CHINDERAH MATERIALS RECOVERY FACILITY

Resource Recovery for the Circular Economy

Re.Group specialises in resource recovery, aiming to extend the lifecycle of our everyday packaging materials and keeping them in the circular economy for as long as possible.

How does a Material Recovery Facility (MRF) work?

Mixed packaging materials are sorted into separate streams of glass, paper and cardboard, steel, aluminium, and plastic based on their properties such as size, shape, weight, density, magnetism and material type.

1. Receivals Area

   Recyclable packaging materials are collected by trucks from homes and businesses and transported to the MRF where they are unloaded into the receivals area.

2. Infeed & Pre-sort

   Materials are inspected for gross contamination before a front-end loader lifts the material onto the first conveyor.

   Employees at a manual sorting station remove large contaminants and hazardous items.

3. Primary Screen

   Materials enter a primary screening process which separates materials according to their properties such as size, shape and density.

   At the Chinderah MRF the primary screen is called an OCC screen. Small items like broken glass fall through the smallest holes, 3D containers and cans fall through medium sized holes, and big items like paper and cardboard go through onto another conveyor.

4. Glass Beneficiation Plant (GBP)

   Broken glass and other small items from the primary screen can feed into a Glass Beneficiation Plant (GBP) or a Sand Plant. Glass from the Chinderah MRF is sent to Re.Group's GBP at Enfield in Sydney, where it is processed to remove contaminants such as paper, metal and plastic caps, ceramic, stones and porcelain. The x-ray and optical sorting technology can identify broken glass by colour and sort it into flint (i.e., clear), amber and green cullet,

5. ready to be made back into new bottles.

   Sand Plant

   Broken glass fines that cannot be made into new bottles can be crushed and made into quality sand for use in infrastructure projects.

6. Paper & Cardboard

   Paper and cardboard from the primary screen pass over bounce conveyors and ballistic separators that shake out small pieces of contamination. People or robots undertake a final quality inspection and remove things like film plastic, before the clean material goes to the paper baler.

7. Magnet

   The 3D materials from the primary screen and ballistics separator pass under a magnet that removes ferrous metals such as steel and tin cans, which go to the steel baler.

8. Eddy Current Separator

   Remaining 3D materials pass through the eddy current separator, which uses electromagnetic fields to excite non-ferrous metals (such as aluminium cans) and makes them jump off the belt into the baler.

9. Plastics and Containers – Polymer Sorting

   Mixed Plastic bales from the Chinderah MRF are sent to Re.Group's advanced Container and Plastics Sorting facility at Hallam. Optical sorting uses Near Infrared (NIR) scanners which identify the types of plastics based on the spectrum of light they reflect, and air jets shoot out the items based on types of plastic and colours, e.g., PET clear and coloured bottles, PET trays, HDPE natural, HDPE colour, PP plastic containers and other plastics.

10. Waste

    Non-recyclable waste from the sorting process is taken to landfill, while some items – like batteries and gas bottles – are too dangerous even for landfill and have to be specially collected.

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Recycling Process