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INSIDE:

Stainless Markets Are Tarnished pg 42

Scrap Handling Equipment Focus pg 48

GreenWaste Recovery Digs Deeper pg 74

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A photograph of two men standing in a scrap metal yard. The man on the left is wearing a yellow hard hat and blue jeans, while the man on the right is wearing a red hard hat and khaki pants. Both are wearing white shirts with a logo. The background is filled with piles of scrap metal and debris.

problem SOLVERS

Mervis Industries, Danville, Ill., strives to “solve the unsolvable” as part of its customer service philosophy.

by deanne toto

Trash to Treasure

The GreenWaste Recovery MRF in San Jose, Calif., successfully recovers recyclables from MSW.

The city of San Jose, Calif., has long enjoyed a reputation as a recycling leader. The city's landfill diversion rate of 62 percent is among the highest in the nation. However, with the city's goal of achieving zero waste by 2022, it was clear to city officials that more would need to be done in pursuit of this goal.

The efforts of GreenWaste Recovery Inc., San Jose, have played a predominant role in helping San Jose achieve a higher diversion rate by sorting recyclables from the city's municipal solid waste (MSW). The company's dual-line recovery facility (MRF), which has been in operation since May of 2008, is recovering nearly 80 percent of recyclables from the city's MSW and efficiently processing single-stream material using the same system, according to GreenWaste Recovery and the city of San Jose.

Waste from all San Jose city facilities and multi-family dwellings goes to the GreenWaste Recovery MRF in central San Jose, as do curbside recyclables.

GETTING GREENER

Privately owned GreenWaste Recovery specializes in collecting and processing residential and commercial trash, yard trimmings, curbside recyclables, food waste and construction and demolition debris. Its Zanker Road Landfill is a leader in construction and demolition diversion, and its Z-Best Composting facility in Gilroy, Calif., accepts yard trimmings, gypsum and food waste.

Because the company lacks an MSW landfill, it tries to stay ahead of the curve when it comes to recycling, says Frank Weigel, COO of GreenWaste Recovery. "It comes down to the right thing to do," he says of the company's decision to develop its MRF to recover recyclables from MSW.

"We've always stepped out and tried new things," Weigel says of GreenWaste Recovery. "For us, Northern California is a really competitive market. We are privately owned and have to compete against national companies with deep pockets. This is our way to compete and achieve higher



diversion, which appeals to cities in this area,” Weigel says.

The company worked with Bulk Handling Systems (BHS), Eugene, Ore., to design, engineer and manufacture its MRF in San Jose to handle MSW and single-stream material. Roughly 80 percent to 85 percent of the 400 to 450 tons per day of MSW the facility processes comes from San Jose, Weigel says. Approximately 80 percent of the 140 to 150 tons per day of commingled recyclables GreenWaste Recovery processes are collected from Santa Cruz County. “We have the capacity to double the amount of curbside recyclables we are processing,” Weigel adds.

The MSW material GreenWaste Recovery receives varies from day to day, he says. “Some days it’s rich in normal recyclables; other days, the material is more on the organic side.”

The bulk of the commercial material the facility processes is from restaurants and is rich in organic material as well as in HDPE (high-density polyethylene), PET (polyethylene terephthalate) containers, aluminum cans and ferrous metals. “We also do a little bit on the commercial side from offices with paper-rich loads,” Weigel adds.

GreenWaste Recovery’s processing system has been designed to handle all of these various infeed materials and features screens designed for processing mixed MSW material containing high levels of residue and film.

GETTING SORTED

The GreenWaste Recovery MRF has been able to recover 80 percent of the recyclables from incoming MSW material and relies heavily on a patented automated sorting process developed by BHS that incorporates screening, air systems and optical

sorting technology. In contrast, many dirty MRFs achieve recovery rates of 15 percent to 25 percent, including organics, and are heavily reliant on manual pickers.

“The key to this system is that it is really flexible to be able to handle the combination of material: single-stream, commercial loads and MSW,” says Eric Winkler, BHS Northwest regional sales manager.

When MSW material arrives at the GreenWaste Recovery facility—which measures only 40,000 square feet—it enters a pre-sort area where large material, including ferrous metal, wood, green waste, hard PET plastics and cardboard, are removed by hand. The MSW material, which is contained in plastic garbage bags, is sent to a bag breaker so it can be liberated before advancing to a 2-inch-minus screen that removes the organic fraction for composting. The remaining material passes through a Nihot Single Drum Separator, which removes light fiber, plastic containers and aluminum cans from the heavier material.

The light material is sent to a Polishing Screen, which separates fiber from containers, while the heavy material passes through a steel deck Debris Roll Screen to remove more of the organic fines for composting. The fiber that is recovered using the Polishing Screen is then post-sorted, recovering plastic film and removing light trash. The segregated containers are then sent to an NRT optical sorter, where PET containers are removed. HDPE material is removed manually, while an eddy current separator recovers the aluminum fraction.

The single-stream and commercial recyclables follow a slightly different route through the GreenWaste Recovery MRF. This material also is pre-sorted to remove large pieces of ferrous metal, film and large rigid plastics, but it then is transported to

an OCC Separator screen that removes the OCC (old corrugated containers). The material then advances to a Debris Roll Screen, which removes glass and fines for additional processing, Weigel says. A NewsSorter Screen separates larger ONP (old newspapers) from containers and smaller fiber material. A Polishing Screen then separates mixed fiber from containers. The containers from this line are also sent to the NRT unit to be further sorted.

Weigel says the MRF has a residual rate of 13 percent from its MSW processing line, though more residual material is produced at the composting facility. The residual rate from the single-stream line averages 5 percent.

KEEPING THINGS MOVING

GreenWaste recovers a variety of material—OCC, mixed paper, broken three-color or mixed glass, steel cans, aluminum cans, PET, natural HDPE, colored HDPE, mixed HDPE, rigid plastics and plastic film—that it sells primarily through brokers, Weigel says. Most of the recovered fiber is shipped overseas, but he says GreenWaste Recovery is trying to find more local markets for the material, particularly OCC. The company sends recovered metal to Standard Iron & Metals Co., Oakland, Calif., while it ships glass to a nearby facility operated by Strategic Materials, based in Houston, for further processing. The organic material GreenWaste recovers goes to its sister company, Z-Best Composting.

GreenWaste Recovery significantly invested in processing capacity while secondary commodities were still enjoying near-record-high prices. However, markets have declined considerably since the equipment began operation.

Weigel says being on the West Coast has helped in that it makes shipping material overseas easier. “We have had some pull back,” he says of overseas consumers. “They are pickier about what they take. We are extra cautious when baling. You want to make sure your material moves before the next company’s in tough times.”

He adds, “Prices have climbed steadily over the last few months. Commodities are gradually going up and things are getting better.”

Weigel continues, “Even if it stayed where it is today, we would continue doing what we’re doing.” 

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GREEN POWER

GreenWaste Recovery Inc., San Jose, Calif., recently installed a 1.8-acre, 1,500-panel solar power system at its material recovery facility (MRF) that will generate 408,000 kilowatt-hours of electricity annually. It is one of the largest commercial solar power installations in San Jose.

“The project truly reflects the value our company places on green technology and environmental stewardship,” Richard Christina, president of GreenWaste Recovery, says. “We are using the power of the sun—a clean, renewable energy source—to divert recyclable and compostable materials away from landfills and put them to good use.”

SolarCity, based in Foster City, Calif., installed the company’s solar power system. The purchase was financed through a Power Purchase Agreement.