



# MULTIFUNCTIONAL **WASTE TO ENERGY** PLANT BELLOLAMPO - COMUNE DI PALERMO

The project foresees the revamping of an existing Mechanical Biological Treatment (MBT) plant, as well as the construction of a new section for the treatment and energy recovery of the Organic Fraction of the Municipal Solid Waste (OFMSW) resulting from source separated collection. Added-value products such as biomethane, biofertilizers, Refuse-Derived Fuel (RDF) will be produced as well as ferrous and non-ferrous metals recovered.

The project includes:

- Improvement of the organic fraction treatment resulting from the MBT;
- Treatment facility for the OFMSW resulting from source separated collection;
- Biofertilizers and quality compost production from the OFMSW (resulting from source separated collection);
- Biomethane production from OFMSW and MSW.

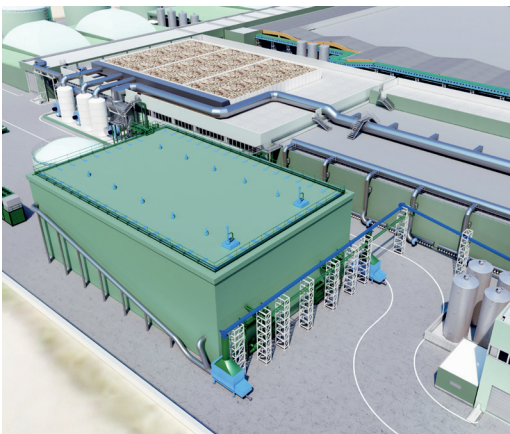
The project integrates the existing facilities with the new industrial structures. The final layout includes:

- A pre-treatment section for the OFMSW resulting from source separated collection; two anaerobic digestors (AD) to process the organic fraction sourced from the MBT section and the inflow of OFMSW resulting from source separated collection;
- A section for the upgrading of biogas resulting from AD to obtain biomethane;
- A facility to feed biomethane into the natural gas grid;
- A bio stabilization section for the digestate generated from the AD of the OFMSW from undifferentiated collection and sewage sludge (existing);
- A bio stabilization for the digestate generated from the AD of the OFMSW resulting from source separated collection to produce high-quality compost.

As a result, two different waste treatments processes will be integrated:

- **OF-MBT process.** This will treat the undersized organic fraction material obtained through the existing mechanical pre-treatment facility;
- **OFMSW process.** This will treat the OFMSW from source separated collection.

The OF-MBT process scope is the treatment of the OF obtained from the existing MBT facility through a section of dry anaerobic digestion for the production of biogas that will be sent, together with the one obtained by the OFMSW, to the upgrading facility which will capture CO<sub>2</sub>, and therefore, obtaining biomethane. Waste coming from AD will be subject to accelerated bio-oxidation at the existing biocells. From this process an inodorous outcome with low humidity (less than 50%) is obtained and destined to landfill. The FORSU process aims to obtain through AD the production of biogas and fertilizer and/or quality compost. Again, the biogas, which will be upgraded, can be fed directly in the national grid.



## DESIGN DATA

**Private client** Biowaste CH4 Palermo S.r.l.  
**Type of service** detailed design, executive project, construction supervision, commissioning and operation monitoring  
**Project cost** €51.128.321,75  
**Location** Palermo  
**Total site surface** 40.000 m<sup>2</sup>  
**Design period** June 2020

## TECHNICAL DATA

**OFMSW capacity:** 60.000 t/year  
**OF-MBT capacity:** 100.000 t/year  
**Exhaust air treatment capacity:** 250.000 m<sup>3</sup>/h

### OFMSW PROCESS

**Compost production:** 14.500 t year  
**Biogas production:** 1.100 Sm<sup>3</sup>/h  
**Biomethane production:** 638 Sm<sup>3</sup>/h

### OF-MBT PROCESS

**Biogas production:** 1.230 Sm<sup>3</sup>/h  
**Biomethane production:** 650 Sm<sup>3</sup>/h  
**Stabilized organic fraction production:** 67.300 t/year