CONTINUOUS IMPROVEMENT FUND

Project Synopsis

CIF Project #943 - Quinte Waste Solutions Hot Beverage Cup Cost Analysis

Background

At the time of this study, municipalities were under pressure to add single use coffee cups and similar polycoat materials to their Blue Box recycling programs. Concerns were being raised about the cost implications. This study proposed to build on work completed by Stewardship Ontario which identified markets for hot beverage cups, associated market specs and tested capture rates in single stream operations using optical sorters. The purpose of this study was to examine the feasibility of capturing cups in two-stream MRF operations, determine the best practices in handling the material to maximize capture and minimize costs and determine the likely system cost of managing these materials in various municipal programs.

Quinte Waste Solutions (QWS) offered to serve as a test municipality for comparing both costs (through time and motion studies) and success rates for the three current recycling methods typically used in smaller Ontario MRFs (i.e., loose, stacked and bagged in both the fibre and container streams) through a series of sort trials in a hand-sorting facility.

Methodology

In QWS's Blue Box program, these materials are currently accepted in the fibre stream. The study team (consisting of QWS, SO and CIF staff) opted to run samples of cups mixed in fibre and containers on each of the respective container and fibre sort lines. QWS segregated two 250 kg container and two 250 kg fibre samples in advance of the study team's arrival. Upon arrival, the study team documented the composition of each 250 kg sample using the current CIF/SO MRF Material Composition Study (MMCS) categories. Once documented, the samples were set aside so as to not get contaminated by other inbound material. At the completion of the day shift, QWS contractor staff cleared the line bunkers/storage containers to capture all test material during the test run.

QWS positioned staff on the sort line for each test in accordance with their normal sorting operations. Following each sample run, all material was gathered from the bunkers/storage container. These materials were sorted by the audit team (AET Consulting) to determine their composition following the four tests, again using current MMCS categories, to determine the effective capture rate during the trial runs.

During each of the tests, audit staff performed time-in-motion analysis on the time involved in separating the hot beverage cups from the incoming material.

Summary of Results

Audit results showed that 9 kg of polycoat were present in the 500 kg prepared sample of container stream mix and that 34% of the polycoat was 'hot cup' material. Similarly, 17.98 kg of polycoat was present in the 500 kg prepared sample of fibre stream mix and that 34% of the polycoat was 'hot cup' material. After the samples were run down the lines, the audits showed that the sorters were able to capture 67% of the hot cups and 80% of cold cups. Capture rates on the fibre line were even higher with sorters capturing 88% of both hot and cold cups.

Concerns were, however, noted by the audit team about the actual operation of the facility during the trial runs. It was originally envisioned that the lines would be operated under normal conditions. In actuality, the lines appeared to be staffed with additional sorters and multiple sorters were found to be attempting to recover cups throughout the operation which was not the intention.

Further work on the project, including the proposed time and motion study was not pursued because of the introduction of the Waste Free Ontario Act and the work being deemed to be no longer of relevance.

Financials

An original budget of $28,500 was set to complete the work with 100% funding from CIF. The costs for the completed work were only $7,160.53.

Learnings

The work completed under this study showed beverage cups can be recovered successfully if sufficient labour is applied to the task. However, the circumstances under which the data was collected made it impossible to draw any reliable conclusions about the level of effort and associated costs that would be required to manually capture beverage cups in an typical two-stream MRF.