Photos courtesy of Rumpke Consolidated Cos.

FEATURE

Upstreaming

How Rumpke upgraded its single-stream Cincinnati MRF.

BY Lisa McDaniel AND Anthony DiPuccio

A GROWING NEED: With forecasts calling for growth in the recycling industry, Rumpke felt the need to improve the throughput and capacity of its Cincinnati-area MRF.

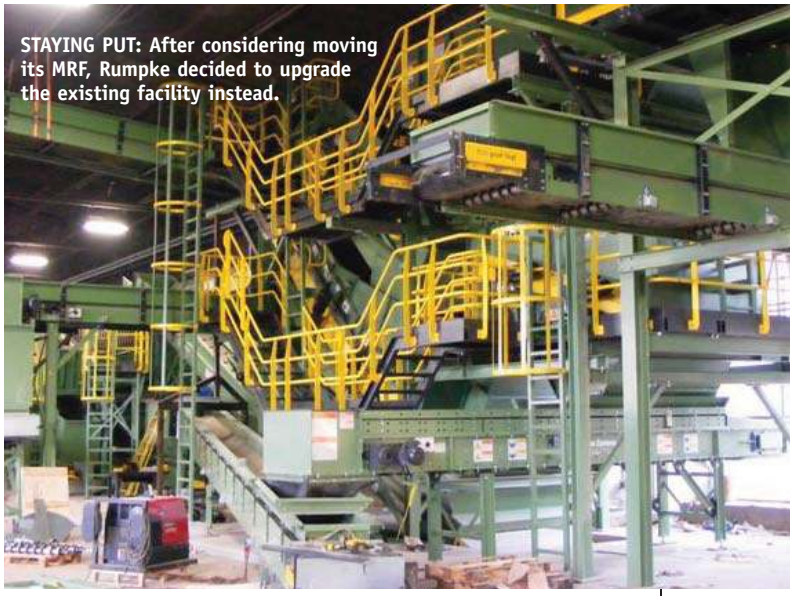
Managers of materials recovery facilities (MRFs) are finding a need to make recycling easier for residents, expand the types of materials accepted by their facilities and provide quality recyclables in a time of low rates paid by end users. Meeting these needs requires changes in the way that today's MRFs are equipped and operated. Many MRFs were originally designed for pre-sorted or dual-stream operation and now must be upgraded to effectively provide single-stream services.

A CHUNK OF CHANGE: The recent upgrade to its Cincinnati-area MRF cost Rumpke more than $6 million.

Rumpke Recycling recently tackled such an upgrade. The company, a division of Cincinnati-based Rumpke Consolidated Cos., owns eight recycling centers and provides recycling services to thousands of customers in Ohio, Kentucky and Indiana. In 2009, Rumpke undertook a multi-million dollar upgrade to its MRF in metropolitan Cincinnati.

Original Design

Rumpke's Cincinnati-area MRF was constructed in 1991. The facility originally used a two-sort process with a straight-line positive sort for commingled containers and



STAYING PUT: After considering moving its MRF, Rumpke decided to upgrade the existing facility instead.

a floor sort for fiber. The only automation consisted of a magnet for steel food cans.

Material volumes during this period were approximately 1,000 tons per month (tpm) with a 6-to-7-ton per hour (tph) throughput. All of the equipment, including balers, was designed and constructed by Rumpke. However, Rumpke soon made modifications to the original operations.

In 1992, a second straight-line conveyor was added along with a raised sorting area for fiber. Three years later, an air classifier/trommel and an eddy current were added to the container line. It was around this time that Rumpke was awarded the city of Cincinnati's curbside recycling contract, which increased monthly tonnage to approximately 2,000 tpm with a throughput of 8 to 9 tph.

Seeing the need to increase the hourly throughput of the system and wanting to enter into the single-stream method of handling residential recyclables, Rumpke added a CP Manufacturing primary screen in 1998 to perform a basic container/paper sort. Rumpke was pleased with the results and in 1999 added a second screen from the manufacturer to process newspaper (ONP) in tandem with the primary screen. Rumpke made the conversion to a single-stream MRF during this time period and achieved a 12-to-14 tph throughput using this configuration.

During this period, a Bollegraaf 110MR baler was installed for commercial recyclables and a dual-ram Excel 2R10 baler was installed for plastics, aluminum and high-grade paper. Monthly tonnages continued to increase, reaching an estimated 5,500 tpm. This basic sorting/baling configuration was used for the next 10 years. With this process, Rumpke 93 percent of materials.

Renovation

With increasing volumes, as well as forecasts for growth in the recycling industry and anticipated changes to Cincinnati's curbside program, Rumpke needed to improve the MRF's throughput and capacity. The company initially considered relocating the MRF to the Rumpke landfill located northwest of Cincinnati. However, when new building costs were factored into a move, the decision was made to work with the existing building and acreage.

