

50 MORARO (GO) ITALY

Year	2007
Client	MAINARDO Srl
Operator	MAINARDO Srl
System description	Sorting
Waste processed	Dry source separated waste
Plant capacity	40,500 t/year



Ecomaster has designed and built an efficient sorting plant, characterized by a high automation level, for the recovery of dry recyclable wastes derived from the source separation of municipal waste.



The plant is designed for the treatment of dry recyclable material deriving from the source separation of municipal waste.

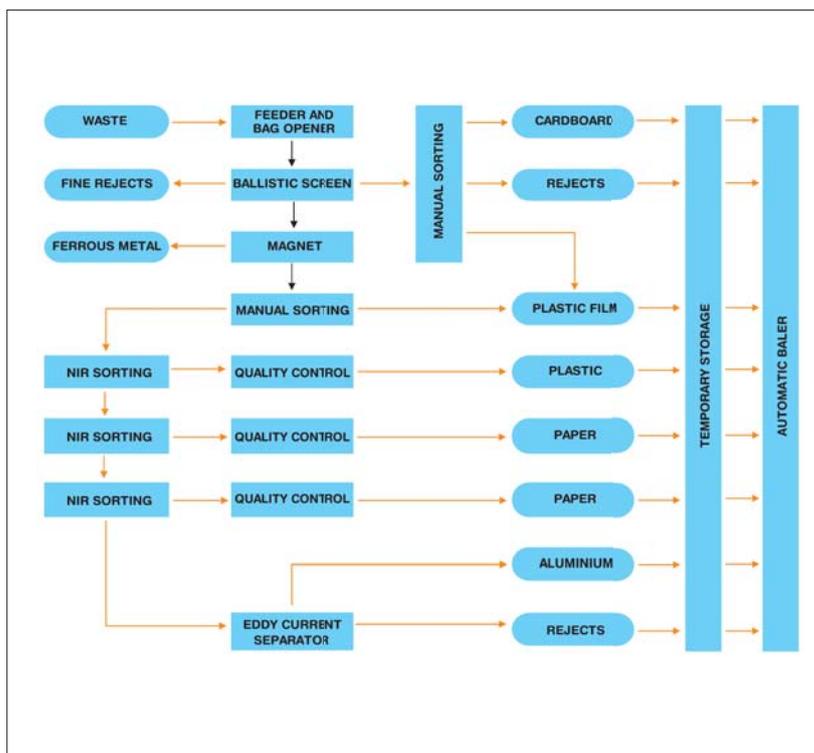
After the separation of bulky waste and other unsuitable material, waste is loaded by wheel loader into the feeding hopper of the metering bag opener. This equipment is provided with a mobile floor, hydraulically driven, and an elevator which pushes the waste against the bag opening knives.

Downstream of the bag opener, a conveyor feeds a two-step ballistic screen, which sorts the waste in the following fractions:

- The first step oscillating slats sort a fine fraction, which is collected as a reject;
- The oversize material is processed by the second step slats, which has opening larger than the first step. The materials to be processed by the automatic sorting line go through the screen openings;
- The oversize material, consisting mainly of large packaging materials, such as cardboard, film plastic and plastic containers, is collected by the manual sorting conveyor.

The large size materials are manually sorted and separately stored in their silos located underneath the floor of the sorting room, waiting for their turn of baling. The second undersize material produced by the ballistic screen is collected by a conveyor in order to be processed by a magnet for the separation of magnetic ferrous metal. At the end side of this conveyor there are two manual sorting stations for the control of the quality of the waste which is processed by the automatic sorter. The sorter functioning is based on compressed air jets, which are controlled by optical sensors.

The optical sensors, of NIR (Near InfraRed) type, work in the light field near the infrared and are able to detect the quality of the various materials based on their light adsorption. The system electronic processor activates the compressed air jets in the area interested by the material. The timing of the jets is also controlled by the computer. The material passing over the active jets is projected into a collection hopper and collected by another conveyor.



The first optical sorter is programmed for the sorting of plastic, which is inspected and manually cleaned by two operators. The other waste, different from plastic, is conveyed to a second optical sorter, similar to the previous one, which is programmed for the sorting of paper products. Also here there are two stations for the visual inspection and manual cleaning of the recovered product. The manually sorted waste is reprocessed in order to be recovered. A third NIR sorter processes the material remaining on the conveyor, which consists mainly of paper, plastic and used beverage aluminium cans. Usually, this automatic sorter is programmed for the recovery of paper, which is the material having a higher concentration. Two additional stations are included for the inspection and manual cleaning of the material automatically sorted.

At the end of the line, the remaining material is processed by an eddy current separator for the automatic recovery of aluminium. All recovered materials, together with the process rejects, are temporarily stored in silos located underneath the sorting rooms. The handling of these materials is by means of a wheel loader, that pushes them, in turn, into the receiving pit of a large steel apron conveyor, which conveys them to the baler feeder. The baler, and its feeder conveyor, were pre-existing.