



Compacting Waste

By Edward D. Agne

THROW away little things and save big bucks? It hardly seems likely, but that's just what the U.S. Air Force is doing. At Randolph AFB, TX, they are putting used—and hazardous—air filters into a state-of-the-art industrial compaction machine and saving thousands of dollars in hazardous waste disposal.

The air filters contain aircraft paint removed by plastic media blasting (PMB). Small plastic pellets "sand blast" off old paint to provide a fresh surface for repainting. Plastic pellets do not abrade the aircraft skin as a harder blasting medium can, thereby prolonging the life of the aircraft. The pellets are "captured" by a filtering system and recycled. When the filters become clogged with paint residue, they are disposed of by a compaction machine built by Compacting

Technologies International (CTI), Portland, OR.

The paint removal operation is conducted in a negative-pressure stripping booth where technicians in protective clothing operate the four high-pressure nozzles which direct the plastic pellets onto the aircraft skin. The stripping booth air is drawn through the filtering system to control emissions from the process and to collect the pellets for reuse.

About 134 T-37 and T-38 jet trainers of the Air Training Command are stripped each year at Randolph AFB. Approximately 50 aircraft can be stripped before the 74 filters, each measuring 18 by 36 inches, in the PMB system must be changed. The CTI machine compacts several used filters at once in a 55-gallon drum for appropriate disposal.

Air Force officials indicate that

hazardous waste compaction and PMB are big improvements over the formerly used stripping system. Prior to adopting PMB, chemical stripping agents were used; this method generated 4,000 pounds of waste byproduct per aircraft. The use of PMB reduces the per-aircraft waste stream to just under 400 pounds.

Compaction Ratios

According to CTI officials, high compaction ratios are possible because their machine offers advanced technology and design. The 55-gallon steel drums fit snugly into the machine's steel containment chamber and rest on a steel anvil which conforms to the underside of the barrel. The containment chamber's tight fit and the design of the anvil prevent the drums from

distorting or splitting. Further, a hydraulically driven compression plate, or platen, conforms closely to the interior diameter of the barrels. It provides efficient compaction and prevents the escape of any waste material.

The CTI compactor is governed by a microprocessor which monitors safety functions and the compaction cycle. The machine employs a two-stage hydraulic compaction system, which CTI's Steve Nowak says is unique to the industry. The hydraulic pump (which drives the platen) has two stages, high and low. When there is little resistance from the material being compacted, the pump operates in the low-pressure range. The machine automatically switches to the higher pressure when the platen meets greater resistance. According to Nowak, "The effect is similar to downshifting a car when driving up a hill and more power is required for the drive train."

A hold-down or continual push function is controlled by a microprocessor. When the total compaction force reaches a certain pressure, the microprocessor signals the motor to go into the hold-down cycle—a sustained push for a programmed amount of time. Nowak says, "This hold-down function dramatically increases the compaction ratios on waste streams." CTI programs the microprocessor to establish the correct compaction cycle and hold-down time for the material being compacted, and offers operator and preventative maintenance training as well.

Nowak states that the advantages of the two-stage hydraulic system are threefold: "It is more energy efficient, puts less strain on the hydraulic pump thereby extending its life and, since it is under less strain, there is less tendency for the system to heat up, so less hydraulic fluid is required."

The CTI machines, according to Nowak, handle nearly all types of dangerous wastes, including hospital/infectious, low-level radioactive, ignitable, toxic and corrosive, metals and glass. He noted that the equipment installed at Randolph

features a system which removes liquids from the material being compacted and redirects them to a special holding tank for subsequent recycling, treatment, or disposal.

Other Case Histories

Although Air Force personnel at Randolph would not disclose additional specific operating data about the hazardous waste compaction program, hazmat industry sources familiar with similar installations say results can be impressive.

Christopher F. Hawthorne, president of Safety Strategy, Inc., Lynn, MA, and the New England repre-



sentative for CTI and other hazardous waste management companies, notes that many industrial firms which employ spray painting operations use compactors to aid in the disposal of filters used to contain overspray.

"It's a large and growing problem, as the used filters usually contain harmful solvents, paint particulates, and other materials," says Hawthorne. Since the EPA ranks many of these materials hazardous, the filters must be handled and disposed of properly. He notes that a number of recent purchasers of CTI compactors had first tried to manually compress the filters into a 55-gallon drum. "They were lucky to get one or two filters stuffed into the barrel and they were still shipping a lot of air to the landfill or to recycling facilities."

Hawthorne noted that S. Bent & Brothers, Inc., one of New England's largest furniture manufacturing companies and users of paint spray filters, achieves compaction ratios of 14 to 1. "This means that instead of shipping 14 barrels to a hazardous waste facility, at \$400 to \$500 per barrel, the firm now ships *one* barrel." The company, he points out, saved almost \$70,000 in disposal costs during the first year of operating the CTI machine. Other savings are realized, he adds, by not having as many filled drums to store, label, prepare for transit and manifest.

Roger R. LeBlanc, administrative assistant at S. Bent's Gardner, MA, headquarters, commented, "Not only has the CTI compactor saved a lot of time, money, and headaches, it has allowed us to stay competitive in a very competitive industry." ❏



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