



CIF Project #918: EWSWA Container Line Residue Conveyor & Fibre Line Optical Sorter

Background

In 2019, Essex-Windsor Solid Waste Authority (EWSWA) commissioned a Mass Balance and Efficiency study on both of its Fibre and Container Material Recovery Facilities (MRFs). This Study was done following significant changes and volatility in recycling end markets, primarily due to China's implementation of its National Sword Policy in 2018, banning the importation of 24 different recyclable commodities and tightened the quality requirements for other recyclable commodities that would be allowed to be imported into the country.

In addition, Ontario is in the midst of transitioning its Blue Box Program to Individual Product Responsibility (IPR). This transition will make producers fully responsible for the funding and operations of the Blue Box Program. This presented EWSWA with a unique challenge, as it needs to ensure that changes in operations or additional investments will not negatively impact its ability to transition while also ensuring it can meet changing end market requirements.

To evaluate EWSWA MRFs investments, EcoCompass Inc. was hired to conduct MRF Mass Balance and Efficiency Audits before and after these system changes to quantify the improvements in quality and capture rates as a result of the new equipment.

Summary of Results

Refurbished screen improves OCC, Hardpack and SRP#56 streams

While the optical sorter was the focus for EWSWA, smaller upgrades upstream were also needed to maximize its efficacy. To this end, EWSWA refurbished its Old Corrugated Cardboard (OCC) screen and installed a new fines screen upstream of their new optical system in 2019

Before the investment the existing OCC screen was only capturing 50% of the cardboard moving through the fibre line. Missed OCC was increasing the workload for sorters downstream who were only able to gather an additional 21% bringing the total OCC capture to 71%. This missed OCC ended up in either a lower value grade (Hardpack), or in the newsprint bale as contamination. With tightening end markets, this increased the risk of SRP#56 being rejected or downgraded.

After EWSWA refurbished their OCC screen, the capture rate of OCC increased to 85%, a 35%

higher capture rate than the previous OCC screen. It resulted in less burden on all downstream sorting activities and contributed to the improved capture of Boxboard into Hardpack from 28% to 67%. The higher capture of OCC and Hardpack also resulted in a significantly improved quality of SRP#56.

Previously, OCC missed by the old screen was recovered with Boxboard and sold as Hardpack. This resulted in a missed opportunity to earn a higher revenue. The mass balance study in 2019, after the upgrades, indicates that EWSWA separates out approximately 13% more OCC annually from other lower revenue or residue streams. The higher revenue earned from capturing more OCC will contribute to a quicker payback on their OCC screen investment (i.e. two years or less depending on market conditions).

What is equally important is that sorting OCC into the appropriate grade reduces the burden downstream, which in EWSWA's case also resulted in improved newsprint (SRP#56) bale quality. This helped maintain their end market for the SRP#56 by ensuring sustainability of meeting the material specifications.

Financials

A total of \$320,767.09 in funding was spent to complete this project.

Learnings

Improvements upstream ensure success of optical sorter & better sorting improves potential to earn higher revenues

A new, or refurbished OCC screen is a lower cost investment, in terms of MRF operations, but its impact is significant, especially with the rise of e-commerce, which is increasing the volume of OCC, as well as introducing new sizes of OCC to be managed.

To find your opportunities for small wins, prioritize data collection. A mass balance study is one method. It examines the flow of materials through your facility and determines where commodities are missed and/or incorrectly sorted, and it can be carried out for between \$30,000 to \$50,000 per study. It's another example of a low-cost investment that carries a high value. This along with other data tracking efforts like it, help identify opportunities for strategic spending, which will be critical to maintaining efficiency and effectiveness and to supporting new, higher end market demands while we await transition.