Best Practices in PET Recycling

Baling Procedures

Issue: *Baling of recycled PET is required by most buyers. Proper baling procedures are important for equipment maintenance, efficient handling of recycled PET, and production of quality bales.*

Best Practices: For intermediate processing centers (IPC) and plastics recycling facilities (PRF) that bale PET bottles and containers for sale to reclaimers or end-users, there are a number of general considerations to be taken into account beyond the general quality issues described in the *Bale Specifications* best practice. The choice of specific baling equipment for your facility will be a function of your recycling program design and budget, specific market specifications, and facility throughput requirements. The final decision on your baling system must balance cost and performance issues that fit within the limits and requirements of a particular PET recycling program.

Two types of baling equipment are available on the market. The first are known as vertical or "downstroke" balers. The second are known as horizontal balers. These are distinguished by the orientation of the shaft that drives the compaction ram of the baler.

Generally, horizontal balers are considered superior, as they have a motor and piston/cylinder configuration that can achieve greater compression ratings than most vertical balers. Horizontal balers are best for achieving the desired packing densities that most PET bale purchasers require (15-18 lbs/ft^3). Horizontal balers are generally more costly than vertical balers. Balers can be equipped with automated features, such as "auto-tie" systems that automatically wrap baling wire around the bale when it is finished or automated compaction systems that have photoelectric sensors that can detect when the bale chamber is full and automatically begin a compaction cycle. Once again, the additional costs of these systems need to be compared to their performance benefits for your PET recycling program.

Depending on the type of baler used by a particular facility, it may be necessary to remove caps from PET bottles and containers or to install perforators to puncture bottles that contain caps prior to baling them if your facility receives a high percentage of PET bottles and containers with caps. PET bottles and containers that have caps on them can trap air inside the bottles. Smaller balers that do not have adequate compression capacity to "burst" the air trapped in capped bottles can result in bales of inferior integrity, or bales that do not meet a purchaser's density specifications. When purchasing balers, it should be determined from a manufacturer at what compression rating their equipment is capable of "bursting" bottles with caps, such that it is no longer necessary to de-cap or perforate. The costs and benefits of these systems should then be compared to make a final choice.

Regardless of the type of baler used at a facility, the following general rules should be applied when preparing bales of PET bottles and containers that meet the PET Bale Specifications provided in this document:

- wrap baling wire in one direction only
- use only non-corrosive galvanized metal baling wire to wrap bales
- do not use "headers" made of cardboard or other materials at each end of the bale (baling systems that achieve the desired bale densities of 15-18 lbs/ft^3 will not require the use of headers to maintain bale integrity)
- do not double wrap baling wire
- properly maintain baling equipment by scheduling regular checks and necessary replacement of hydraulic fluid levels and filters

Following these simple rules will assist in providing uniform bales that will improve debaling operations and reduce processing wastes at PET intermediate processors, reclaimers or end-users. In addition, proper maintenance will maximize the performance and economics of your baling operations.