



Mixed Waste MRF Retrofit

New CP Equipment Increases Recovery



Executive Summary

The Sunnyvale Material Recovery and Transfer (SMaRT) Station was installed in 2007 as one of the CP's first mixed waste processing systems. The SMaRT Station MRF is operated by Bay Counties Waste Services (BCWS), a progressive waste company with roots in the waste management industry dating back to 1914. The mixed waste MRF consists of dual infeed municipal solid waste processing lines and a residential processing line. CP Group was selected to retrofit the MRF for increased material recovery and system performance. The retrofitted system is exceeding expectations.

"The retrofitted system has increased our recovery rates dramatically for all of our commodities while maintaining our material quality."

—Jeff Nabhan, Facilities Manager, BCWS SMaRT Station

About Bay Counties Waste Services

BCWS is a fourth generation family owned business. BCWS collects and processes the residential and commercial garbage, recyclables, green waste, and organics in Sunnyvale, CA. It serves approximately 29,000 residential addresses, 23,000 multi-family addresses, and 3,000 commercial addresses, totaling an estimated 130,000 people. All collection vehicles run on Compressed Natural Gas produced from BCWS' own facilities—a true closed-loop process.

In 2008, BCWS sought expansion and was awarded the contract to operate the SMaRT Station. The SMaRT Station serves the cities of Mountain View, Palo Alto, and Sunnyvale. The system currently receives approximately 760 tons of MSW, 126 tons of green waste, and 82 tons of residential curbside material per day. Currently the owners of BCWS are involved in the collection of material from 13 cities, including the SFO airport and Levi's Stadium, and operate 4 MRF's.



Challenges

Inefficiencies were identified in the recovery of containers on the MSW line. The old screens were missing approximately 90 PET bottles and 60 aluminum cans per minute. An additional 30 PET bottles and 30 aluminum cans per minute were buried under materials and missed. This totaled 120 PET bottles and 90 aluminum cans per minute that were not being recovered. BCWS identified this as a significant problem, as well as an opportunity, and began to look for solutions.

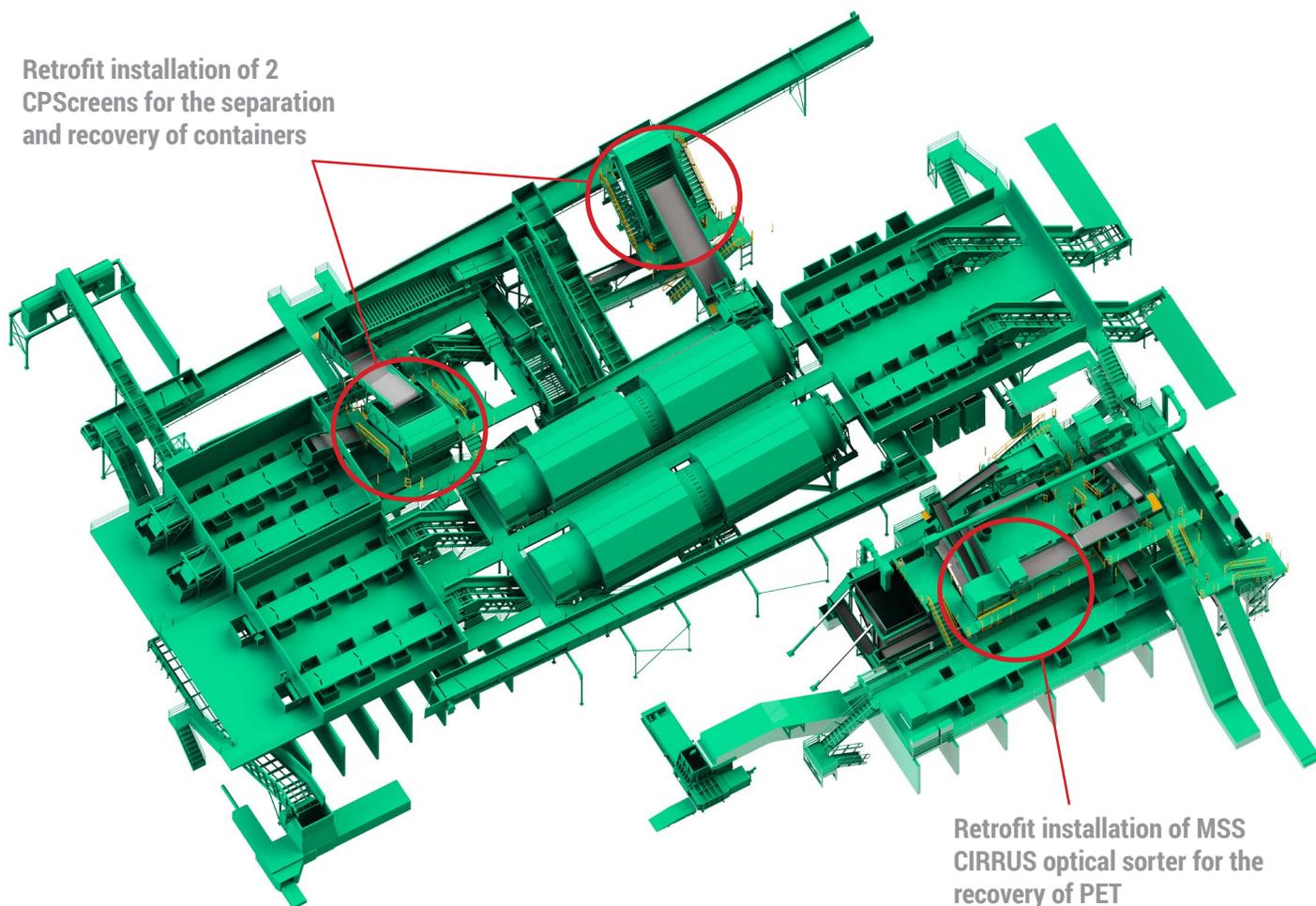
On the residential container line, BCWS sought to increase automation, reduce headcount, and move employees to the MSW processing line.

