination.**

Dan Odenwelder, sales representative for BE Equipment Inc., Quakertown, Pa., was the exception. BE specializes in selling recycling and volume-reduction equipment. **Based on Textron's requirements, Odenwelder contacted The Glosser Co., McKeesport, Pa. He was familiar with Glosser's stationary precrusher and knew that the company already was developing a combination system.**

Glosser's management agreed to accelerate development of the CRUSHER™, which would be the industry's first self-contained precrushing and compacting unit. In August 1994, about two months after the project's initiation, BE installed a 2-cubic yard, self-contained, precrushing compactor at the Danville plant. The total system, including receiving container, has a 30-cubic-yard capacity. The Danville site served as Glosser's beta installation.

Working as a team, Textron, Glosser and BE identified initial problems, and Glosser engineers made minor equipment adjustments. Within weeks of beginning operations, the new precrushing compactor was performing to Textron's requirements. In service for a little more than a year, the new system processes a full mixed-waste stream and disposes Textron's trash more efficiently than before.

The CRUSHER's computer-controlled system requires no special skills or experience beyond basic instruction and general training in operating plant equipment. A selector switch can be set to the size of the load and offers a choice of one to 15 cycles. Once the choices are made, operation is automatic.

A set of hydraulic cylinders operates precrushing and compacting rams in the self-contained, gateless unit. **The system crushes and compacts odd-sized and mixed waste streams, ranging from huge crates and pallets to large and small appliances containing liquids. Because the system is seamless, it can handle wastes containing moderate to high volumes of liquids, such as bottling, painting and pharmaceutical wastes.** An on/off switch initiates the cycle. A computer board measures electric current and controls the ram cycle and travel limit.

The CRUSHER eliminated open-top containers, and reduced the frequency of pulls and dumping from a daily basis to once every one or two months. Textron now is in compliance with federal, state and local regulations, and corporate policies. Disposal costs have dropped, based on fewer labor hours required for initial handling of refuse, less frequent hauling and reduced landfill volume. Textron recouped its capital purchase within about 13 months (payback before tax), yielding a 92 percent pretax return on investment. □