73 FINALE EMILIA (MO) - ITALY

Year	2017
Client	AIMAG SpA
Operator	AIMAG SpA
System description	Pre-treatment, semi-dry anaerobic digestion, biogas upgrading
Waste processed	Organic source-separated waste
Plant capacity	50,000 t/year

Pipeline-grade biomethane, a highly valuable form of chemical energy, is recovered from source separated organic waste with a high-tech system including semi-dry anaerobic digestion and biogas upgrading.

Source separated food waste and green waste are processed by the same pre-treatment line. The preparation of the digestion feedstock includes a shredder, for opening the bags and reducing the size of the waste components, and a magnetic separator for sorting ferrous metals.

After the metal sorting phase, a disc screen is used to separate the organic waste to be digested from plastic bags and other large-sized rejects. A feeding bunker is used to store the digester feedstock, which consists of a mixture of organic waste and bulking agent derived from green waste shredding and compost screening operations.

The semi-dry digester is designed to process a high-solids feedstock, which achieves a high biogas yield from a single anaerobic digestion vessel. The loading of the feedstock from the storage bunker into the digester is fully automated.

The digester vessel has the shape of an elongated parallelepiped and is made by steel-reinforced concrete.

Some slow-speed rotors, with a horizontal shaft driven by a planetary gear-motor, are provided inside the digester. The rotors agitate the material contained by the digester, which proceeds with a plug-flow pattern. The organic material is heated by heat exchangers located along the longitudinal walls of the digester.

The digestate extracted from the digester is sent to a composting line, while the biogas produced in the digester is treated with an upgrading system which produces pipeline-grade biomethane.

Part of the produced biogas is used as a fuel in a co-generation unit and in a boiler, which provide the heat required by the digester.

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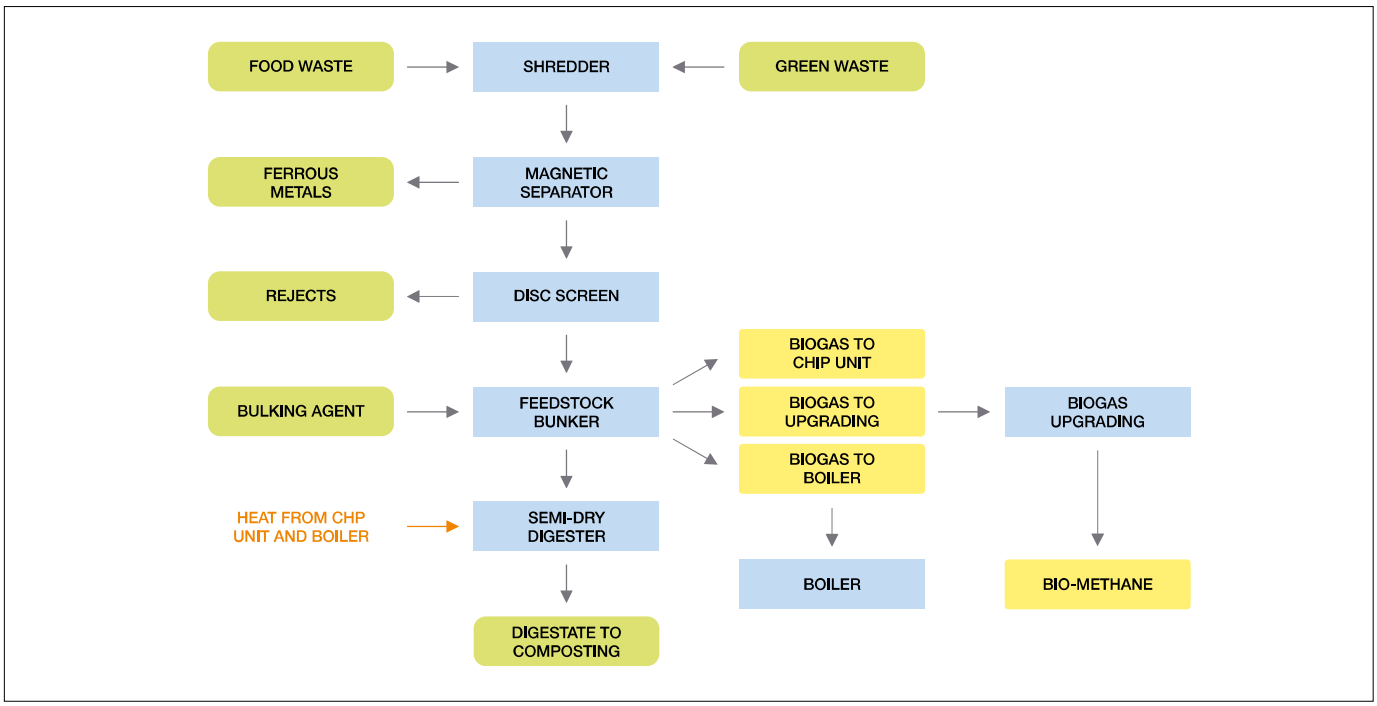

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ATZWANGER SpA . Division Ecomaster Atzwanger
Via Palmanova, 31 . 33050 S. Maria La Longa (UD) Italy
Tel. +39 0432 920175 . Fax +39 0432 923393
www.atzwanger.net