Solution

In August 2014, BCWS sent 2 tons of their MSW material to CP Group's manufacturing facility in San Diego, CA. There, the material was tested on the patented CPScreen. The CPScreen separation performance was highly efficient and BCWS decided to move forward with the system retrofit.

The system retrofit consisted of the installation of 2 new CPScreens on the MSW line for the separation of 2D paper, films, and residue from 3D containers and bulky waste. A new MSS CIRRUS optical sorter was installed on the container line for the identification and recovery of PET bottles. One of the 2 eddy current separators was moved from the MSW line to the residential container line, and an additional 5 conveyors were removed. The integration of the new equipment required integration with the system's operation interface.

Retrofit installation of 2
CPScreens for the separation
and recovery of containers



Retrofit installation of MSS
CIRRUS optical sorter for the
recovery of PET



Results

On the MSW line, the new CPScreens have increased the separation of the 2D material (paper and plastic) from the 3D material (aluminum cans, PET, HDPE, etc.), making it dramatically easier for sorters to recover material. BCWS has identified changes that have increased their positive sales of the recycled material. After the retrofit, while doing belt checks, they found an average of only 2.5 PET bottles and 1 aluminum can per minute being missed. This is a dramatic improvement to the 120 PET bottles and 90 aluminum cans being missed per minute before the retrofit. BCWS believes this will continue to improve over time as the sorters get more accustomed to the new system. BCWS also noted a significant increase in the baler use from the increased recovery of PET.

The operations interface was improved, and the new CPScreens integrated with the existing MSW line. All new controls were implemented on the container line. A benefit is the ease of use of the new MCC controls on the MSW line, with new programmable logic controls, and data exchange via profinet. Remote access was made available from any of the 5 new tablets. BCWS employees have a better understanding of how to control the system. For example, being able to control the speed of the belts and CPScreens from a tablet while standing right next them has been helpful in determining the proper speeds. The electrical system improvements and new system control tools assist BCWS to achieve operational goals and objectives.

The recovery increase in the 2" minus organic material is a significant change. Prior to the retrofit, BCWS had a trommel screen and a flat metal disc screen that collected an average of 17TPH of the 2" minus material. With the new CPScreens, BCWS is collecting an average of 28TPH of 2" minus organic material, a 65% increase in fines and organics recovery for anaerobic digestion. The increased recovery further diverts material from the landfill while reducing costs.

On the residential container line, BCWS is finding new markets with the additional PET recovered from the MSS CIRRUS optical sorter. Additionally, they are now combining 2-7 plastics instead of just recycling HDPE. By combining these plastics, volume and total value for recyclables has increased. By adding the CIRRUS, headcount was reduced on the container line and many employees were moved to the MSW line to increase recovery.

With the custom designed solution, new equipment, and new controls, BCWS achieved their retrofit objectives.

Retrofit Result Highlights:

- 98.8% recovery of previously missed *aluminum cans*
- 97.9% recovery of previously missed *PET*
- 65% increase in recovery of *organics*
- Reduction in landfill and shipping costs
- Increase in total value of recyclables
- Improvement in system control

"Everyone from CP was extremely helpful and my knowledge of our facility grew immensely with the help of all the CP employees. I honestly don't think we could have partnered with a better company to complete our retrofit. From the initial planning, to the final testing, CP offered a complete solution to every issue we had. They even came up with new ideas that we hadn't even thought of to improve our system. Hopefully we will get the chance to work with CP in the future with more expansions."

—Jeff Nabhan , Facilities Manager, BCWS SMaRT Station



Jeff, left, with his father Jerry



Timeline of Significant Events

The entire installation process took 6 weeks from start to finish. Downtime was minimized by implementing a phased shutdown and after-hours work. This created the most material processing time possible during the retrofit. Extensive on-site and off-site planning allowed the installation to stay on track and on budget.



About CP Group

The CP Group of Companies is a solutions providing team of engineers and manufacturers in the waste, recycling and renewable energy industries. CP Group engineers, manufactures and installs Material Recovery Facilities worldwide for a variety of sectors. Custom turn-key systems for residential recycling, commercial and industrial, municipal solid waste, engineered fuel, construction and demolition, and electronic waste processing are designed, installed and serviced by the Group. CP Group engineers and manufactures conveyors, disc screens, air separation machines, trommels, optical sorters, magnets, and intelligent motor control and data acquisition systems. The CP Group, headquartered in San Diego, CA, is comprised of CP Manufacturing, Krause Manufacturing, MSS, and Advanced MRF.

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