Improving Performance

Processing Equipment

Retrofit at Florida Composting Facility

Solid Waste Authority of Palm Beach County improves its methods for preprocessing yard trimmings and "finishing" the compost produced at its facility.

Patrick D. Byers

Palm Beach County, Florida may have been confused during the last presidential election but there is no confusion about management of the county's organic waste stream. Palm Beach County has a population of approximately 1.2 million people and the Solid Waste Authority of Palm Beach County is responsible for the management and disposal of the solid waste that is generated here.

The authority currently collects and/or accepts approximately 200,000 tons of curbside collected yard trimmings and 60,000 tons of biosolids from local wastewater treatment facilities each year. For the past seven years, the authority has been operating a cocomposting facility as part of the program for managing these two residuals. The Compost Facility was highlighted in an article that appeared in BioCycle in October, 1995. The Compost Facility is permitted to handle up to 120,000 tons/year and has been operating at approximately 80 percent of its capacity. A mixture of biosolids and shredded yard trimmings provide the feedstock. This report explains the improvements that have occurred in preprocessing yard trimmings utilized as feedstock and postprocessing or screening the compost produced by the Compost Facility.

Yard trimmings discarded at the curb are picked up once per week and delivered to either the authority's transfer stations or directly to the authority's new Woody Waste Recycling Facility (WWRF). The WWRF is located in the same 1,400-acre North County Regional Resource Recovery complex as the Compost Facility. Approximately 100,000 tons of the total yard trimmings collected are delivered to the WWRF for processing. The remainder is delivered to another private facility the authority contracts with to produce a boiler fuel.

Past methods to produce the feedstock amendment for the Compost Facility were labor and equipment intensive. This included receiving, spreading, manually removing contamination, stockpiling, drying (four to six weeks), grinding, screening, stockpiling finished products, and loading products for distribution.

There were several disadvantages. The spreading operation was mechanically intensive and, once spread out, the removal of contaminants was very labor intensive. Grinding and screening operations were not matched for production, which either slowed down the grinder or produced too much blow-by in the trommel screen. Stockpiling of finished products required an additional loader and operator. All of the equipment
was mobile and pretty much mismatched as far as production capability.

A new stationary (we call it PAC Man) system, which went into operation in October, 2000, either has reduced operating costs or improved the quality of the products.

NEW PROCESSING SYSTEM REDUCES COSTS

Processing now involves receiving, stockpiling, drying (four to six weeks), prescreening, use of picking station for removal of contaminants, direct loading into a horizontal wood hog, post screening, and use of stacking conveyors for the screened mulch. All equipment is matched to provide for efficient use of manpower and equipment. Previously, three loaders with operators, one grapple and operator, and eight temporary manpower employees were required to process materials. Now, one loader with operator, one grapple and operator, and four temporary manpower employees are used. The reduction in manpower and machinery has greatly reduced the operating costs. It is anticipated that the savings in operational expenses should be enough to recover the capital expenditures within a five-year period.

The research, procurement and installation of the new stationary yard trimmings processing system was rather involved. The authority took proposals and selected RRT Design and Construction to: Evaluate the authority’s current operation; Define new system performance requirements; Provide system equipment and construction specifications; Estimate construction and operating costs; and Develop conceptual design drawings.

At this point, the authority and RRT made a collective decision to go with a single source equipment supplier who could provide the whole equipment package as a turnkey operation. RRT then was tasked with selecting a vendor and coordinating the design, construction, and acceptance of a turnkey system that would meet the authority’s needs. The selected vendor, Continental Biomass Industries, supplied all the equipment for this system, provided guarantees on production capacity, and provided a warranty covering the entire system.

The new stationary (we call it PAC Man) system consists of four major components: Prescreener, Picking Station, Magnum 4800 Grinder, and Stardeck System.

The Prescreener also doubles as a feed hopper where material is metered into the system. The screen deck consists of heavy-duty discs to screen out a three-inch material and bypass the Picking Station. This material may be conveyed away from the system or reintroduced.

The Picking Station is in line to remove any foreign material (plastic, rock, metal, etc.) from the flow of yard trimmings prior to grinding. Drop chutes were not designed in, as the brush would hang up on the chutes. Metal is removed with a 30-inch magnetic head drum built in a specially designed stainless steel section. This system may be manned with two to eight personnel depending on the level of contamination.

The 4800 grinder is powered by an 860 horsepower Caterpillar engine and has been set up on stationary stands in line with the system. It has the new pocket rotor that is ideal for the yard trimmings material and is a down swing mill, turning at 700 rpm. The slower speed helps in reducing wear on the tips and passing any steel that may get by the picking station. On the discharge belt, there is a cross belt magnet to remove the tramp steel so that it does not go into the end product. In the event that the overs from the Stardeck System need to be reground, the material can be reintroduced.

The multideck Stardeck System allows the product to “waterfall” over each of the four ten-foot decks. This helps spread the palm fronds and be more efficient in separating the fines at 1-1/4 inch from the boiler fuel. The system is capable of changing sizes of screened material by only changing the speed of the stars and not having to change out screens. This is the most efficient means of screening the authority’s high vol-

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