

Tratolixo, Portugal's largest waste management company, already had two Putzmeister lines for converting waste from areas west of Lisbon into electric power and compost and is now adding a third to increase production and as a back-up option.

Tratolixo's waste-to-energy plant in Abrunheira, a town near Lisbon, has been managing the waste of nearly a million inhabitants from areas to the west of the city, specifically the towns of Cascáis, Oeiras, Mafra and Sintra, since 2012. This plant is the largest in Portugal, with a processing capacity of 75,000 t per year. It produces electric power and compost through anaerobic digestion.

How does this process work?

Once the plant receives the urban waste it is conveyed to the Putzmeister feed hoppers designed specifically for this client by a conveyor belt. Just underneath are THS 2052 MX screw conveyors and KOS 1480 dual-piston pumps which pump the waste to three digestion towers with a capacity of 35,000 t/year each. The fermentation process, which generates methane gas, takes place in these towers.

At the same time, a part of the fermented waste in the digestion tower is recirculated by other KOS 1070 piston pumps from Putzmeister in order to mix it with other waste before returning to the tower. The methane gas generated by the process is stored in a gasometer at the same plant or converted into electric power that is then fed directly into the power grid.

Nothing goes to waste at Tratolixo – not even waste. The waste in the digestion towers is analysed daily and once it is considered to no longer meet the requirements

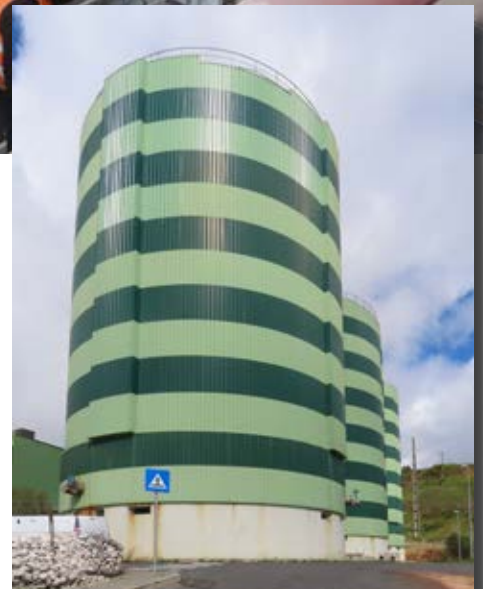
Putzmeister and Tratolixo: Generating energy and compost with urban waste



View of the plant

for producing gas, it is converted into compost for agricultural use. Similarly, wastewater is conveyed to a treatment plant and, once treated, returns to be used at the plant as it is not suitable for human consumption.

Three digestion towers



Technical data

Material	Organic waste from urban areas
Density	35% solid waste
pH	6 – 8
Size of foreign bodies	< 60 mm
Supply pumping operations (max.)	42 m³/h at 5 bar
Recirculation pumping operations (max.)	20 m³/h at 5 bar
Supply pumping	16 h/day from Monday to Saturday (in two 8 h shifts)
Recirculation pumping	16 h/day every day (in two 8 h shifts)



▲ Compost ready to be sold

◀ Reception hopper, screw conveyor and feed pump of the third line. You can also see how the recirculation pipework returns to the reception hopper



◀ Team from Tratolixo, Putzmeister and Maquinter during the visit to the plant

Technology from Putzmeister and service from Maquinter – the keys to success

When pumping biomass, organic waste and food scraps, it is of vital importance to be able to rely on pumps and supply lines that are leak-proof and free from faults, as anything that disturbs the flow of material could lead to obstructions and blockages.

Putzmeister has been amassing extensive experience in conveying biomass since the late 1980s. Tratolixo had already been operating Putzmeister technology in two other lines in this plant since it was opened in 2012. In 2024, this is expanded with a third line due to an increase in production.

In Tratolixo's plant in Abrunheira, there are three KOS 1480 piston pumps for supply pumping and three KOS 1070 pumps for recirculation pumping. The KOS models consist of a robust feed hopper, two reinforced supply cylinders with a piston each and an S transfer tube for switching over with two power-

ful piston cylinders, meaning that pumping foreign bodies and dry or viscous material is no problem.

At the Tratolixo plant, these are powered by three HA 55 E hydraulic power packs, with open hydraulic circuits and electric drives, and an SEP 55 control panel. In addition, the lines are also equipped with three reception hoppers designed by Putzmeister to match the specific requirements of this plant and three Putzmeister THS 2052 MX systems, which thoroughly mix the initial mixture with screw conveyors so that the pumps can deal with the waste more easily.

While the Putzmeister equipment was designed to be hard-wearing, wear is inevitable and Tratolixo relies on the team from Maquinter, the official Putzmeister dealer in Portugal, for maintenance and replacement parts. Without a doubt, this team was an important factor in the decision to invest in further Putzmeister equipment. Maquinter's team of Service technicians travels to the Abrunheira plant every year to carry out extensive preventative maintenance, which is crucial to ensure a long service life for the systems. But that is not all. Maquinter also played an important role in the entire technical consulting process for commissioning the system, lending the technical engineering expertise required by the project.



▲ Control screen from which the entire workflow for the three lines is controlled



Value of generated methane gas



Material extracted from the digestion towers



Wastewater to be treated and returned to the process



The material in the digestion towers is analysed daily

Technical data

THS 2052 MX screw conveyors

Drive	Hydraulic
Max. output	80 m³/h
Max. speed	40 rpm
Screw diameter	480 mm

KOS 1480 P feed piston pump

Operating output (at 85%)	50 m³/h
Max. output (100%)	58.8 m³/h
Pressure	10 bar
Delivery cylinder length	1400 mm
Delivery cylinder diameter	280 mm

HA 55 E hydraulic power pack

Electric motor power	55 kW (IE3)
Electric motor speed	2000 rpm
Voltage	400 V at 50 Hz
Delivery cylinder length	1400 mm
Delivery cylinder diameter	280 mm

KOS 1070 recirculation piston pump

Operating output (at 85%)	30 m³/h
Max. output (100%)	35.3 m³/h
Pressure	5 bar
Delivery cylinder length	1000 mm
Delivery cylinder diameter	230 mm



HA 55 E hydraulic power pack of the third line, the other two are visible in the background



Third recirculation pump



Premises of Maquinter, the official Putzmeister dealer in Portugal, who play a key role in the entire implementation and after-sales service process



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