With the decision made to work within the existing building's 68,000-square-foot footprint, Rumpke focused on identifying the type of equipment necessary to process 25 to 30 tph while maintaining high standards for marketable materials.

Rumpke identified four legitimate vendors for this project and narrowed down the field to two vendors during a competitive negotiation process. Company personnel traveled to five sites where the vendors' systems were in place. Observing the sorting systems in operations before selecting them is vital, says Brad Dunn, plant manager of the Rumpke Cincinnati MRF.

The company ultimately selected a highly automated Bollegraaf processing system that uses conveyors, screens, magnets and optical sorters to process paper, glass and plastics. Despite the sophistication of the renovated facility, manual sorting is still needed at various points in the process to maintain quality control. "Automate your system as much as possible but understand that you will still need quality control personnel in the system," says Jeff Rumpke, regional vice president of Rumpke Consolidated Cos.

The two-phased upgrade process took approximately four months to complete. Diligent pre-planning of the movement of materials during the two phases was crucial, Dunn says.

The first phase ran approximately seven weeks and consisted of removing and replacing the container-processing portion of the system. Operations continued with commingled bottles being baled and placed in a storage warehouse close to the Rumpke MRF. Loose, commingled bottles were also delivered to Rumpke's Dayton, Ohio, MRF for processing.

The second phase began with a tear out of the old CP screen system. During this time, single-stream residential material was bundled together by the baler used for commercial material. Approximately 9,000 tons were baled

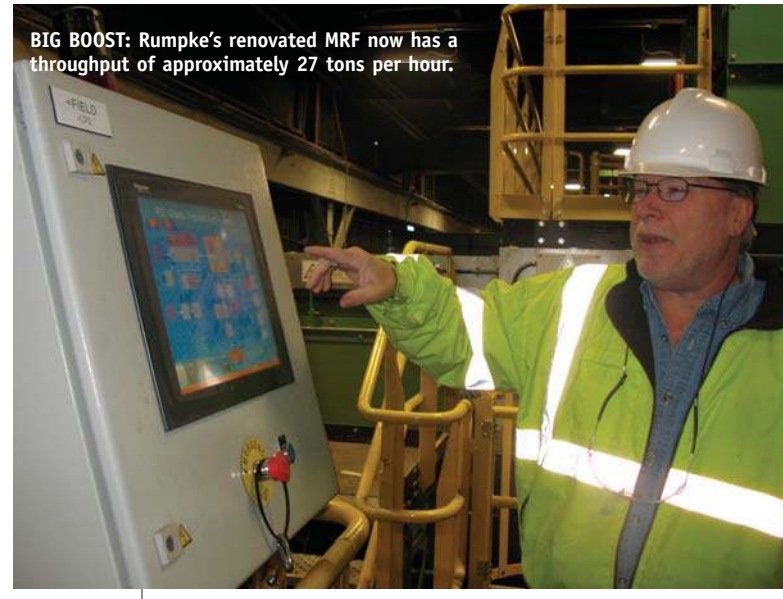
FOUR IS THE MAGIC NUMBER: The two-phased upgrade of Rumpke's MRF took about four months to complete.

and warehoused, while an additional 9,000 tons of loose single-stream material was diverted to the Dayton MRF. During this nine-week phase, commercial recyclables were diverted to area processors.

Rumpke was responsible for the equipment removal. The company reused the overhead magnet, the balers and the drum feeder from the original system. Everything else was replaced.

Because Rumpke worked with the existing MRF building, the rebuild provided a good opportunity to clean and refurbish areas of the facility that are not accessible during the course of everyday operations. The rebuild made it possible to install new electrical panels and related equipment, for example.

During the renovation, Rumpke operations, maintenance and safety personnel met regularly to discuss all aspects of the tear out and construction. The project gave Rumpke staff a greater understanding of the importance of safety in the workplace. "Our goal in this process is to produce a quality product in a safe working environment, optimizing the quantity of materials going through the Rumpke MRF," says Steve Sargent, director of recycling for Rumpke.



BIG BOOST: Rumpke's renovated MRF now has a throughput of approximately 27 tons per hour.

Results

The total cost of the upgrade was $6.2 million. Of this, $5.2 million was for new equipment with the remaining $1 million for concrete work, general building work and siding. The new system became fully operational in January 2010 and is meeting Rumpke's expectations. As a result of the project, the company has seen a dramatic increase in the quantity of material processed, with a throughput of nearly 27 tph. Rumpke's goal is to reach a processing benchmark of 1 ton per man-hour, and the company believes the new system can help in meeting this goal. Rumpke has a 95 percent recovery rate with the system. ■

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