CalRecycle

GRANT #5004-502

eCullet, Inc.

Company Background

This project was a follow-on to a previous research and development grant (No. 5003-505) for an improved optical system to clean and color-sort heavily contaminated mixed-color broken glass. Many Materials Recovery Facilities (MRFs) sort recyclables collected "single-stream," where all materials are placed in a single bin at the curb. This second grant funded eCullet to commission a facility to process such MRF material into furnace-ready cullet for glass container manufacturers. The plants would use the optical sorter module developed in the first grant. The feedstock would include residuals normally sent to landfill but containing large amounts of broken glass "fines." A startup company, eCullet's business objective was to process variable MRF material, including shipments that would normally be rejected or landfilled due to exceptional contamination or high cleaning costs. The company intended to produce recycled glass feedstock at a higher throughput and lower cost than currently available, while digging "deeper into the pile" to recover glass otherwise lost to manufacturers.

Goals

- Negotiate and lease a suitable location in Northern California for a plant potentially capable of processing up to 90,000 tons per year of contaminated MRF material;
- Engineer and construct a processing line using eCullet's patented optical sorting system, including three sorting modules;
- Source contaminated material from local MRFs;
- Produce furnace-ready recycled glass cullet that would meet the specifications of California glass container manufacturers;
- Lower the potential cost of glass recycling by producing less expensive feedstock for container manufacturers;
- Improve the potential capture of broken glass currently "lost" in landfilled MRF residuals;
- Create new California jobs.

Accomplishments

- Built and commissioned a working facility in Oakland capable of processing up to 90,000 tons of mixed glass material per year;
- Addressed a new market opportunity by extracting glass from extremely contaminated MRF residuals that otherwise would have been sent to landfill;
- Produced clear, amber and green cullet fractions within the specifications of container manufacturers;
- Processed contaminated glass as small as a quarter-inch in diameter, at speeds up to 20 tons per hour;
- Began cullet shipments to a customer at low market prices;
- Demonstrated a new, technologically advanced processing plant can be built at relatively low cost (around $1.5 million), potentially improving the economics for turning recycled glass into new bottles; and
- Created four new California jobs, in addition to the temporary

Challenges

This project experienced some unforeseen delays and challenges. The Grant Agreement was extended to a second year to accommodate the necessary changes. Specific challenges included finding a suitable location, ensuring adequate power to the facility, obtaining multiple bids to build a custom processing system, certain design changes were required during installation, and system "debugging" that took longer than planned. Once these challenges were overcome, the project became a great success.

Grant Type
Curbside glass processing

Year Awarded
2005

Funding
$815,000 Grant Funds
$884,665 Matching Funds

$1,699,665 Total Project

Project Length
Two years

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Lessons Learned and Recommendations

- When faced with unexpected delays outside of your control, leverage help from other players, such as local and state recycling advocates.
- Shop around, negotiate carefully and spend time for multiple bids. The highest bidders are not necessarily the best performers.
- A proper design effort, including detailed CAD drawings, is important to controlling costs.
- Competent engineering staff and other expert resources are critical.
- Expect to make significant changes to initial plans.
- Obtaining sufficient source material and continuous technology development will ensure the long-term success of the plant. Materials recovery facilities may benefit by supplying material for processing that was previously ineligible for California Refund Value payments.