



# INTEGRATED M.S.W. TREATMENT PLANT - ENNA

The design is developed in accordance with a public tender for the construction of an integrated system for the M.S.W. management in the Municipality of Enna (CIG 5533376E50), which was issued by the Commissioner for the Waste Emergency in Sicily (O.P.C.M. 9/7/2010 n. 3887 - D.L. n. 43/2013). The plant lay-out provides one mechanical treatment line for the screening of M.S.W. with a capacity of 31.4 t/h. The process-line layout is the following: a wide area for the storage of the incoming wastes, a shredding and a double-stage screening (with holes from 130 to 80 mm). This is aimed to separate the following materials:

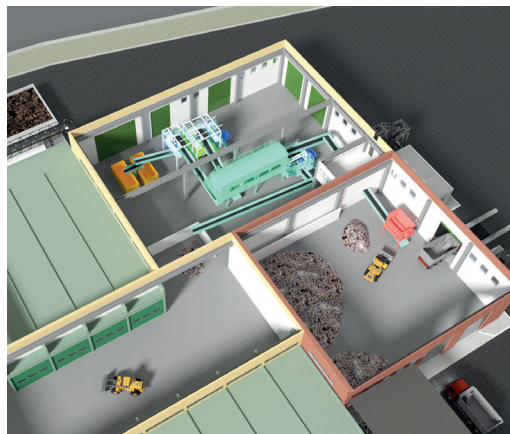
- i) oversize fraction >130 mm, by which nonferrous metals (e.g. aluminium cans) and ferrous materials will be separated;
- ii) oversize fraction 80÷130 mm, by which ferrous materials will be separated;
- iii) underscreen fraction < 80 mm, which must be processed with biological treatment.

The designed layout also provides the possibility of future development of a fine shredding section for producing RFD from high calorific fractions. Provided biological treatments for the underscreen fractions are:

- 1) anaerobic digestion to obtain biogas which can be recovered into a cogenerator engine for the production of electricity and thermal energy (supplied for the self-consumption of the plant);
- 2) aerobic stabilization of the digested sludge to obtain a stable dry material which can be sent to disposal or recycled.

The buildings will be kept in constant depression in order to ensure the health of workers; the air is recirculated within the aerobic tunnels to facilitate the biological process.

Lastly, the exhaust air will be treated with a scrubber and a biofilter, and so treated air can be given off into the atmosphere, since pollutant concentrations are reduced to the levels set forth by law.



## DESIGN DATA

### Public client

Commissario Delegato per l'emergenza Rifiuti in Sicilia (ex O.P.C.M. 9/7/2010 n. 3887 - D.L. n. 43/2013)

**Tasks assigned and carried out**  
Final design

**Cost** € 11.836.978,51

**Location** C.da Cozzo Vuturo (EN)

**UTM Coord. (Zone 33S)** 438,258 E - 4,161,038 N

**Site area** 41.000 m<sup>2</sup>

**Shed surface** 3.400 m<sup>2</sup>

**Design level** Final design

**Designing period** 2014

## TECHNICAL DATA

**Operations according to Encl. B and C referring to Part IV of Law Decree No. 152/06 (D.Lgs. 152/06) and further amendments D8, D9, D14, D15, R1, R3, R4, R5, R13.**

**Potential capacity:** 50.000 t/year; 314 t/h

**Treatment lines:** one

**Mechanical pretreatment:** shredding - double screening (130 mm and 80 mm) - ferrous and nonferrous metals recovery

**Biological treatment:** anaerobic digestion of underscreen materials (seven tunnels, dimensions 6x30 m each) biological stabilization and drying of the digested sludge (four tunnels, dimensions 6x30 m each)

**Leachate storage:** 1.500 m<sup>3</sup>

## ACCESSORY EQUIPMENT

**Air treatment:** 80.000 Nm<sup>3</sup>/h

**Air treatment system:** wet scrubber and biofilter

**Biofilter surface:** 600 m<sup>2</sup>

**Biogas cogeneration system:** 600 kW endothermic engine biogas purification system

**Expected biogas flow rate:** 300 m<sup>3</sup>/h

**Expected electrical energy production:** 3.400 MWh/y

**Expected thermal energy production:** 3.700 MWh/y