

OMRF Equipment Process Flow

The Organic Materials Recycling Facility (OMRF) at the Davis Street Transfer Station in San Leandro, California is a state-of-the-art, highly automated system for processing municipal solid waste with maximum recovery and diversion. OMRF operations will include screening, air separation and optical sorting to remove non-organic materials, recover recyclables, and provide an organics-rich feedstock for composting at the Davis Street Organics Material Compost Facility.

1. Technology Overview

- **Bulk Handling System (BHS) Screening Technology**
 - Patented in-line compound tri-discs provide excellent material agitation and accurate material separation in a compact and energy efficient manner.
 - Material dwell time on each screen is very short resulting in significantly less cross contamination of the various fractions and cleaner more marketable finished products.
 - New generation Decline DRS screens for accurately sizing the material stream into precise size ranges for further processing. These screens have impact zones, rollover sections at the end and decline angles to minimize wrapping and reduce cleaning time.
 - The BHS Polishing screen is in use in all of our mixed waste processing systems and provides excellent ballistic separation of 2D and 3D material streams at the high throughputs required.
- **Nihot Air Separation Technology**
 - Field proven in hundreds of mixed waste applications
 - Unequaled separation of material based on density
 - Combination of negative/positive air flow
 - Adjustable infeed belt: speed and position
 - Adjustable air flow
 - Drum chamber with adjustable tuning features
 - Quickly tunable based on inbound material stream.
- **National Recovery Technologies (NRT) Optical Sorting Technology**
 - In-Flight sorting for very high recovery of targeted commodities
 - Fiber-Pure system developed based on experience in mixed waste processing to provide the highest recovery of fiber and film with minimal manual post sorting
 - Transmissive and reflective NIR sensing utilized
 - Individual spectrometers across the full width of the unit for reliability and high uptime

2. Process Flow Description

- **Sizing:**
 - Initial sizing of the material with the reducer
 - Sizing the material stream into (5) precise size ranges
 - 12" plus
 - 6" – 12"
 - 2-1/2" – 6"
 - 2-1/2" – 4"
 - 0" – 2-1/2"

- The inbound material is sized and organic fraction removed at the front of the system to eliminate cross contamination of high value commodities.
- **Separation by density:**
 - (3) Nihot SDS units to effectively separate the various size fractions based on density. In general, the higher value commodities such as paper, plastics and aluminum will be in the light fraction. The Nihot units separate the higher value material for final processing with additional screening and optical units.
- **2D & 3D separation:**
 - (4) 144" wide BHS Polishing screens to efficiently separate the high volume of fiber/film from the 3D container stream.
 - This critical step cannot be overlooked. The ability to produce clean and marketable products and meet the recovery objectives requires this step prior to final separation with optical sorters.
- **Final Separation with optical sorters:**
 - After all, of the above steps the material is conditioned and sized for final separation with NRT optical sorters.
 - Combination of various in-flight optical sorters with QC units to minimize manual labor.
 - Patent pending FiberPure system to recover the fiber and film.

3. Below is a summary of the main steps as outlined in the process flow description

1. Size incoming material stream – Pri-Max 6600
2. Split material stream into 12" + and 12" minus fractions with Decline DRS screens
 - a. 12" + to a manual post sort
3. Open small bags that got past the primary reducer with BHS Bag Breakers
4. Remove FE with drum magnet
5. Split material stream into 0" - 6" and 6" – 12" fractions with Decline DRS screens
6. Remove 2-1/2" minus fraction with Decline DRS screens
 - a. This fraction is sent to OMCf Pre Processing for additional processing.
7. Separate various size fractions into light and heavy fractions with Nihot SDS units
8. Light fraction from Nihots to BHS Polishing screens for 2D & 3D separation
9. 2D fraction from 6" – 12" Polishing screens to FiberPure system to produce fiber and film for final QC.
10. 2D fraction from 2-1/2" – 6" Polishing screens to is sent to the OMCf Pre-Processing for additional processing.
11. 3D fraction from Polishing screens to container line
 - a. Ferrous (FE) magnet
 - b. NRT optical unit to eject fiber
 - c. NRT to recover HDPE
 - d. Eddy current separator (ECS) to recover non-FE
 - e. NRT to recover PET
 - f. NRT to recover mixed plastics
 - g. NRT to QC PET and recover PP

- h. Optional NRT to recover containers missed
- 12. 2-1/2" - 6" heavies fraction to manual QC station to recover containers with fluids and non-FE
2-1/2" - 6" heavies fraction to Decline DRS to remove 4" plus fraction from 2-1/2"-4" fraction that is sent to the OMCF Pre Processing for additional processing.