

UFI Awards 2020

Sustainable Development

The multi-utility project for the recovery of organic waste in Fiera Roma

Fiera Roma, Italian Organizer and Exhibition Center, based in Rome, always oriented towards Customer Satisfacion, pays great attention to its Corporate values, and first of all the **Sustainable Development**.

Fiera Roma has signed an agreement with ACEA, a Multi-Utility Company working to improve residents' lives by offering top quality essential services: Water, Energy, Lighting and **Waste Treatment**; operating in the creation of sustainable solutions in the Circular Economy through the development of a series of shared projects.

With this view, FIERA ROMA is the first Italian Exhibition Center who has implemented a **SMART COMP MACHINE**: An innovative solution for organic waste that is directly transformed into compost in the place where it is produced, reducing CO2 emissions and eliminating collection and processing costs. Waste management is a crucial challenge, especially considering the food consumption and waste produced by trade fairs.

Fiera Roma has become the first "Organic Waste Free" Company.

The sustainable use of resources and waste, including minimization and valorization, is a common goal of the plans, directives and rules published in recent decades; the sector is undergoing a profound change due to the great attention paid to certain trends that are changing market dynamics and logic. Certainly among the most significant are:

- the evolution towards an increasingly "widespread" model with a central role of the customer who becomes producer and consumer ("prosumer");
- the use of technological innovation as a founding base for the development of infrastructure and new value-added services / products for customers in all areas of daily life (Smart City, RealTime data, BigData, Dashboard, Business Intelligence, DSS ...);
- the reduction of sources of pollution and the circular economy logic (closing the loop) increasingly sought by the European Commission.

WHAT IS IT?

It consists in a mini composting plants equipped with revolutionary sensor technology that transforms organic waste into compost on the spot, using an aerobic process that produces **ready-to-use fertilizer** in approximately 90 days. This initiative creates a new approach focused on proximity, which closes the gap between where the waste is produced and the place where it is processed. A new **zero-kilometer** waste



management model that moves the processing venue closer to the spot where the waste is produced.

Diffused composting targets large customers (shopping malls, cafeterias, airports and stations) that need to manage large quantities of organic waste. The first AceaSmartComp was installed in the Acea cafeteria which will become organic waste free.

CAPACITY:

- ✓ 60 Ton/Year
- ✓ 160 Kg/Day



HOW DOES IT WORK?

But how it really works the waste transition process? The smart composter system is structured as follows:

The project developed foresees the use of an electromechanical composter, with a maximum management capacity of 60 tons/year of waste including the structure necessary for the process, quantified in the measure of 20% compared to the organic fraction inserted.

The single chamber rotating cylinder machine is fully automated, and transforms the organic waste delivered into compost, reducing the volume of the organic fraction treated up to 80%.

The composting chamber rotates thanks to its coupling between the washer welded on the cylinder and the gear motor combined with the gearbox. The composting chamber is covered with thermal insulating material and is mounted on 4 rollers that allow its rotation. The compost produced automatically leaves the composting chamber.

The composting process is outlined in three steps:

- **1. INPUT-** domestic and non-domestic organic fraction with the addition of about 20% of cellulosic wood structure;
- **2. PROCESS** automatically managed to reach temperatures above 55°C and sized to treat the compost internally for at least 35 days;
- **3. OUTPUT** quality compost collected in bags or big bags, to be replaced when full and transferred to the ripening area.



The machine is equipped with an activated carbon biofilter for odour control, installed in accordance with current sector regulations, guaranteed for an average duration of 5 years and replacement at saturation. The activated carbon system, thanks to its high porosity is able to absorb most of the volatile organic compounds, guaranteeing a purified air flow at the outlet. To facilitate the loading of the machine, a load cell is installed. The load cell is dimensioned in relation to the organic waste produced, so as to offer an equalization capacity of the peaks and improve the efficiency of the degradation process.

The automatic feed hopper is equipped with limit switches that stop moving parts if the entrance door is open as a safety precaution. A screw mechanism is installed in the load cell that will automatically feed the composting chamber with the scraps inserted inside. In order to allow the highest quality of the product output, a vibrating grid sieve is installed.

The screen installed at the outlet of the machine, measuring 50cmx100cm, separates the product in two flows according to the granulometry of the same surface, equipped with a professional electro-vibrator that needs a dedicated 380V three-phase power supply. The mesh of the grid is sized to offer sufficient light to pass the quality compost as an under screen and to retain as an over screen the foreign bodies that will be, therefore, delivered as undifferentiated waste.

The composting process is regularly monitored through a smart sensor system in order to adjust process variables, optimizing product quality and operationalenvironmental functionality. For the management control of the machine, temperature sensors has installed in special sections of the machine. A monitoring unit for environmental parameters is positioned in the installation area of the machine, in order to constantly check the characteristics of the ambient air quality and the maintenance of well-being conditions, before installation.

The advanced technology, the consolidated aerobic composting process transforming it into compost in the same place where it is produced. With the use of mini composting plants, in fact, it is possible to transform wet waste directly on site into compost through an aerobic process that in about 90 days produces quality fertilizer ready to use. The project has been implemented and shared from Fiera Roma to contribute to offer an ecological and economic solution for the disposal of waste in the Rome.

A perfect example of a virtuous circular economy, which allows the reuse of organic food waste, which is transformed into compost. The self-produced quality compost **will enrich the 70,000 m2** of lawn managed by Fiera Roma. Also, once the transformation process is complete, the fertilizer produced will be donated to visitors, through specially designed bags. In addition to sequestering stable carbon in the soil, Fiera Roma, with the smart comp initiative, aims to **reduce CO2 emissions by eliminating the transport of organic waste**. 365 vehicles, every year, collect the staff from Fiera Roma and take it to the Roman transfer stations and then be transferred to composting plants even 600 km away from the collection site. With this process there will be a reduction in the environmental and social impact generated by the circular economy process.



COMMUNICATION CAMPAIGN

The smart comp system is accompanied by a communication and information campaign with the aim of promoting and sensitizing users to the logic of circular economy and Organic Waste Free typical of the Waste Transition. All communication activities is carried out bilingual (Italian and English) to allow a communication plan that can reach as many visitors as possible.

Characteristic elements of the communication campaign will be:

- The organic showcases
- The path of the staff
- The infographics in the display area of the machine

The path of the organic is the central element of the communication plan guiding the visitor in the transformation of organic material. The path starts from the organic seen as a waste from the food chain, and proceeds through the biological process of composting until the introduced material is transformed into compost.

Waste transition process is a unique opportunity to improve and shorten the organic waste management chain, with a very simple principle: the individual user deals with the treatment of their own waste to produce compost.

For all this reason the project carried out by Acea in collaboration with Enea and University of Tuscia aims at the widespread and participated treatment of organic waste produced by large users (canteens, hospitals, shopping centers, airports, stations).



CONCLUSION:

In this scenery Fiera Roma will be a benchmark and a model, not only for the Companies in its compartment areas, but also for Rome, Italy and the world meeting exhibition industry.

The target for Fiera Roma is to implement new sustainable strategy in the next years to introduce a path in the production system that leads the companies of the future to progressively eliminate the generation of waste that cannot be recirculated or residues that cannot be reused in other production cycles. Fiera Roma has the purpose of promoting itself in the Italian sector to develop virtuous change. However, today the times are certainly more mature and the pressure of public opinion is increasing, more and more aware of the environmental risk that humanity is running.





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Waste Transition





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