

44 SESTO FIORENTINO (FI) ITALY

Year	2005
Client	QUADRIFOGLIO SERVIZI AMBIENTALI AREA FIORENTINA SpA
Operator	QUADRIFOGLIO SERVIZI AMBIENTALI AREA FIORENTINA SpA
Partner	UNIECO Soc. Coop.
System description	Compost refining
Waste processed	Organic waste
Plant capacity	70,000 t/year



QUADRIFOGLIO SpA, which carries out environmental services in the Florence area, has awarded to the joint-venture including UNIECO Soc. Coop. and ECOMASTER ATZWANGER the contract for the design and construction of a biotunnel composting plant complete with air treatment and compost refining systems.



The production of quality compost to be used in agriculture requires the refining of the composted material by means of a screening process. The purpose of this process is to produce a material with a fine particle size, substantially free of contaminants such as plastics, textiles, etc.

The refining line has been built using some pre-existing pieces of equipment, such as a feeder and a rotary screen.

The feeder of the compost refining line is loaded with a wheel loader. A belt conveyor takes the material to the inlet opening of the rotary screen. The rotary drum type screen separates two flows of material as follows:

- An undersized fraction, having a particle size smaller than 50 mm, that is collected by a conveyor and sent to the secondary screening process;
- An oversized fraction, having a particle size greater than 50 mm, that is rejected or recycled as structural material;

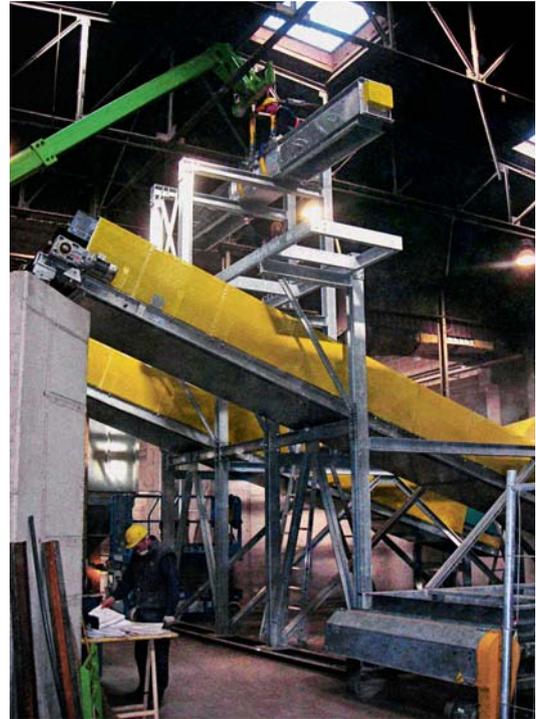
The secondary “flip flow” type screen, consists of two oscillating structures that are elastically interconnected. The oscillation loosens and then tensions the screening mat, that is made of plastic material and is connected to both structures.

This screening process causes a periodic acceleration of the particles that are on the screening mat, with subsequent greater screening efficiency and capability of processing material with a high moisture content without clogging the screen mat. The oscillating screen separates two flows of material as follows:

- An undersized fraction, having a particle size smaller than 8 mm, which is the compost product and can be further matured prior to its marketing;
- An oversized fraction, having a particle size greater than 8 mm and smaller than 50 mm, that can be recycled as structural material to be mixed with the organic waste prior to their composting inside the bio tunnels.

As illustrated in the process diagram, the refining line also includes the sorting of ferrous materials, such as nails or steel caps.

The refining line, which has a capacity of 36 tonnes per hour, is already designed for the future installation of equipment to sort inert waste (glass particles, stones, etc.), which at the moment is not required due to the high quality of the organic material delivered to the composting plant.



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The refining line includes a dust collection and filtering plant, consisting of a centrifugal fan and a bag filter with automatic bag cleaning by means of compressed air jets. After filtration, the waste air is conveyed to the centralized odour control system of the factory.

